



PROCEEDING

INTERNATIONAL CONFERENCE ON SCIENCES AND BUSINESS MANAGEMENT GRADUATE 2020

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College of Logistics and Supply Chain, Suan Sunandha Rajabhat University



Message from the President of Suan Sunandha Rajabhat University

Suan Sunandha Rajabhat University is ranked as No. 1 Rajabhat University and No. 18 in academic quality by Webometrics Ranking of World Universities or Ranking Web of World Universities. Suan Sunandha Rajabhat University has been pushing for development of research quality for students and researchers and creating a conducive research environment to develop the research quality continuously and become the world's leading university in research. This is especially important for postgraduate education, which aims at promoting students to develop their knowledge and skills distinctly in a specific field. It also aims to help individuals to achieve academic excellence and develop knowledge and various new technologies. As a result, postgraduate students are encouraged to present their research at national and international academic conferences, resulting in the research being further developed in depth and recognized in academic circles. Hence, it is a great opportunity that College of Logistics and Supply Chain, Suan Sunandha Rajabhat University has organized "Sciences and Business Management Graduate Conference 2020: SBC2020". This is an important academic activity which promotes the development of research and education quality. In addition, the conference will provide a good opportunity for students to present and disseminate their research to the public and stimulate idea exchange among researchers in various fields from different educational institutions, which is beneficial to the organization, society, and nation.

I sincerely hope that this academic conference will allow faculty, researchers, students and interested parties to exchange ideas and gain new knowledge creating a research network. Thus, new knowledge created from research can be used to drive efficiency and effectiveness within the society and nation in the future.

Chutikarn Sriviboon.

Assoc. Prof. Dr. Chutikarn Sriviboon
President of Suan Sunandha Rajabhat University



Message from the Dean of College of Logistics and Supply Chain
Dr. Chattrarat Hotrawaisaya

College of Logistics and Supply Chain, Suan Sunandha Rajabhat University, warmly welcomes you to "Sciences and Business Management Graduate Conference 2020: SBC2020". This conference is a great platform for students to disseminate and exchange knowledge gained research related to science, management and other relevant fields with their peers, faculty, experts, and academics, enhancing their experience and developing their research presentation skills. For this conference, College of Logistics and Supply Chain, Suan Sunandha Rajabhat University, has collaborated with different national and international institutes. Peer review is conducted by experts, lecturers and academics from various fields and institutes nationally and internationally. Hence, research published in this conference has been preliminarily assessed as quality research.

We sincerely hope that this conference will be valuable to all participants and interested parties in developing relevant research, resulting in self-benefit and benefits for the country. Additionally, we greatly thank the lecturers, experts, faculty members and staff who took part in organizing this conference and making this conference a success.

Chattrarat H.

Dr. Chattrarat Hotrawaisaya
Acting Dean of College of Logistics and Supply Chain

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SBC-02-001

THE ENHANCEMENT OF THE EFFICIENCY OF TRANSPORTATION FOR TRUCK CARRIER IN THAILAND

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Abstract

The objective of this research is 1) to study the relationship between transportation efficiency and the quality of logistics service. 2) To study the causal structural relationship of logistics service quality affecting the success of trucking operators in Thailand, which operates the freight forwarding business of trucking operators in Thailand. 3) To present a model for evaluating the transportation efficiency of truck transport operators in Thailand. The guidelines for improving the quality of transportation service of truck transport operators in Thailand. This research used mixed-method, quantitative research using the survey method, and qualitative research using an in-depth interview technique. The researcher applied the concept of a research framework of transportation activity efficiency. Logistics service Quality and balanced scorecard success index. Research areas are trucking establishments with regional offices in Thailand. The sample used was truck logistics operators, that registered with the Department of Transportation Which is still operating and received the Q-mark truck transportation service quality standard by the announcement of the Department of Land Transport B.E, and international road transport operators, totaling 1,092 companies, divided into target groups 1) road transport operators who have received Q-mark trucking service quality standards of 284 persons 2) operators Road freight transport by non-fixed trucks of 145 persons and 3) International road freight operators 28 persons. The method for selecting sample size in each landscape in a proportional allocation using questionnaires is a data collection tool. The analysis of descriptive statistics, Inferential statistics, and structural equation modeling (SEM) were analyzed from the conceptual framework analysis. There are efficiency transportation 8 factors, 2) the quality of logistics services, there are 7 factors, and 3) the factors that affect the success of the transport operators have 4 factors, which the knowledge of this research is knowledge expansion and Confirming the promotion of business success, that is influenced by transportation efficiency and the quality of logistics services of truck transportation operators in Thailand.

Keyword: Efficiency of Transportation, Logistics Service Quality, Balanced Scorecard

Introduction

In conclusion, Thailand still has relatively high logistics costs to GDP. especially when compared with developed countries. Also, comparative competitiveness has not evolved much over the past 10 years, mainly due to the logistics system that is still mainly dependent on road transport. Thailand currently needs to stay in business competition is more intense in the field of trade and services. Therefore, improving all aspects of business operations to reduce operating costs, increase service levels, and increase business opportunities is a must. Developing efficient transportation systems is a vital mechanism for increasing competitiveness. Transportation development is currently focused on transport and keep on schedule. Reducing the time it takes to transport goods. Is a measure of the transportation efficiency of both the transport And logistics providers Meanwhile, Customers order products more often, and the quantity ordered is reduced to reduce inventory costs. Resulting in more part of the vehicle transport in each way It has a huge impact on the carrier. The administration is more difficult and increases operating costs. The increase in the operating cost of the carrier also affects the cost of the carrier. The increase in the operating cost of the carrier also affects the cost of the carrier. Therefore, finding ways to increase efficiency at a reasonable and mutually beneficial to all parties is necessary. At present, many countries have adopted the concept of measuring transport activity efficiency. Used in improving transportation efficiency because it is a model that is efficient and is a sustainable transport system development and became interested in the ideas about performance measurement used to develop freight transport activity as well but the measurement of transportation efficiency was not as successful as it should have been. Probably because many organizations in Thailand clung to the concept and the traditional working practices in the past have been driven by experience and habitual nonconcept or tool enabling the development of efficient transportation Not yet successful. The operator's logistics, lack of technology, and integration, As a result, the overall cost is still high, Improved logistics remembered as having made extensive carefully made. operators need to improve the quality of goods and freight to be effective enough to respond quickly to customer needs. What affects customer satisfaction. In addition to the prospective entrepreneurs to be socially responsible, then. (Jermsittiparsert, Siam, Issa, Ahmed, & Pahi, 2019) It is the quality of the manufactured products and the quality of services, cargo services. If the company has good shipping quality and efficient products, it will improve customer satisfaction.

The researcher is therefore interested to study transportation efficiency. Quality of service The efficiency and quality of the delivery service will lead to the success of trucking operators in Thailand and to be used in the development of modern transport efficiency So, to build the competitiveness of enterprises in truck transportation. The research focuses on the factors affecting the performance of the transport operators. And service quality To find ways to enhance and develop cooperation Enhancing the efficiency of transport and can be

the result of the practical and effective implementation will contribute to the success of the business. As well as increasing the opportunity to compete as well.

Research questions

To comply with the objectives of the research. The researcher, therefore, poses the following research questions.

1. Transport efficiency It is related to the service quality of truck transportation operators.
2. How does the quality of truck transport operators' service relate to the success of truck operators in Thailand?
3. The performance of transport operators, transport trucks affect the success of the business? How?

Research Objectives

1. To study the relationship of transportation efficiency Quality of logistics service That affects the success of the freight forwarding business of trucking operators in Thailand
2. To study the causal structural relationship of the quality of logistics services That affect the success of the freight forwarding business of trucking operators in Thailand
3. To present a model for evaluating the transportation efficiency of truck transport operators in Thailand.

4. Research hypothesis

Improving the transportation efficiency of truck transport operators in Thailand The researcher has set the research hypothesis as follows.

Hypothesis 1: Transportation efficiency has a direct influence on the success of truck transport operators.

Hypothesis 2: Transport efficiency influences the quality of logistics services of truck transport operators on the success of truck transport operators' business operations.

Hypothesis 3: Quality of logistics service, service has a direct influence on the success of truck transport operators.

Scope of Research

To achieve the research objectives of improving the efficiency of transportation of trucking operators in Thailand. the research scope was set as follows.

1. Scope of content

This research studies factors related to the concept of supply chain and logistics, truck transport, performance measurement, service quality, success indicators.

Balanced scorecard. As well as relevant research to lead the search and presentation of the model. Improving the efficiency of freight transportation of truck operators in Thailand.

2. Population scope

A group of operators transporting goods with trucks That have been registered with the Department of Land Transport (Trucking information center) total of 1,092 companies as follows.

1. Entrepreneurs freight truck transport services have been certified quality Q-mark trucking Department of Land Transport Act 2562 of 679 companies.

2. Entrepreneurs non-fixed freight truck transport of 347 companies.

3. Entrepreneurs freight international truck transport divided by a total of 66 operators, as follows.

1) International road freight forwarder According to the agreement on cross-border transport in the Mekong Sub region in the first 18 companies.

2) International road freight operators Under the memorandum of understanding between Thailand - Laos - Vietnam, a total of 15 companies

3) International road freight operators Under the memorandum of understanding between Thailand - Cambodia, number 17 companies

4) International road freight operators Under the Memorandum of Understanding on the transportation of perishable goods through the border By road from Thailand via Malaysia to Singapore, 1 company

5) International freight forwarder Under the memorandum of understanding between Thailand - Myanmar. To initiate a cross-border transportation agreement in the Mekong particle at the Mae Sot-Myawaddy border crossing of 15 companies

For the acquisition of the sample Purposive sampling was used to determine the sample size according to Hair et al (1995); Comrey & Lee (1992) and Hair et al (2010), the sample size was not less than 300 people.

3. Time scope this research has a period of research and data collection. From the academic year 2017 – 2020.

Research limitations

The variables used in the study were:

1. The independent variables are transportation efficiency and logistics service quality.

2. The dependent variable is the success factor of the truck transportation business operation.

Literature Review

The researcher analyzes by synthesizing data on improving the transportation efficiency of trucking operators in Thailand And the performance results according to the concept and theory, summarizing the performance components of the organization in 3 aspects as follows :

1. Transportation efficiency

From the study and review of the research literature on the meaning of the efficiency of transportation management. In conclusion, the operator can manage transportation. To achieve the objectives that are set effectively. Taking into account the speed, cost, safety, convenience, and other aspects that result in business operations to achieve goals and create customer satisfaction. Therefore, by studying and reviewing related research, it is possible to summarize the factors of efficiency of the transportation service of the transport operators. The results of the analysis, enabling grouping of factors that affect the performance of the transport operators, transport trucks, 8 factors follows.

- 1) Cost
- 2) Time
- 3) Frequency
- 4) Flexibility
- 5) Reliability
- 6) Loss and Damage Risk
- 7) Delay Factors and Punctuality
- 8) Service Quality.

2. Logistics Service Quality: LSQ

The quality of logistics services is considered essential for connecting production and consumption (Saura, Frances, Contri, & Blasco, 2008) from a company perspective. The logistics process is seen as merely a cost generator without the ability to make a difference (Ballou, 2004; Cited in Saura et al. (2008)), but these began to change in the mid-1990s as marketing-based logistics research began to analyze the capabilities of logistics to deliver quality and establish Greater customer satisfaction and loyalty (Mentzer et al., 2001; Mentzer et al., 2004). The Logistics Service Quality (LSQ) factor is of great importance to this study. Since the researcher has reviewed related concepts and theories, it can be said that Quality Assessment of Logistics Service Well, there has to be a selection of indicators that can evaluate the service in the relevant components of the logistics activity. Appropriately, Therefore, (Logistics Service Quality: LSQ) was selected in this study with details. As follows 1) Expertise and understanding of customer needs (Personnel contact quality) is a logistics service provider that must have knowledge, expertise, and understand the customer needs. It can also help solve customer problems in different situations in all

cases to achieve satisfaction in service quality. 2) The ability to meet customer needs (Order release quantities) is the presence of products. To be able to respond to the needs of customers promptly and able to respond to the quantity required by the customer. Which has the same concept as Product Availability. 3) The ability to prepare information for customers to make decisions (Information quality) is to prepare information about the customer's Supplier with complete and sufficient information that the customer can use in making decisions for each Supplier's purchase. 4) Efficiency Processes and work procedures (Ordering procedures) is a continuous process and procedure from Supplier to be efficient and effective. Where the steps must be easy to use. 5) Order accuracy is the delivery of an exact quantity and correct order. 6) Shipping safety without damage (Order condition) is when the goods arrive. Customers safely Not damaged. 7) Quality of products and services (Order quality) is that the products or services must be of quality, can be used or recognized as well. 8) The ability to handle problems (Order discrepancy handling) is the ability to handle problems that arise, such as when the product is damaged or the delivery of the product is not by the order. 9) The ability to manage time (Timeliness) is the ability to manage time as well, such as the time from receiving an order until the time when the product has been delivered to the customer. Shipping Exactly on the agreed date And period of product replenishment

Which from the study of literature and related research It was found that the logistics service quality (LSQ) was more appropriate to measure the service quality of the logistics business than any other issue. Logistics By applying from the research of (Vinh V Thai, 2013) as follows:

- 1) Personnel contact quality
 - 2) Information quality
 - 3) Order handling quality
 - 4) Physical distribution service quality
 - 5) Timeliness
 - 6) Image
 - 7) Social responsibility
3. Balance Scorecard

This research Using the Kaplan & Norton's Balanced Success Index (1992) concept, which sets out a four-point approach to measuring performance: (1) Financial Perspective (2) Customer Perspective. (3) Internal Business Perspective and (4) Learning and Growth Perspective are used as concepts and theories to study the relationship of success in Operates the business of truck transportation operators in Thailand Because performance measurement based on the Balanced Success Index concept is a good tool for measuring the performance of a business. Efficient (Kim et al., 2003., Al-Mudimigh, 2009) is consistent with Jain et al. (2007), saying that a balanced performance measurement concept can

measure business performance. Also, the literature review found that there are few studies on the measurement of performance by applying concepts and theories as to the basis for studies on measuring business performance (Kim & Kim, 2007), and studies on shipping efficiency and business performance based on the Balanced Success Index concept are also few. For example, Chang. (2007), Chang. & Ku. (2009), Islam & Yang. (2009)

The concept of the Balanced Scorecard and the review of related research of Graduate Rung Simanon (2008) in the study of indicators for the container tractor business. By applying the principles of the Balanced scorecard system to the creation of effective indicators for the container tractor business. In this regard, the researcher has applied it as a conceptual framework together with the study of transportation efficiency affecting the success of trucking business operators in Thailand. Can be concluded that transport efficiency Service quality is a guideline for developing ideas Creating something new or existing to be effective More valuable To make the work easy and efficient.

Research Framework

Review of the literature Researchers has created a framework of the research-based educational dimension of relations reasons for transport efficiency of 8 factors Including Cost, Time, Frequency, Flexibility, Reliability, Loss and Damage Risk, Delay Factors and Punctuality, Service Quality. logistics service Quality of 7 factors Including Personnel contact quality, Information quality, Order handling quality, Physical distribution service quality, Timeliness, Image, Social responsibility and factors affecting the success of truck transport operators 4 factors including the financial perspective, Customer perspective, Internal process perspective, learning and growth perspective, as Figure 1 shows the conceptual framework of the research.

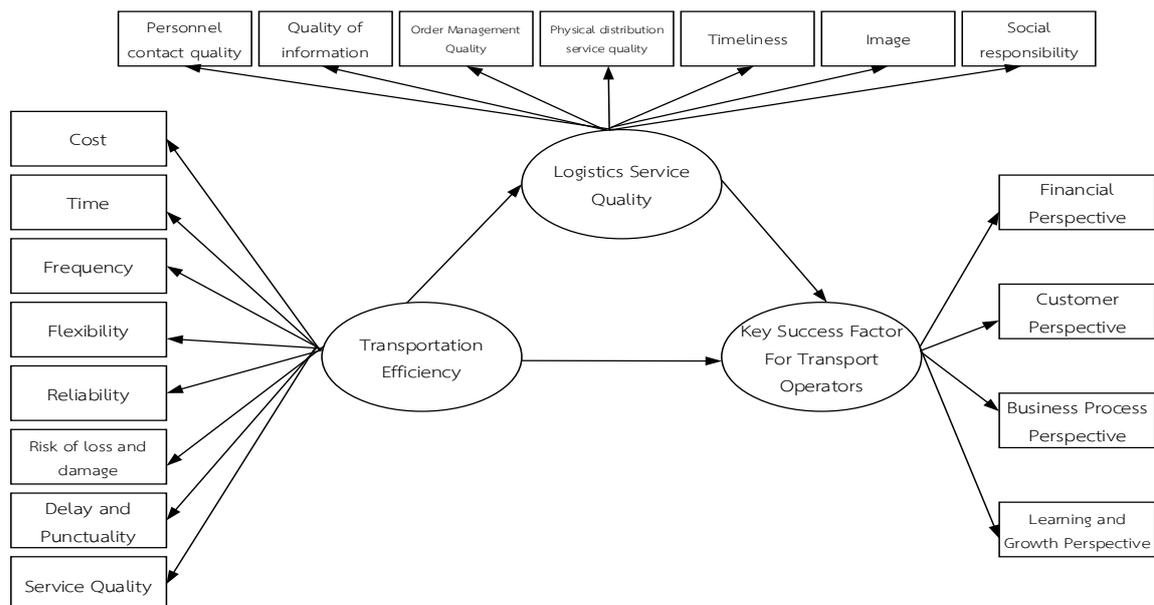


Figure 1 Conceptual Framework

Source: Researcher (2020)

Research Methodology

1. population, and the sample used in the research.

Population The population used in this research is a group of trucking operators. That has been registered with the Department of Land Transport (Trucking Center <http://www.thaitruckcenter.com/tdsc/index>) as follows.

1) Entrepreneurs freight truck transport services have been certified quality Q-mark trucking Department of Land Transport Act 2562 of 679 companies.

2) Entrepreneurs non-fixed freight truck transport of 347 companies.

3) Entrepreneurs freight international truck transport divided by a total of 66 operators, as follows.

(1) International road freight forwarder According to the agreement on cross-border transport in the Mekong Subregion in the first 18 companies.

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(4) International road freight operators Under the Memorandum of Understanding on the transportation of perishable goods through the border By road from Thailand via Malaysia to Singapore, 1 company

(5) International freight forwarder Under the memorandum of understanding between Thailand - Myanmar. To initiate a cross-border transportation agreement in the Mekong particle at the Mae Sot-Myawaddy border crossing of 15 companies

2. Sample

In this research, The researcher chose to use systematic sampling, which is a selection of samples using probability sampling. (Kalaya Wanichbancha, 2006 B) The population determines the establishment of freight by truck. Which has been registered with the Department of Transportation Trucking Information Center, which is divided into 3 groups, is still operating. And received Qmark truck transportation service quality standard certification following the Notification of the Department of Land Transport B.E. There are 679 companies, 347 freight operators, and 66 international freight operators. is the allocation of sample sizes for each landscape class (Surin Nimangkul, 2005). This can be shown in Table 1 showing the number of transport operators divided by the proportional allocation.

Table 1 shows the number of transport operators by allocating a proportion.

No.	Type of Entrepreneurs	Population	Sample	Percent
1	Entrepreneurs freight road-certified service quality standards trucking Q-mark.	679	284	62
2	Entrepreneurs freight with non-fixed trucks.	347	145	32
3	Entrepreneurs International freight operators.	66	28	6
Total		1,092	456	100

Source: Researcher (2020)

3. Research Tools

In this collection of information The researcher has divided the research data according to the study objectives as follows:

Qualitative research Is to interview experts and scholars of logistics and executives or specialists in truck transportation. Throughout the process, in-depth interview techniques were used. The key contributors to this research consisted of trucking executives. Transportation Manager Academic, logistics specialist. Government academics related to the field of logistics profession a total of 10 people (Morgan and Scannell, 1998) used the purposeful Selection method to gain comparative insights. The results of quantitative research on similarity or differences of data to lead Let's summarize the quantitative research results.

Quantitative research In collecting quantitative research data with a tool used to collect data is the questionnaire, which the research tool construction The researcher has studied related concepts, theories, and literature. To define operational definitions and structure of the variables to be studied the relationship of transportation efficiency and the logistics services quality of truck transport operators. That affects the success of the freight forwarding business of trucking operators in Thailand It is a guideline for setting the scope. The content of the questionnaire is divided into 4 parts as follows.

- Part 1 Questionnaire on Personal Factors of Respondents.

The questionnaire is a type of checklist consisting of gender, age, level, position, type of business, business hours. Business truck number Number of employees of the business Business location Closed-ended questions using nominal and ordinal gauges, with respondents choosing the answer that most closely matches the truthfulness of the respondents. There are a total of 8 questions.

- Part 2 Questions about transport efficiency factors.

The researcher used the measures from Day. (2002) and Battor & Battor. (2010), the measuring instrument used to measure transport efficiency was a five-point Likert-type Scale Ranging with a 5-level value. The respondents choose the answer that is most

relevant to the truth of the respondents. Transportation efficiency measurement is based on 47 multi-item scale questions, 8 factors.

- Part 3 Logistic Service Quality Factors.

The researcher used the measures from Day. (2002) and Battor & Battor. (2010), the measure used to measure the service quality of businesses is a Five-point Likert-type Scale Ranging. 5-level values, with respondents choosing the answer that most closely matches the respondents' truthfulness. This is 32 Multi-item Scale questions, questions from 7 factors.

- Part 4 Factors Affecting the Success of Transport Operators.

The researcher used the gauges from Day. (2002) and Battor & Battor. (2010). The gauges used to measure the performance of trucking operators are five-point gauges. Likert-type Scale Ranging, with a 5-level value, respondents choose the answer that most closely matches the truthfulness of respondents, factors affecting the success of the trucking business. These are 36 Multi-item Scale questions, questions based on 4 factors.

The criteria for evaluation The researcher has determined the rating. Factors for Enhancing Transport Efficiency Development for Trucks in Thailand The questionnaire in question was a 5-level approximation scale of the Likert scale (Ravipa Homsethi, 2006). Has set the score value and meaning as follows.

Level of	5	means	the most.
Level of	4	means	a lot.
Level of	3	means	medium.
Level of	2	means	less
Level of	1	means	minimal.

The criteria for the interpretation of the results. Meaning of the score Factors for Enhancing Transport Efficiency Development for Trucks in Thailand The researcher arranged the criteria for interpreting results into 5 levels, namely, most agree, highly agree, moderate. Least agree and least agree Then come to find the average level By specifying the meanings according to (Sorachai Phisalabutr, 2007) according to the equation class formula as follows:

$$\frac{\text{Highest rating} - \text{Low rating}}{\text{Number of layers}}$$

$$\frac{5 - 1}{5} = 0.8$$

Average rating interpretation

1.00-1.80	means	minimal efficiency.
1.81-2.60	means	less efficiency.
2.61-3.40	means	moderate efficiency.

3.41-4.20	means	very efficiency.
4.21-5.00	means	the most efficiency.

4. Data analysis

The research was conducted to determine the statistics that are appropriate and consistent with statistical data. To answer the research objectives set The statistics used in data analysis are as follows.

- Descriptive Analysis Statistics.

It is used by the researcher to describe/describe the properties or characteristics of distributing the variables according to the characteristic factor of the group. The measure is defined as percentage, mean, and standard deviation. The researcher analyzed the basic statistical values of 19 observable variables to use them to explain/describe the distribution characteristics. And the distribution of the observed variables By defining the measure as the mean And standard deviation of skewness by using software SPSS for Windows version 11.

- Statistics, model analysis, structural equations.

The researchers used it to analyze the structural equation models for trucking efficiency in Thailand. In which the researcher studies the theory and research related to the variables to develop into a research framework. It was also defined as an empirical research model with LISREL for Windows version 8.80 to examine the harmonization of the research model with the empirical data.

Conclusion

Three factors of this research conceptual framework are applied to the research process to improve the efficiency of transportation of trucking operators in Thailand. To analyze the factors affecting the business success of transport operators. As well as measuring the quality of logistics services to build a sustainable business enterprise and the success factor of logistics activities.

Future Research

1. This research studied the factors affecting the success of the trucking business. With transport efficiency factors And logistics services quality. Further research suggests further ideas and theories that can make Customer loyalty to logistics service providers should be studied. Such as customer relationship management strategy, supplier relationship management strategy, and logistics personnel management strategy. To make the research variables comprehensive, resulting in more complete research in principle and reason.

2. This research studies a sample group in the trucking operators industry. This group of operators uses the service the most. future research should shift the sample to other

operator industries. To compare the logistics service quality variables. That affects the success of the service business and the research results obtained can be used as a guideline for business management effectively.

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SBC-02-002

A CAUSAL RELATIONSHIP MODEL OF FACTORS AFFECTING THE PERFORMANCE OF AUTOMOTIVE PARTS SUPPLY CHAIN IN THE EASTERN ECONOMIC CORRIDOR DEVELOPMENT PROJECT OF THAILAND FOR THE FUTURE OF ELECTRIC VEHICLES :A LITERATURE REVIEW

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Abstract

This article provides a critical literature review on supply chain performance measurement. The study aims at problem areas and requirements for the performance management of the supply chain. It covers articles from journals related to the topic, including study and detailed investigation as to the methodologies, approaches, and findings of the work. The methodology followed during the conduct of this research, supply chain management has gained significance in the field of manufacturing for improving organizational competitiveness. The supply chain ensures improved efficiency and effectiveness of not only product transfer, but also information sharing between the complex hierarchies of all the tiers.

The literature deals with innovative management, quality management, knowledge management, risk management and has gained much attention in recent years from researchers and practitioners. Performance measurement and metrics have an important role to play in setting objectives, evaluating performance, and determining future courses of action apart from the common criteria used to evaluate the performance in the supply chain. Further research is still needed to develop the empirical research framework and implement performance measurement systems for the requirements from the automotive parts used in a supply chain management.

Keywords : Supply Chain, Performance, Automotive Parts

Introduction

The global electric vehicle fleet may reach 250 million by 2030. The International Energy Agency says more than 2 million electric vehicles hit the road last year, adding up to a total of more than 5 million. The agency has stressed the importance of public policy, charging infrastructure, and a fall in costs for continued EV uptake, and says up to 43 million EVs could be sold in 2030. The automotive industry has been a major pillar in Thailand over decades. In 2016, it contributed 12% of GDP, worth THB 944 billion, according to the Federation of Thai Industries. In 2016, Thailand was ranked the 13th largest automotive parts exporter and the 6th largest commercial vehicle manufacturer in the world, and the largest in ASEAN. Even still, Thailand has ambitious targets and expects to manufacture 3,500,000 units by 2020, thereby improving on its status as one of the top performers on the global automotive stage. As the trend towards next-generation automotive is growing in importance, the has been working to ramp up Thailand's competitiveness. This marks an important next step for Thailand as the country builds on its automotive legacy and paves the way for a brighter and cleaner future in becoming a leading global, fuel-efficient automotive production hub. (Boi, 2017, pp. 3-5)

The automotive industry has been considered an important part of the Thailand's economy. Due to the changes in technology and environmental concerns, the internal combustion engines which are the expertise of Thai workers are about to be replaced by electric vehicles. Hence, the industry will shortly be faced with great challenging and must reassess the business model to pass the hurdle. The paper analyzes competitive advantage (Kanitpong, T., 2018) The electric vehicle is currently an issue that is being watched in Thailand. Recently, the government plans to be one of the national strategic industries. Ready to hope for electric Vehicles to be the third product champion in Thailand in the future after pickup trucks and electric vehicles. However, the development of electric vehicle technology in Thailand still needs time to learn about technology, investment, and infrastructure to support the automobile society modern and the development of related industries throughout the supply chain. Which must take at least 10 years (Yongpisanphob, W., 2017) Electric Vehicle (EV) is a clean energy vehicle that is gaining great attention in the global market. Because it is an environmentally friendly vehicle to reduce greenhouse gas emissions of many countries. Currently, if not including hybrid Vehicles (Hybrid Electric Vehicles or HEV), which are hybrids (Powered by fuel and electricity) that has been marketed for a while. There are three other types of electric vehicle technology developments (mainly using batteries to store energy) Plug-in Hybrid Electric Vehicle (PHEV), Battery Electric Vehicle (BEV) and Fuel Cell Electric Vehicle (FCEV), summarizing the forecast of electric vehicles in Thailand in 2017 - 2036 it was found that the rate of demand for electric vehicles from forecasting continued to increase. This is because the government has a policy to seriously promote the use and investment in the production of electric vehicles in the country. To

reduce dependence on imported fuels from abroad Increase energy consumption options for people, It is therefore expected that the quantity of electric vehicles in Thailand will increase significantly in the future. As well as from the trend of changes in energy usage to drive motor vehicles. Because environmental problems have been brought up as a major issue for economic activities on the world stage, and many countries responded to the problem. With each of them focusing on environmental problems, in particular, the pollution released from cars running on the road has led to the promotion of the use of electric vehicles (Electric Vehicle: EV) to replace fossil fuel vehicles. Leading automakers have responded to this direction. And gradually bring electric cars to the market continuously, as shown in Figure 1.

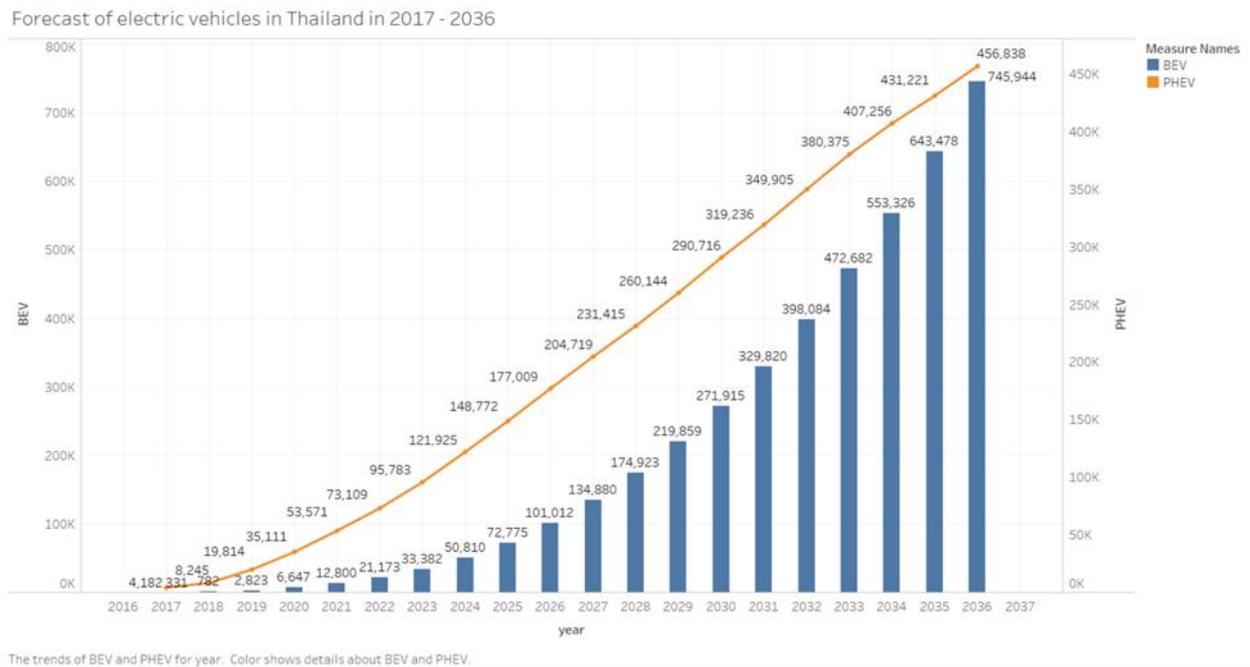


Figure 1. Forecast of electric vehicle consumption in Thailand 2017-2036
Source: Electricity Generating Authority of Thailand, (2016)

To prepare for the future growth of electric vehicle applications, It is therefore expedient to be promoted by the government to act as a production base for future vehicles if Thailand cannot adapt in time May affect the manufacturing sector in a wide range. Since Thailand is still considered relatively new to electric vehicle technology and still lacking sufficient availability in terms of use and production. It is, therefore, necessary to estimate electric vehicles in the future. To assess the potential impact of the large number of electric vehicles entering the system and establish guidelines or measures to reduce the impact and support the adaptation of the use of electric vehicles in the future

Research Objective

To review a conceptual framework : A causal relationship model of factors affecting the performance of the automotive parts in the supply chain of the Eastern Economic Corridor Development Project of Thailand for the Future of Electric Vehicles.

Literature Review

1 Supply Chain Performance

Supply chain management is the coordination and management of a complex network of activities involved in delivering a finished product to the end-user or customer. It is a vital business function and the process includes sourcing raw materials and parts, manufacturing and assembling products, storage, order entry and tracking, distribution through the various channels and finally delivery to the customer. A company's supply chain structure consists of external suppliers, internal functions of the company, and external distributors, as well as customers. Firms may be members of multiple supply chains simultaneously. The management and coordination is further complicated by global players spread across geographic boundaries and multiple time zones. The successful management of a supply chain is also influenced by customer expectations, globalization, information technology, government regulation, competition and the environment. (Hervani, A. A., Helms, M. M., & Sarkis, J., 2005, p. 331; Gawankar, S. A., Kamble, S., & Raut, R., 2017, p. 259). Performance management is a strategic and integrated process that delivers sustained success to organizations by improving the performance of the people who work in them and by developing the capabilities of individual contributors and teams. Performance management is strategic in the sense that it is concerned with the broader issues facing a business if that business is to function effectively in its environment, and with the general direction in which the business intends to go to achieve its longer-term goals. Performance management is integrated in two senses: 1) vertical integration, linking or aligning business, team and individual objectives with core competences; and 2) horizontal integration, linking different aspects of human resource management, especially organizational development, human resource development, and reward, so as to achieve a coherent approach to the management and development of people. (Armstrong, M., 1994, p. 2) Supply chain performance measures were measured through accessing the supply chain metrics, encompassing both operational and financial measures with supply chain relationship responsibilities were used to correlate the results of the supply chain metrics for both the best performing (Cadden, T., Marshall, D., & Cao, G., 2013).

2 Knowledge Management of Performance

Knowledge management refers to the ability to manage knowledge, consisting of the creation of knowledge, processing, exchange, and support of the learning process and

the creation of new innovations in the organization. To be an organization, learn to modify the corporate culture and to create and use operational knowledge have mutual learning and exchange of learning. In terms of people in the agency, for example, if it was a government agency, it would be a civil servant. Should have a suggestion and can learn from others, this could be for colleagues or service users. Innovation in all aspects of the enterprise can affect performance. Both product innovation and process innovation have a significant positive impact on financial performance. Product innovation, process innovation and management innovation has a significant positive impact on non-financial performance, and marketing innovation has an influence on earnings, debt, and marketing. Including businesses should develop innovation in all aspects because innovation is a key factor affecting the performance and success of an organization. (Suwannaputit, U and Chayomchai, A., 2018)

3 Risk Management of Performance

The underlying premise of enterprise risk management is that every entity exists to provide value for its stakeholders. All entities face uncertainty and the challenge for management is to determine how much uncertainty to accept as it strives to grow stakeholder value. Uncertainty presents both risk and opportunity, with the potential to erode or enhance value. Enterprise risk management enables management to effectively deal with uncertainty and associated risk and opportunity, enhancing the capacity to build value. (Coso, 2020) The risk management in the organization is very important and useful operation. It helps staff choose the way or specify some strategies that get along with the limit of acceptable risk. Moreover, it is like a device to respond the risky actions and make the work go on well enough in the risky situation. Last point it can reduce the uncertain or unpredictable events; while it makes the organization react to the risk in the good acceptable ways.

4 Quality Management of Performance

Quality refers to the extent to which a firm with supply chain partners offers a quality product that creates a higher value for customers. It is expected that firms that can respond fast to customer needs with high-quality products and innovative design, and excellent after-sales service allegedly builds customer loyalty, increase market share, and ultimately gain high profits (Behrouzi and Wong, 2011), proposes eight dimensions of quality: performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality, which are comprehensive but measures for each are difficult to establish listed quality as an important measure of operational performance. In several studies, quality has been considered as the most important part of the value in a supply chain. From the literature, it was seen that quality is one of the main components of performance that it measured supply chain performance in connection with the subprocesses (Gawankar, S. A., Kamble, S., & Raut, R., 2017, p. 265) creation of a cooperative and learning organization to

facilitate the implementation of process-management practices, which, when implemented, support customer satisfaction and organizational survival through sustained employee fulfillment and continuous improvement of processes, products, and services. (C. Ayasanond, 2019; Flynn, B. B., Schroeder, R. G., & Sakakibara, S., 1994)

5 Innovation Management of Performance

The impact of innovation on corporate performance, the company promotes sustainability, growth (Fowowe, 2017) and can facilitate business success (Budiarto and Pramudiati, 2018) various types of innovation development. Correlates with performance in different areas (Saunila, 2014). The previous studies have discussed a positive relationship between innovation and efficiency (Centobelli et al. 2019; Chege and Wang, 2020) impact of innovation on performance. Organizational work that can be demonstrated by financial indicators (Mashal, 2018), the positive impacts of innovation include Competitiveness (Anwar 2018; Conto et al, 2016), Ability to Financial Access (Abdu and Jibir, 2018), Connectivity, and Communication (Radzi et al. 2017), Marketing (Adam et al. 2017; Love et al. 2016; Prange and Pinho 2017). Innovation can be defined as a process that relates new ideas to a newly introduced product, process or service. Though a part of the literature relates innovation performance in firms only to technological innovation, most of the literature has criticized this bias denoting innovation performance as the generation or adoption of novel ideas or behavior in a form of a new product, service, technology, procedure, or management strategy (Liao et al., 2008; Aboelmaged, M. G. (2012). There is a huge contribution to the positive impact of innovation on corporate performance. There is a huge contribution to the positive impact of innovation on corporate performance.

6 Firm Performance

Performance is a multidimensional concept defining the success of a business, in other words, the level of achieving the objectives of a business. The short-term goals of firms are improving efficiency, reducing the level of inventories, and shortening the rate of turnover; their long-term objective is increasing their market share and profitability, (Civelek, M. E., Çemberci, M., Artar, O. K., & Uca, N., 2015). Firm performance is a structure involved in strategic management to competitive. The organizational performance measurement model dimensions (Richard et al., 2009; Selvam, M., et al., 2016), namely, profitability performance, growth performance, market value performance of the firm, customer satisfaction, employee satisfaction, environmental audit performance, corporate governance performance, and social performance. The index factors of firm performance are profitability performance, growth performance, market value performance, customer satisfaction, employee satisfaction, environmental performance, corporate governance performance, and social performance

Research Methodology

The study format is a systematic review of the literature, searching for secondary sources from electronic databases from libraries in Thailand and international electronic databases on major databases and publisher websites (Google scholar, EBSCO, Scopus, Springerlink, Wiley Interscience, Elsevier Science Direct, Emerald Insight, Taylor & Francis) Including studying and collecting data used in the study of in textbooks, books and journals in the country and abroad published documents, online database and various websites. Which has both foreign and Thai sources from the information resource database system of Suan Sunandha Rajabhat University. The descriptive report was presented by content analysis on the main issues. And methods of literature review to identify the journal articles for review, a structured keyword search was conducted on major databases and publisher websites. The review aimed to capture the research addressing performance efficiency that was carried out in the field of supply chain management. Therefore, the following keyword structure was used “supply chain” or “supply chain performance ” and “supply chain measurement”. The search included all papers published till the end of 2020. The results were initially filtered to include only articles written in English that were also published in peer-reviewed journals. Next, articles that were screened in detail to supply chain performance were included in this review, is shown in Table 1

Table 1 Literature Review of Firm Performance

Authors, Year	Supply Chian Performance	Knowledge Management	Risk Management	Quality Management	Innovation Management
Seet, P. S., Lindsay, N., & Kropp, F. (2020)	-	-	✓	-	✓
Mongkol, A., (2019)	✓	✓	-	-	-
Yu, H., Shang, Y., Wang, N., & Ma, Z. (2019)	-	✓	-	✓	-
Nabeel-Rehman, R, & Nazri, M. (2019)	✓	-	-	-	✓
Chandrarom, O., (2018)	✓	✓	✓	-	✓
Suwannapussit, U and Chayomchai, A., (2018)	✓	✓	-	-	✓
Purwani, T., & Nurcholis, L. (2016)	✓	-	-	✓	-
Civelek, M. E., Çemberci, M., Artar, O. K., & Uca, N., 2015	✓	✓	✓	-	-
Giniuniene, J., & Jurksiene, L. (2015)	✓	-	-	-	✓
Badillo, E. R., Llorente, F., & Moreno, R. (2014)	✓	✓	✓	-	✓
Sharma, B. (2006)	✓	-	-	✓	-
Darroch, J. (2005).	-	✓	-	-	✓

From table 1 a study reviewing the variables that are important to the performance of the organization. From the study, there were important variables as follows: Supply Chain Performance, Knowledge Management, Risk Management, Quality Management, and Innovation Management, In this paper, the model construction has been developed based on the literature review, which identifies the main factors that for firm performance organization measurement, as shown in Fig. 2.

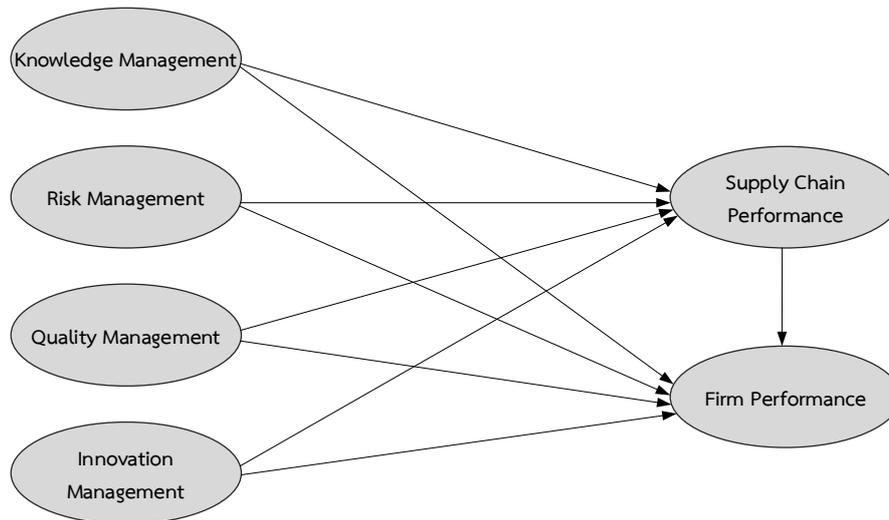


Figure 2 Conceptual Framework

Result

The objective of this review is to study the conceptual framework for research as described above and it is to be studied with the auto parts industry in supporting and enhancing the potential of the automotive parts industry in supporting the electric vehicle industry in future. From a literature review study, it was found that key parameters for performance supply chain operations (Seet, P. S., Lindsay, N., & Kropp, F., 2020; Mongkol, A., 2019; Yu, H., Shang, Y., Wang, N., & Ma, Z., 2019; Nabeel-Rehman, R., & Nazri, M., 2019; Chandrarom, O., 2018; Suwannaputit, U and Chayomchai, A., 2018; Purwani, T., & Nurcholis, L., 2016; Civelek, M. E., Çemberci, M., Artar, O. K., & Uca, N., 2015; Badillo, E. R., Llorente, F., & Moreno, R., 2014; Sharma, B.,2006) namely, knowledge management, risk management, quality management, and innovation management. The above variables are also important to the firm performance of organization.

Conclusion

This paper uses literature reviews, document analysis from a variety of secondary sources, including textbooks, books, national and international journals and publications, online databases, and websites with local and international resources to create a deep, detailed research framework. It is also used to create research instruments, questionnaires, testing methods according to research methods, and collect data and analyze to achieve

research objectives. Further, it is used to summarize and synthesize findings from data analysis as a guideline for improving business performance and review the usage guidelines and make suggestions to create new knowledge in applying information to the development.

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THE IMPACT FROM E-HEALTH TECHNOLOGY ADOPTION TO HEALTHCARE SUPPLY CHAIN PERFORMANCE BY THE ANALYTIC NETWORK PROCESS

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Abstract

E-Health is the application of ICT in the field of healthcare. Although it is said to have been in use since 1950 in the USA. Since then, operations have been gradual. Nowadays, the ability to access the Internet and emerging diseases (e.g. COVID-19). This has created an accelerating rate in the adoption of E-Health, mHealth, telemedicine, or VDO conference in the delivery of health care services very and urgently. The adoption of E-Health will play a role in improving the efficiency of healthcare supply chain operations. These are very challenging as healthcare supply chains are more complex than conventional supply chains. Without a clear investigation, it can be helpful to one party but problems with the other. Because stakeholders have different performance requirements. This research aimed to present a guideline and framework for the firm of healthcare supply chain performance of 4 criteria, outcome quality, operation cost, time and speed, and flexible which were identified according to the literature review. Analytic network process (ANP) is used as a tool to prioritize the impact of E-Health technology adoption on healthcare supply chain performance. And weighted by experts based on the ANP model structure to prioritize healthcare supply chain performance components. Super Decisions software is another tool used for all relevant calculations of the ANP model to achieve synthesized priorities.

This research was found that the impact of E-Health adoption improves the efficiency of the healthcare supply chain. Base on the key performance weight was Operation Cost (0.315), Outcome Quality (0.299), Time and Speed (0.273), and Flexible (0.113) respectively. The findings also provide a framework for measuring the performance of healthcare supply chains for researchers in the healthcare industry and entrepreneurs can apply for further development of E-Health technology for the healthcare supply chain.

Keywords : E-Health, Supply Chain Performance, Analytic Network Process (ANP).

Introduction

Challenges to medical services access. Although, medical innovation is constantly evolving. It also found that there were restrictions on access to healthcare services. Space size and geographic issues such as the environment that is the islands of Indonesia (Setianto & Wahyuningrum, 2019). India has remote rural areas, out of the city (Mathur et al., 2017). Pakistan has a hilly environment (Kamal et al., 2020). Healthcare supply chain costs It is a limitation to critical health service access (Essila Mvogo, 2018). Countries with developed economies and high incomes lead to good public health (Scott & Mars, 2015). The trend for ICT use has been used in connection with healthcare. E-Health is widely used in patient-centered areas instead of traditional doctor's consultations, demonstrate the needs of the people who live in disadvantaged areas (Agha et al., 2013). Telehealth will be the key to the restructuring of the healthcare supply chain system, especially in developing countries (Scott & Mars, 2015). To increase the efficiency of health services with expert advice online (Lee et al., 2020). Patient care through long-distance data via other telecommunications (Liu et al., 2016). Therefore, E-Health is a mechanism to close the gap and empower healthcare and improve access to remote rural health services.

Healthcare providers focus on investing in patient care technology but ignore invested in supply chain management technology. Although, IT investment has a positive impact on the quality of care and profitability of the organization (Chen et al., 2013). Hence, the relationship of healthcare supply chain performance is an issue that should be confirmed as a result of the healthcare information technology. This will help organizations prepare for the changes needed to ensure better efficiency of healthcare services through the utilization of e-health technology (Wu et al., 2016).

Literature Review

1.E-Health Technology

1.1 E-Health

E-health is information communication technology (ICT) in combination with information accessible via the internet in the healthcare sector (Holmes & Miller, 2001). Includes computers, mobile phones, satellites, software and data systems, and digital platforms (Yusif et al., 2020). Health information technology (HIT) and medical telecommunication and multimedia (Ziadlou, 2013). Information technology integration and communicating with healthcare services effectively with a secure data connection of patient health care, surveillance, education, research (Banerjee, 2018). storage, management, and sharing of information, notifications, support medical decisions refer to experts or remote consumer care (Hadwich et al., 2010).

1.2 E-Health Technology

E-Health covers Telehealth, Telemedicine, and mHealth technologies (Hadwich et al., 2010). Applications are divided into two types: stored and forwarded or asynchronous and real-time or synchronous (Mathur et al., 2017). E-Health technologies include electronic medical record (EMR), doctor's prescriptions, clinical decision-making support systems, health knowledge management, and medical research. Telephone consultation, text communication, e-mail, website, appointment, video call. Technologies related to audio, video to store data and allow communication (Banerjee, 2018). Electronic, or other telecommunications to monitor patients via long-distance data (Liu et al., 2016). Mobile technology (Alolayyan & Hijazi, 2020). Wireless connection of smartphone, laptops and tablets to improve health outcomes and health research (Banerjee, 2018). E-Health functions are also available: E-health commerce, E-health content, E-health care and E-health connectivity (Hadwich et al., 2010). Elements based on ICT system in healthcare: e-commerce, e-learning, Health informatics and Telehealth (Scott & Mars, 2015). Business model structure: E-pharmacy, E-doctor/e-physician's consultation service, E-medical records and E-patient (Rawabdeh, 2007).

1.3 E-Health trends

The increase of e-health technology usage has revolutionized medical operations according to the needs of the public as healthcare moves towards e-health technology (Holmes & Miller, 2001). To achieve integration in the development of intelligent systems and support accurate decision making in public health (Ilahi et al., 2014). Wireless technology is an important topic in the field of medical information and health care for improving healthcare services (Alolayyan & Hijazi, 2020). Telehealth technology is rapidly expanding in healthcare operations from a received new type of counseling from a doctor (Agha et al., 2013). Remote healthcare services is an inevitable innovation for modern healthcare, face-to-face communication between doctors and patients, health promotion, and health monitoring (Jungwirth & Haluza, 2019).

1.4 E-Health Practics and Benefit

The obvious benefit of E-Health in healthcare is the destruction of geographic constraints, reduce patient travel restrictions, increase access to health services, and travel costs. Healthcare providers are turning to E-Health because they are cost-effective and convenient (Banerjee, 2018). Clinical outcomes, and reduced care costs, and enhance competitiveness in the healthcare market (Saunders & Harris, 2017; Setianto & Wahyuningrum, 2019). E-health reduces the total cost of healthcare (Holmes & Miller, 2001; Zare et al., 2019). It is an economical alternative to traditional one-on-one healthcare methods (Alolayyan & Hijazi, 2020). Customer relationship management, supply chain management, knowledge management (Abdalla, 2019). Residents in disadvantaged areas, chronic patients. Elderly people who are far from the community (Agha et al., 2013). Counseling for patients with emotional disorders (Santesteban-Echarri et al., 2020). Mental Health Counseling from

Covid19(Zhou et al., 2020). The fight against Covid19 in three ways, Tracking, Testing, and Treating(Leite et al., 2019). Health teaching for new patients and healthcare professionals(Jungwirth & Haluza, 2019; Mathur et al., 2017). Referring to lung disease patients(Stickland et al., 2011). Track and evaluate hypertension patients(Zare et al., 2019). People with chronic illnesses can manage their health at home(Flores-Vaquero et al., 2014).Telehealth helps alleviate hospital congestion and improve the utilization of medical resources(Wang et al., 2019).Therefore, the key benefit of E-Health in the world of healthcare is to empower patients to engage in self-care by real-time information access. Moreover, also makes health care easier to access than traditional methods, patients will reach out to specialists and learn instantly on-demand, doctors are more flexible and reduce medical expenses(Banerjee, 2018; Wang et al., 2019).

2.2 Healthcare Supply Chain Performance

2.1 Healthcare Supply Chain

Supply chain operations, generally consist of core activities, procurement, transportation, warehousing, and distribution. Supply chain management development gained momentum in 1990. Customer focus, global market trends, and information society are the three main trends. The first word “SCM” occurs in the article “SCM: Logistics Catches up with Strategy” by Oliver and Webber in 1982(Svensson, 2008). Healthcare supply chain drivers by multi-stakeholders, including patients, employers (buyers and payers), healthcare providers, insurance, and government agencies regulating healthcare services.

The healthcare supply chain is the process of delivering the right products, the right quantity, at the right time to the appropriate patient care facility, with satisfaction and lower cost(Abukhousa et al., 2014; Mathur et al., 2018). Consists of three main parts: supply management, internal supply chain, and demand management.

2.2 Healthcare Supply Chain Performance: HSCP)

An efficient healthcare supply chain contributes to the efficiency of healthcare services(Rahayu & Day, 2015). Support logistics activities, inventory management, transportation, production operations, and distribution(Hoeur & Kritchanchai, 2015), and the physical response of the healthcare supply, such as medicine, medical equipment, food, etc. This improves the quality services of patients and cost reduction(Moons et al., 2019).

Healthcare Supply Chain Performance refers to the efficiency of the supply chain through business processes to create efficiency for the overall supply chain(Kamal et al., 2020).Stakeholders in the supply chain have different requirements for health operations, suppliers are driven to maximize profits, healthcare providers focus on cost-effectiveness, and patient safety(Kritchanchai et al., 2019). The healthcare supply chain differs from other industries, are comprised of large numbers of individuals and the healthcare sector will not be able to increase efficiency at all, if failure to follow appropriate supply chain management (SCM) guidelines. All activities in the supply chain impact on the costs and

access to healthcare of patients and communities (Md. et al., 2016). Supply chain activity affects profit and loss, influenced by quality, service, cost, and time(Colin et al., 2017). Hospital supply chain efficiency is measured by quality, speed, cost, and flexibility of the demand-fulfillment process(Rakovska & Stratieva, 2018). Clinical efficiency, economic efficiency (lower cost savings) patient satisfaction(Alolayyan & Hijazi, 2020). Important empirical research studies also link and reveals top management commitment and customer satisfaction is vital to the success of the supply chain(Kamal et al., 2020). Healthcare organizations are looking for ways to improve operational efficiency and reduce costs without compromising on patient care services quality(Msimangira, 2010; Polater & Demirdogen, 2018). Based on the frequency of factors to measure performance, healthcare supply chains are consistent with quality factors, cost, and time or triangle of the objective "Cost - Time - Quality"(Ivanov et al., 2019).

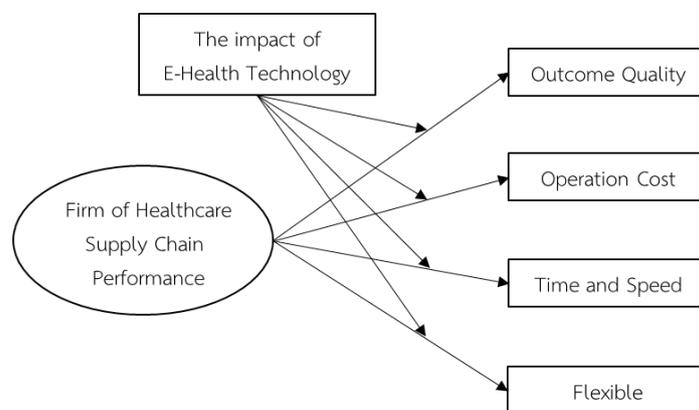


Figure 1 Conceptual Framework

Table 1 Literature review of healthcare supply chain performance

Factors	Dimensions	Authors, Year
Outcome Quality	Delivery Accuracy Service Reliability Quick Response	(Abdallah et al., 2017; Chen et al., 2013; Ivanov et al., 2019; Parmata et al., 2016)
Operation Cost	Product Cost Logistics Cost	(Abdallah et al., 2017; Chen et al., 2013; Ivanov et al., 2019)
Time and Speed	Stock Leadtime Information Leadtime Processing Leadtime	(Abdallah et al., 2017; Chen et al., 2013; Ivanov et al., 2019)
Flexibility	Rapidly Adjust of Service Capacity Provide Service on Vary Greatly Demands	(Abdallah et al., 2017; Chen et al., 2013; Srivastava & Singh, 2020)

Research Methodology: The Analytic Network Process (ANP)

Analytic Network Process(ANP) is a decision-making process with a systematic mathematical process, developed from an Analytic Hierarchy Process(AHP) in 1975, for

multiple criteria decision making(MCDM), of influence between elements and within elements (Kengpol, 2011).

1. Model Construction

In this paper, the model construction has been developed based on the literature review and discussion with healthcare supply chain information system experts, which identifies the main factors that are acceptable for healthcare supply chain performance measurement, as shown in Fig. 1. Moreover, Cost, Quality, Time, and flexible, subcomponents can also be assigned to be used to monitor the influence of E-Health use on the healthcare supply chain performance as shown in Fig. 2.

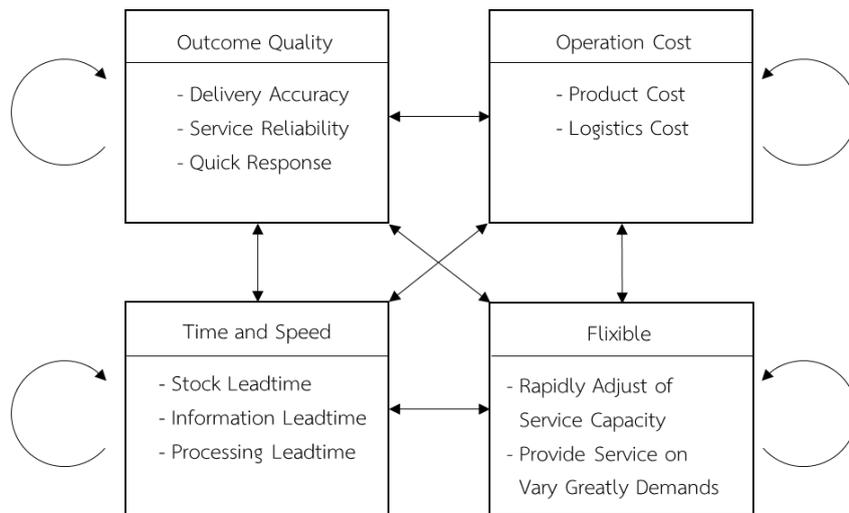


Figure 2 ANP Model for this paper.

2. Evaluation

Weight assessment by experts, pairwise comparison of components between the group and within the same group from E-Health technology impact, uses ratio scale of absolute number from number 1 until 9, number 1 (equal important) and number 9 (extreme strong)(Hoeur & Kritchanai, 2015). The Super Decisions software is used for all calculations in the ANP model such as weighted supermatrix and limited supermatrix to achieve synthesized priorities in the form of weight values.

$$W_i = \left(\prod_{j=1}^n a_j \right)^{\frac{1}{n}}; \quad i = 1, 2, 3, \dots, n; \tag{1}$$

- W_i Total pairwise comparison of two elements,
- a_j Pairwise comparison value given by experts, and
- n Number of experts.

Generally, Consistency Ratio(CR)consider the consistency criteria of the paired comparison according to the criteria of AHP, lessthan 10%(Kengpol, 2011), there is a CR more than 10% will be taken as an issue in talking to experts in re-consideration. The advantages

of using the program can be adjusted to align scores instantly while experts perform weighted, thus there is no CR value exceeding 10% in this paper.

Compare criteria in the entire system to create a supermatrix. The general form of the supermatrix can be explained as follows Fig.3.(Supeekit et al., 2016)

$$W = \begin{matrix} & \begin{matrix} C_1 & C_2 & \dots & C_n \\ e_{11} \dots e_{1m_1} & e_{21} \dots e_{2m_2} & \dots & e_{n1} \dots e_{nm_n} \end{matrix} \\ \begin{matrix} C_1 \\ \vdots \\ C_n \end{matrix} & \begin{bmatrix} W_{11} & W_{12} & \dots & W_{1n} \\ W_{21} & W_{22} & \dots & W_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ W_{n1} & W_{n2} & \dots & W_{nn} \end{bmatrix} \end{matrix}$$

Figure 3 Described of Supermatrix

3.Result

In this study, the analysis framework aimed to examine healthcare supply chain performance from the effects of E-health technology adoption, it was found that the sum of the weights in the components showed the weight values in order of importance as shown in Fig. 4

Name	Normalized by Cluster	Limiting
Provide Service on Vary Greatly Demands	0.51168	0.057581
Rapidly Adjust of Service Capacity	0.48832	0.054953
Logistics Cost	0.59060	0.186176
Product Cost	0.40940	0.129055
Delivery Accuracy	0.35220	0.105268
Quick Response	0.50065	0.149636
Service Reliability	0.14715	0.043982
Stock Lead Time	0.12377	0.033832
Processing Lead Time	0.44752	0.122329
Information Lead Time	0.42871	0.117187

Figure 4 Result of Component Priorities

From Fig.4, the influence of healthcare supply chain performance from E-Health adoption, Limit matrix is the priority of each factor, the importance of elements is the multiplication of the limit matrix with the weight value of each criterion is shown in Table 2.

Table 2 Overall priorities of HSCP elements

HSCP Criteria	HSCP Criteria Priority	HSCP Sub Criteria	HSCP Sub Criteria Priority	Impact of E-Health to HSCP Priority	Ranking
Outcome Quality	0.299	Delivery Accuracy	0.352	0.105	6
		Service Reliability	0.147	0.044	9
		Quick Response	0.501	0.150	2
Operation Cost	0.315	Production Cost	0.409	0.129	3
		Logistics Cost	0.591	0.186	1
Time and Speed	0.273	Stock Lead Time	0.124	0.034	10
		Information Lead Time	0.429	0.117	5
		Processing Lead Time	0.448	0.122	4
Flexible	0.113	Rapidly Adjust of Service Capacity	0.488	0.055	8
		Provide Service on Vary Greatly Demands	0.512	0.058	7

Discussion

The framework presents a comparison of multiple criteria decision making and viewpoints from experts assessment. However, it shows the relationship among the components, cost, quality, time, and flexibility are also an important measure of healthcare supply chain performance

E-health has a positive impact on healthcare performance. From the ANP framework, The first three key components are logistical costs, quick response, and production costs. This is consistent with the report of performance measure is mostly economic, such as cost, saving, and income(Wang et al., 2019). Moreover, process leadtime and information leadtime components are second important. Overall, the framework of this study was influential in the healthcare context, The research result offers a good and implementable healthcare supply chain performance measurement framework from which management or researchers in the healthcare industry can use to carry out the healthcare supply chain performance from E-Health adoption, E-Health will be used in the field of Healthcare in harmony with daily life, the use of technology is not based on effective only, also, require cooperation and coordination in the supply chain to create value co-creation as well(Chakraborty et al., 2014)

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ENHANCING THE FIRM'S COMPETITIVE ADVANTAGE BY ADOPTION SUPPLY CHAIN PERFORMANCE MODEL FOR THAI COSMETIC MANUFACTURERS

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Abstract

The objective of this study is to explore empirical factors from literature reviewing and propose primary supply chain performance model (SCP-Mod) that enhancing the competitive advantage (CA) of Cosmetic Manufacturers in Thailand. In this study, the supply chain risk management (SCRM), and performance management system (PMS) were explored specifically on their relationships with supply chain performance (SCP) thus to ensure its results on firm's sustainable competitive advantage. The developed conceptual framework was based on empirical data and constructed variables. Sequentially, following through in-depth interview with 5 academicians and 12 key informants from Thai Cosmetic Manufacturer Association (TCMA) who also managing the supply chain activities by utilizing the predefined questions to confirm the finding.

Key words: Competitive Advantage, Performance Management System, Supply Chain Performance, Supply Chain Risk Management

Introduction

The Thai economy in the second quarter of 2020 declined significantly by 12.2% compared with -2.0% contraction in previous quarter. In first half of 2020, Thai economy contracted by -6.9%. The export of goods and services, private consumption, and private investment declined sharply due to the pandemic, while public investment and government expenditure expanded and supported the economy. The consumption expenditure of private sectors dropped by 6.6%, compared with a 2.7% expansion in previous quarter, in line with declining income base, change of consumer behavior and, measures for controlling and preventing the pandemic. The decrease in consumption was observed in spending in durable goods, semi-durable goods and also services, such as vehicles (decreased by 43.0%), clothing and footwear (21.4%), restaurants and hotels (45.8%), and alcohol beverages (17.1%) (NESDC, 17 Aug., 2020). Thai cosmetic market ever had a better growth and expanding continuously especially in 2017. The total value of cosmetic industry of Thailand is approximately 2.51 billion bath, separated into approximately 66.9% for domestic and 33.1% for export market. The domestic cosmetics market in 2017 was valued about 1.68 billion baht, growing 7.8% (YoY). It is noteworthy that the cosmetics market has grown approximately 7.6% per year (Year, 2013-2017). For current export market, Thai cosmetics are popular abroad because of the confidence in quality, production standards and safety. In addition, having raw materials for cosmetic production, especially raw materials from natural origin including a variety of types for cosmetics which are unique and innovative in manufacturing. This could meet the needs of various consumer demands. In 2017, Thailand has exported cosmetics worth 83,036.8 million baht with key markets such as ASEAN, Japan, Australia and China. Hence, it was found that markets with high potential for Thai cosmetics were neighbouring countries, e.g., Cambodia, Lao PDR, Myanmar, and Vietnam. It is expected that the value of Thai cosmetics market in 2018 will be approximately 2.76 billion baht which separate into the domestic market approximately 1.81 billion baht, and average growth of 7.7% while export market is expected to be approximately 95,000 million baht, a growth of 14.4% (YoY). It indicated that cosmetics market still have potential growth and be opportunities for new manufacturers and entrepreneurs. (TCMA/FTI-Cosmetic Group, K SME Analysis, 2019)

At present situation, cosmetics industry group stated that COVID-19 pandemic has affected exports by 5.7% and expected the declining of the total cosmetic market in this year around 10%. Thai cosmetics and cosmetic industry group president, Federation of Thai Industries (FTI), revealed that the impact of the pandemic caused by COVID-19, affects Thai cosmetic industry which never happen before. The reason why pandemic hits Thai cosmetic industry heavily caused by several aspects for instance; On the export market, the problem of closing the country resulted in less exporting, especially for neighbouring markets such as CLMV countries, while the domestic market: consumer behavior changed significantly with

the new normal – staying home more turned in to the focusing on maintaining cleanliness, resulted in better selling alcohol hand sanitizer. But the dressing out of the house has decreased as well as the impact of the Mall, Salon, and Airport closures. This resulted on even less or falling on the sales of cosmetics such as shampoos, hair dyes, etc. Overall picture in the first quarter of this year (2020), exports have fallen approximately 5.7% and domestic sales which are imported cosmetics, are also decreased as well. Cosmetics industry initially assessed that if the COVID-19 pandemic still continues until the end of the year, it is expected to give the Thai cosmetics which totally declined by 10%, with approximately 300,000 million baht – divided as local market of 180,000 million baht an export market of 120,000 million baht. Moreover, cosmetic manufacturing is experiencing a shortage of packaging, i.e. filling bottle with head pressing, the spray head, as well as raw material which are mostly imported from abroad, i.e. thickener. As of now, more than 90% of the country's producers still have to import raw material from Italy and Spain, as well as some ingredients from China. In which all of these countries being affected by an outbreak of COVID-19, thus resulting in a huge shortage (TCMA. 2020).

Cosmetic industry is still be a growth engine in boosting economics of Thailand, resulted in significant earnings and supporting country GDP growth. When considering the present uncertainties and possible risks that happened from COVID-19 pandemic, it could be declared that cosmetic manufacturers cannot avoid the potential or relevant effects that generates difficulties. The effect of economies crisis either in global, regional or local level also showed as big barrier to the growth of exporting of Thai cosmetic products within the region or in to the global marketplaces. The way that Thai cosmetic manufacturers could continue their business is to understand the risks or uncertainties that happens, identify or utilizing the proper supply chain management to encounter the situations, and finally managing their firms' performance in the overall aspects, including employees, operational, etc. Researcher thought that readiness in encountering the risks, the ability, fastness in remedy or recovery, and professionally managing its relevant supply chain would be the key benefits for all entrepreneurs or manufacturers. This specific research would encourage and trigger the necessity in using of supply chain performance model as a systematic consideration approach in risk management specifically in total supply chain systems of the Thai cosmetic manufacturers. Thus to ensure that all manufacturers would be ready to confront with negative effects or impacts, and showing their strong professional operations in dealing with such situations which the aims in continuing the business, increasing country economics or business potential, and finally in gaining the highest and sustainable competitive advantage in cosmetic industry field for local, regional, and global prospects in future.

Research Objective

The objective of this study is to explore empirical factors from literatures reviewing and propose primary supply chain performance model (SCP-Mod) that possibly enhancing the competitive advantage of Cosmetic Manufacturers in Thailand.

Literature Review

Supply Chain Risk Management (SCRM)

Supply chain risks are the risks for the information, material and product flows from original supplier to the delivery of the final product for the end-user (Jüttner et al., 2003). There are three broad categories of supply chain risks – supply risks related to sourcing, operational risks related to internal operations and demand risks related because of demand-supply mismatches (Diabat et al., 2012). Operational risk is also defined as more about supply-demand coordination and results from inadequate or failed processes, people and systems (Lockamy and McCormack, 2010) while supply risk is also defined as the potential deviations in the inbound supply in terms of time, quality and quantity that may result in uncompleted order (Kumar et al., 2010). Such risks adversely affect supply chain operations and its desired performance measures such as chain-wide service levels, responsiveness and cost (Tummala and Schoenherr, 2011).

In order to manage the risks that happened in the supply chain system of the firms effectively, the supply chain risk management process should be constructed and strictly followed. The SCRM activity domains which were synthesized by (Ho et al., 2015) and also named it as “SCRM Processes” (Raphaël et al., 2018) are shown as following details;

- Risk Identification, defined as the process to identify risk types and factors.
- Risk Assessment, defined as the process to evaluate probability of an event occurring and the significance of the consequences.
- Risk Mitigation, defined as the process to mitigate either the probability of an event occurring or the significance of the consequences.
- Risk Monitoring, defined as the process to detect a disruption occurrence.
- Risk Recovery, defined as the process to enable the supply chain to quickly return to its original state during the occurrence of a disruption.

All of the above steps or processes should be considered, thus for the overall effectiveness in managing the supply chain risk management. Figure 1 illustrate the supply chain risk management processes proposed in the study of (Raphaël et al., 2018). In this study, author also focuses on the manufacturing risk management performance of the cosmetic manufacturers in Thailand and Ho et al., 2015, proposed a useful classification that takes account of both comprehensiveness and varieties of impact degrees;

- macro risks are akin to environmental risks, the factors include natural and man-made disasters such as earthquakes, wars and economic downturns; and
- micro risks are classified to four categories; demand risks, manufacturing risks, supply risks and infrastructure risks

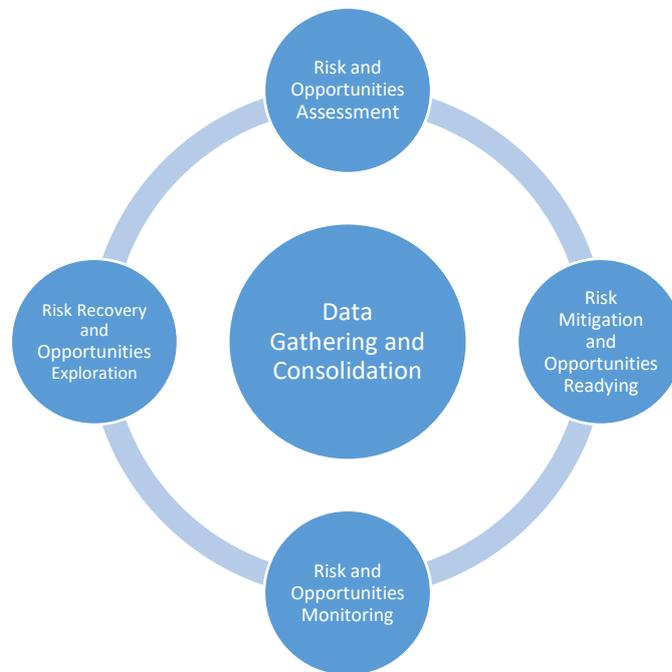


Figure 1 Supply chain risk management processes (Raphaël et al., 2018)

As the risk in supply change is an unwanted event and all firms do not want to face such kind of critical disruptions across their supply chain. Hence the understanding in supply chain risk management processes: starting from knowing risk, capability in identifying or classifying and also assessing it through the entire chain and then mitigating, monitoring and recovering by utilizing all possible resources in a systematic and structural approach, via highly integrational levels amongst the partners or stakeholders could help the firms facing the lowest levels of disruptions across supply chain.

Performance Management System (PMS)

The performance management is a continuous process of identifying, measuring, and developing the performance of individuals and teams and aligning performance with the strategic goals of the organization. There are two main components when considering in this definition (Aguini, 2014). Firstly, the continuous process as performance management is an ongoing. It involves a never-ending process of setting goals and objectives, observing performance, and giving and receiving ongoing coaching and feedback. Secondly, the alignment with strategic goals in which performance management requires that managers

ensure that employees' activities and outputs are congruent with the organization's goal and, consequently, help the organization gain a competitive advantage. Performance management therefore creates a direct link between employee performance and organizational goals and makes the employees' contribution to the organization explicit. (Chang E. & Hahn J., 2006).

A successful performance management system ensures that work performed by employees accomplishes the goals and mission of the organization and that employees have a clear understanding of what is expected of them. Benefits of a successfully adopted performance management system include an organization that is directly aligned to its goals and objectives and a motivated workforce where every employee understands his or her importance and role in the organization (Chandan Kumar, 2012).

Under present situation, Thai cosmetic manufacturers are facing high uncertainty or unpredictability and risk which could affect their organizational performance. The performance management system (PMS) in which they could adapt effectively, might lead the organization to overcome the difficult situation (i.e. during the COVID-19 pandemic). Collaboration among all relevant departments within the organization is also a major clue in achieving the high performance. Anyhow, from the literature review, it should be reminded that all processing steps that linked to the performance measurement system needs to be managed systematically and continuously thus to ensure that the outcome will align with expected results.

Moreover, a good selecting of right and comprehensively implementing of measurement system that mostly fits with organizational design will also result in good direction (Kaplan, 2001; Ferreira and Otley, 2010). The said measurement should further associate with adoption of broad, flexible, externally focused management control systems emphasizing with two basic types: those that relate to results (outputs or outcomes such as competitiveness or financial performance) and those that focus on the determinants of the results (inputs such as quality, flexibility, resource utilization, and innovation). This study aim to confirm that effective performance management under critical situation could result in highest competitive advantage of The Cosmetic Manufacturers in Thailand.

Supply Chain Performance (SCP)

Supply chain is playing a key role in all industrials including the cosmetic manufacturing. All firms are more focusing on the customer needs and trying to find ways to reduce costs, improve quality and meet the growing expectations of their clients. Firms that manage their supply chain effectively could gain more satisfaction from the customers. At present, firm succession relies on the interactions between the flows of information, materials, money, manpower, and capital equipment (Soni & Kodali, 2012). Rimiene & Bernatonyte, 2013, claimed that firms confronted many challenges which continuously affected its performance. These challenges include globalization, increasing cost, heightened

customer expectations, price pressure, and shorten product life cycles. These enacted the needs in shifting of traditional supply chain management models to a new platform and also encourage management to relinquish old supply chain configuration (Arlbjørn, de Haas & Munksgaard, 2011; Ageron, Lavastre, & Spalanzani, 2013).

There were several studies which defined the ways or methods to evaluate supply chain performance. There was dissensus over the most appropriate ways to categorize them as examples on the groups according to: whether they were qualitative or quantitative (Beamon, 1999; Chan, 2003), what they measure: cost and non-cost (Gunasekaran, 2001; De Toni and Tonchia, 2001); quality, cost, delivery and flexibility (Schönsleben, 2004); cost, quality, resource utilization, flexibility, visibility, trust and innovativeness (Chan, 2003); resources outputs and flexibility (Beamon, 1999); supply chain collaboration efficiency; coordination efficiency and configuration (Hieber, 2002); and input, output and composite measures (Chan and Qi, 2003); their strategic, operational or tactical focus (Gunasekaran et al., 2001); the process in the supply chain they related to (e.g. Chan and Qi, 2003; Huang et al., 2004; Li et al., 2005b; Lockamy and McCormack, 2004; Stephens, 2001).

The example of measurement that Chan and Qi, 2003 identified compose of six core processes (supplier, inbound logistics, manufacturing, outbound logistics, marketing and sales, end customers) and present input, output and composite measures for each. Similarly, proponents of the supply chain operations reference (SCOR) model. The SCOR model was one particular performance model that has become increasingly popular and was developed by the Supply Chain Council (Trkman et al., 2010). The model identified five major metrics for measuring supply chain performance, called reliability, responsiveness, flexibility, cost and asset managing factors (Coyle et al., 2013). Supply chain performance indicator is the second order of the conceptual framework of this study. Then the author decided to follow on the SCOR model designed. Anyhow, selection of the three major metrics which potentially fit for cosmetic manufacturing in Thailand is taken into account as: responsiveness, reliability, and flexibility.

Competitive Advantage (CA)

Several views of competitive advantage were literate by plenty of researchers as examples; Competitive advantage is the extent to which an organization is able to create a defensible position over its competitors (Porter 1985; Mc Ginnis et al. 1999). It comprised capabilities that allow an organization to differentiate itself from its competitors & was an outcome of critical management decisions (Tracey et al. 1999). Skinner 1985; Roth & Miller 1990; Vickery et al., 1997; Tracy et al., 1999, gave the inputs regarding significant competitive capabilities comprised of price/cost, quality, delivery, and flexibility. While time-based competitions as a main competitive priority and time is the next source of competitive advantage (Stalk 1988; Vesey 1991; Handfield & Panneesi, 1995; Kessler & Chakrabarti, 1996;

Zhang, 2001). Several research frameworks for competitive capabilities & classify the following five dimensions such as competitive pricing, premium pricing, value-to-customer quality, dependable delivery, and production innovation were also explored (Cleveland et al., 1989; Roth & Miller 1990; Safizadeh, 1996; Koufteros, 1997; Vickery et al., 1997; Tracy et al., 1999; Vickery et al., 1999; Rondeau et al., 2000). Supply chain management also served as a basic foundation in achieving competitive advantage through accelerating the sourcing, delivery process & logistic functions across all participants (Nathan et al. 2005). Competitive advantage means that the extent to which an industry is capable to construct a defensible position over its competitors.

In the competition framework within the industry, firms should consider to continuously build the competitiveness by focusing on price, quality, dependability, speed of delivery (Fawcett & Smith, 1995) and also time to market (Zhang, 2001). This point is also important for cosmetic manufacturers in Thailand in which the focusing points of their supply chain management might be varied or deviated from other industries. To identify the performance of the firms, the performance measurement should be considered. Referring to the works of Tongchim & Rassameethes, 2012, they studied the performance measurement of firm's supply chain in two dimensions; firstly, on the measurement of competitive advantage which also in the same scale of this research paper. Secondly, was about the measurement of firm performance.

For the measurement of firm's competitive advantage, there are three dimensions that need to be considered; Cost competitive advantage, Quality competitive advantage, and Time competitive advantage. Cost competitive advantage means on the lower cost than competitors either total or specific cost e.g. raw material cost, delivery cost, inventory cost, and cost of error or correction of that particular error. Beside the view of quantity measurement, the measurement view on quality must be focused as well (Gunasekaran et al., 2001). Quality competitive advantage is also a part of supply chain performance measurement. As in present business situation, firms are increasing their interests in quality aspects as well which are not only in product quality but also in services thus to enhance their customer satisfaction against the competitors. Apart from this, time is also be a measuring criterion that could affect competitive advantage of the firms. Time competitive advantage is then an important dimension for supply chain performance measurement (Toni and Tonchai, 2001). To measure the firm performance, it is to be understood on the aim or business objective of the firms. Li et al., 2006, (mentioned in Tongchim & Rassameethes, 2012) indicated the measuring parameters of firm performance which composed of market share, growth of market share, return on investment, growth of return on investment, growth of sales, and profit margin on sales. All these points would be considered or modified in applying with cosmetic manufacturers in Thailand as well.

In Summary

From the literatures or the past empirical studies, all dimensions that Thai cosmetic manufacturers should be considered in gaining the sustainable competitive advantage in the market or industry could be summarized at least in three scopes. Firstly, the manufacturers should find the way to enhance their supply chain performance by consider in increasing of its responsiveness, flexibility, and reliability. Secondly, they should manage to reduce the uncertainties or risks in all aspects or scopes that possibly occurring along their supply chain operations. The systematic approaching for all possible risks should involve the SCRM processes which composed of risk identification, risk assessment, risk mitigation, risk monitoring, and risk recovery (Raphaël et al., 2018). Finally, is to ensure that the performance management is bringing to the organization with effectively implemented. In this view, not only financial and operation measurement should be considered but also the measurement of employees or human resources performance. Since the higher employee performance would result in the higher satisfactions, royalties, and finally the higher outputs and performance of the organization especially, under the view of supply chain management as well. Considering these as a holistic approach referring to this study which related to supply chain risk management, performance management system, supply chain performance management as shown in the constructed conceptual framework (Figure 2) which named as “Supply Chain Performance Model: SCP-Mod” that would be introduced to all cosmetic manufacturers in Thailand, it is expected that all manufacturers could manage their supply chain in a better process and right direction in which they could reach the sustainable competitive advantage in the market or industry. In which the overall results will help in boosting up Thai economic during this pandemic (COVID-19) crisis and continuing it as sustainable growth in country, regionally, and globally levels.

Result

Based on empirical data reviewing for the linkages between supply chain risk management (SCRM), performance management system (PMS), supply chain performance (SCP), and competitive advantage (CA), the researcher noticed the possibilities in enhancing the competitive advantage of the firms by understanding and utilizing of supply chain performance model (SCP-Mod) that could be constructed as in following conceptual framework.

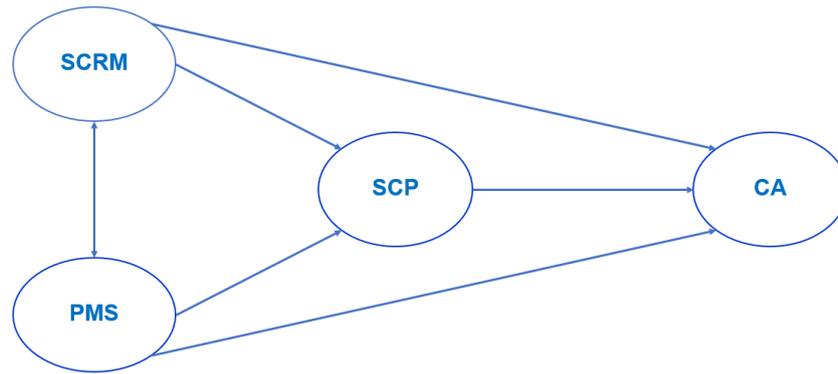


Figure 1 Conceptual Framework (Author)

Supply chain risk management (SCRM) could be measured via four indicators, including the operational risk, demand risk, supply risk, and disruption risk (relevant to COVID-19 pandemic) for the systematic and effective implementation of risk management processes. Performance management system (PMS) could be measured via three key indicators, including the operational performance, employee performance, and financial performance of the firm. The Supply chain performance (SCP) could be measured generally via three indicators, including the reliability, flexibility, and responsiveness of the supply chain management system. And the final construct of Competitive advantage (CA) for the firm could be measured by four indicators, including the view of cost, quality, delivery, and market share of the firm. The overall constructed variables are composed and designed as primary supply chain performance model (SCP-Mod) which is demonstrated in **Figure 2**.

The proposed supply chain performance model (SCP-Mod) will then be cross-checked and validated by using in-depth interviewing processes with 5 academicians and 12 key informants of board of director in TCMA. The results showed that all key informants and academicians agreed on this proposed SCP-Mod and made further suggestions in adapting and using it as a tool in enhancing the competitive advantage of cosmetic manufacturers in Thailand.

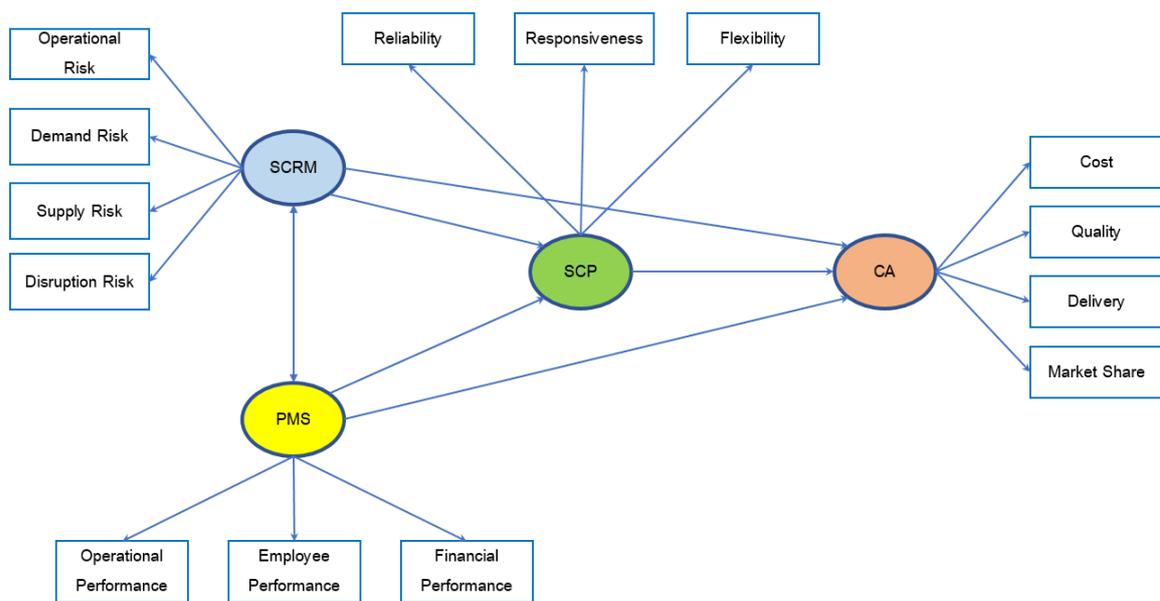


Figure 2 The proposed supply chain performance model (Author)

Conclusion

To this study, the competitive advantage (CA) of Thai Cosmetic Manufacturers could be possibly enhanced if the manufacturers utilized the overall processes which holistically linked between the three constructed. Firstly, effective supply chain risk management (SCR), especially in uncertainty or risky like COVID-19 pandemic situation. The systematic process approach in risk encountering should be consider for proper managing (Raphaël et al., 2018) which started from risk identification, risk assessment, risk mitigation, risk monitoring, and risk recovery. The fast in responding to the occurred risks in the supply chain will help the firm in reducing of its disruption. Secondly, total view of performance management system (PMS) (i.e. employee, operation, and firm financial performance). The right measurement system that firm selected, should reflect not only on the operation but also for employees and financial performance at the end (Kaplan, 2001; Ferreira and Otley, 2010). Finally, the effective supply chain performance (SCP), must be measured and reflected the actual performance in the designed directions and strategies of the firm (Coyle et al., 2013; Gunasekaran et al., 2004) The actual and strong deployment of this supply chain performance model (SCP-Mod) of Thai Cosmetic Manufacturers would be a key success factor that all manufacturers should consider.

Further Study

Since the behavior of each cosmetic manufacturers are not totally the same, i.e. different organization size, different number of employees, different experience in

the field of cosmetic manufacturing, different cosmetics categories handling, etc., future study for the fitness of using or utilizing of the supply chain performance model (SCP-Mod) should be considered intensively by the experience operators in supply chain processes at first. While the evaluation process should be continually scale-up to the managerial level who involves in the designed supply chain system, and finally approach to the top management who involve in strategic decision for the best fit to the organization.

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THE RELATIONSHIP AMONG SUPPLY CHAIN PERFORMANCE, VALUE CHAIN, EXPORT PERFORMANCE AND RELATED DISASTER RISK

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Abstract

The purpose of this research is to study the impact of supply chain performance, value chain and disaster risk on export performance by literally reviewing and identifying the specific factors and additionally present the conceptual model derived from the literature review. The paper found firstly that supply chain performance: business growth, customer satisfaction, potential of management, employee satisfaction, and innovation and development, is very important for driving the export performance because it can cover both internal and external dimensions. Secondly, value chain including inbound logistics, operations, outbound logistics and marketing and sales, which focused on internal potentials of organizations to manage the business operations from inbound logistics to products/services distribution, can also reinforce the export performance. Thirdly, risks from disaster such as COVID-19 virus outbreak and systematic risks related to business operation can also significantly export performance. The discovered factors from the literature reviews can be advantageous for academicians because they can depict the conceptual model that can be academically further investigated through qualitative research such as in-depth interview. In addition, this paper can contribute to the managers in export-based companies in being aware of supply chain performance and value chain among the risk from the virus disaster in order to empower export performance.

Keyword supply chain performance ,value chain , export performance

Introduction

Thailand has great location and geography for trading products and services from both navy and land ways since its areas contact with many countries in ASEAN such as Laos, Myanmar, Malaysia, and seas such as Gulf of Thailand and Andaman sea. In fact, not only trading with nearby countries, But Thailand also has various trades with far countries such as China, Japan, United State of America, European Union, and others. In 2019, the trade value in terms of exportation with current reported countries of Information and Communication Technology Center, the Office of the Permanent Secretary, the Ministry of Commerce with cooperation from the Customs Department, overall was 7,628,400.39 baht. In terms of export, it is unavoidable to mention that Thailand has a great potential in producing and exporting products to other countries. The products to be exported can include processed foods such as canned tuna, processes fishes, shrimps, frozen foods, and others. This is because it has fertile land, good technology, productive labors, and good infrastructure that are significant for country's domestic and international trading system. In addition, the supply chain as well as value chain integration and supply chain performance can be also accounted as one of critical factors influencing the potentials of Thailand's export (Kottala, & Herbert, 2019). Th export performance can refer to the ability of the business receiving financial performance, market performance, competitive advantage, and achievement of firm specification (Ling-yee, & Ogunmokun, 2001; Ayoub, & Abdallah, 2019). The supply chain management starting from upstream level to down stream level and its performance encompassing with business growth, customer satisfaction, potential of management, employee satisfaction, and innovation and development can positively be significant for Thailand's export (Ritchie & Brindley, 2007). However, in 2020, Thailand has encountered with COVID19 outbreak, which it has severe impacts on Thailand's exports. Some entrepreneurs had to reduce, change, and/or close their businesses.

Therefore, it is very crucial that there should be a study about the impact of supply chain performance, value chain and disaster risk on export performance. In a regard, this paper aimed at presenting the relationship among supply chain performance, value chain and disaster risk on export performance by literally reviewing and identifying the specific factors and additionally present the conceptual model derived from the literature review. At the end of this paper, the author also provide recommendation for further studies.

Relationship between supply chain performance and export performance

Supply chain management refers to the overall process of the flow of materials, goods as well as information and transactions through the organization from supplier,

manufacturer, and to customers, which each activities and parties are involved with each other's. In the adjustment of the organization for supply chain management, it is important that the organization has an administrative ability to create business growth and the business sustainability. Chen and Paulraj (2004) stated that a typical supply chain is a network of materials, information, and services processing links with the characteristics of supply, transformation and demand. Chopra and Meindl (2001) indicated that the supply chain is the traditional cycle view, which overlooks supplier, manufacturer, distributors, retailers, and consumers. Indeed, supply chain itself consists of aforementioned matters, but not limit to new product development, marketing, operations, distribution, finance, and customer service.

To implement supply chain management, there should be a consideration of the key points that can influencing the effectiveness of using supply chain management in the organizations. The first is the trust, which is the most important factor. Previously, the business is operated with the trust as a driver. Generally, the business should highlight on providing trust (Kwon, & Suh, 2004). The second is knowledge sharing, which helps trading partners be able to utilize the information. In supply chain management, the information can be accounted as a crucial factor that can link to create maximum efficiency including time and costs. The third is quality of shared information (Raweewan, & Ferrell Jr, 2018). The information delivered to the suppliers and relevant persons must be qualified and informative because it can assist create information accuracy and timeliness consumption. The last point that is also more important is the information and communication technology technologies, which make real time information and data that can be utilized immediately when needed.

In addition, the strategies used to create successful supply chain management are seen vividly. This includes that the business should be flexible with designing the supply chain management system with the purposes to reduce the operation time and cost (Yamin, Gunasekaran, and Mavondo, 1999). Also, the design of the organizational system to match between the products and services and customers through the appropriate channels should be well-made in order to make the business successful. Importantly, each process should be done with cost reduction and attempted to maximize the inputs and minimize the waste. In addition, the members of the organization are required to work together by considering the thought of internal and external collaboration and network to support the organizational policy, mission, and vision. Chi, Kilduff, and Gargeya (2009) advocated that knowing how to analyze the characteristics of the business environment can also help the organization to prepare the information for their business operation. Lastly, the information used in then

chain must be shared with real time concepts, emphasizing on reliability, accuracy, and knowledge.

Today, supply chain management is used with different types of export products including processed foods. It is a great idea to insert the concept of supply chain to better the export performance since it has been known that the supply chain management concept overlook the improvement in each business activities from purchasing input, manufacturing products, sending products to the consumers. When supply chain management is adopted to be used in the processed foods industry, there is some specific points to gain competitive advantage (Palandeng, Kindanggen, Timbel, & Massie (2018). Due to the nature of the food that is perishable and sensitive to the temperature, the way to manage the chain is to be considered about the how to keep the temperature at the certain degree which the food quality according to the standardized certification from Hazard Analysis and Critical Control Point (HACCP) and Good Manufacturer Practices (GMP) can be accepted. Herewith, the cold chain is adopted. The cold chain is utilized to maintain the qualifications of the foods, which the degree should be lower than -18 degree Celsius in the refrigerated containers. However, before loading the food into the containers, the products should also be freezed, which it is called pre-cooled. Moreover, the products should not be loaded tightly because the coldness cannot spread (Athirojanasakul, 2010). The consequence of temperature control can lead to customer satisfaction, cost saving and competitive advantages.

Relationship between value chain and export performance

The Value Chain is a theory invented by Michael Porter (1985). It can be measured by the value that the customer receives and how much is willing to pay for the purchase of the company's products or services (Walters, Glaser, & Barber, 2008). The concept is divided into two activities: primary activities and support activities. The primary activities consist of inbound logistics, operations, outbound logistics, marketing and sales, and service. Meanwhile, the support activities consist of firm infrastructure, human resource management, technology development and procurement. Each adds value to the company's products or services for export. Crain, and Abraham (2008) found the link of using value chain analysis to discover customers' strategic needs. The value chain was adopted into the processed food industry for export. Export performance is today one of the most widely used measures of a company's success, due to the globalization and market liberalization processes (Leko-Simic, & Horvat, 2006). The value chain can benefit the customers when the organization can employ the concepts of value chain with the purpose to improve the traditional business operation to value added business operation and create export performance in terms of

export profit, export revenue growth, export satisfaction, and export revenue (Carneiro, Rocha, & Silva, 2007; 2011). For example, Eid, Abdelmoety, and Agag (2019) changed the traditional marketing activities by using social media marketing to study the UK exporting B2B SMEs. For the successful implementation of value chain, the organization should consider about the appropriate organization culture, human resource, leadership, internal business operation, technology investment, and collaboration with others. Faroque, Morrish, and Ferdous (2017) studied about South Asian low-tech industry and found the relationship among the networking, business process innovativeness and export performance. Consequently, it can help improve the export performance which can include financial performance, market performance, competitive advantage and achievement of firm specification (Ling-yee, & Ogunmokun, 2001; Ayoub, & Abdallah, 2019). Felbermayr and Kohler (2006) mentioned that the world trade growth from 1950 to 1997 was the result of movements at the extensive margin. In addition, Hummels and Klenow (2005) found that larger export more linked with extensive margin about 60%. Beltramello, De Backer, and Moussiégt, (2012) found the links of the export performance of countries within global value chains (GVCs). In conclusion, value chain including inbound logistics, operations, outbound logistics and marketing and sales, which focused on internal potentials of organizations to manage the business operations from inbound logistics to products/services distribution, can also reinforce the export performance.

Relationship between disaster risk and export performance

For the operation of the modern organization, whether it is the business, or government sector must face the uncertainty factors. In particular, the risk is an event that may arise in the future under uncertain circumstances and affect or damage the organization both in terms of strategy, operations, and finance. It is undeniable that these events are risks affecting their operations. Hopkin (2018) advocated that risk can be positive or negative which can give the organization's desirable outcomes. Therefore, risks can perhaps be considered as the opportunity to gain or loss the presence of uncertainty for an organization. There are three types of risks: hazard (or pure) risks, control (or uncertainty) risks, and opportunity (or speculative) risks. The hazard (or pure) risks refers to operational or insurable risks, which the organizations will have a tolerance of hazard risks and these need to be managed within the levels of tolerance of the organization. A good example of a hazard risk faced by many organizations is that of theft. The control (or uncertainty) risks refers to uncertainty about the outcome of a situation and are frequently associated with project management. The example can include such as inability to submit work on due date, as well as uncertainty about the delivery of the project on time, within budget and to specification. Lastly, the

opportunity (or speculative) risks refers to organizations deliberately take risks, especially marketplace or commercial risks, in order to achieve a positive return. Leko-Simic, and Horvat (2006) found the link of risk-taking propensity and export performance of Croatian exporters. In 2020, the major risk that many organizations around the world are encountering COVID 19 outbreak, which it can be categorized as opportunity (or speculative) risks. Indeed, the risks happen towards the organizations can influence export performance both in terms of non-financial and financial aspects. Fugazza, (2020) studying a preliminary assessment of the impact of the coronavirus COVID-19) pandemic on commodities exports to China by overlooking at Commodity Dependent Developing Countries (CDDCs). It results indicate that in comparison to short term tendencies observed in the past total commodities exports to China are currently moving downward. The predicted COVID19-related economic contraction results in a reduction of 9.2% in extra-EU27 exports of goods and services, and an 8.8% decrease in extra-EU27 imports in 2020 (European Commission, 2020). For way to help solve the problem, Momaya, (2020) mentioned that the organization should know how to motivate to evolve productive and healthy work schedules and environment, while keeping morale of family members high. In addition, there should be implementation of technology together with preparing the employees for using technology for task delivery, cooperative work and even speed learning of essential skills. Kiser, and Cantrell (2006) recommend overlooking internal and external factors. Ritchie and Brindley (2007) recommended to apply supply chain risk management to link to supply chain performance. These can be the ways that can be for leaders so that they can enhance export competitiveness despite COVID-19.

Conclusion and Recommendations

For the above mention, it can be seen the relationship among supply chain performance, value chain and disaster risk on export performance. The paper found that the supply chain performance including business growth, customer satisfaction, potential of management, employee satisfaction, and innovation and development can influence export performance. Meanwhile, value chain including inbound logistics, operations, outbound logistics and marketing and sales, which focused on internal potentials of organizations to manage the business operations from inbound logistics to products/services distribution, can also reinforce the export performance. Lastly, risks from disaster such as COVID-19 virus outbreak and systematic risks related to business operation can also significantly export performance including financial performance, market performance, competitive advantage, and achievement of firm specification. The conceptual model can be presented in the below figure (Figure 1). For recommendation, this paper recommends for further studying on using

quantitative research in order to test the hypotheses whether there is relationship among supply chain performance, value chain and disaster risk on export performance.

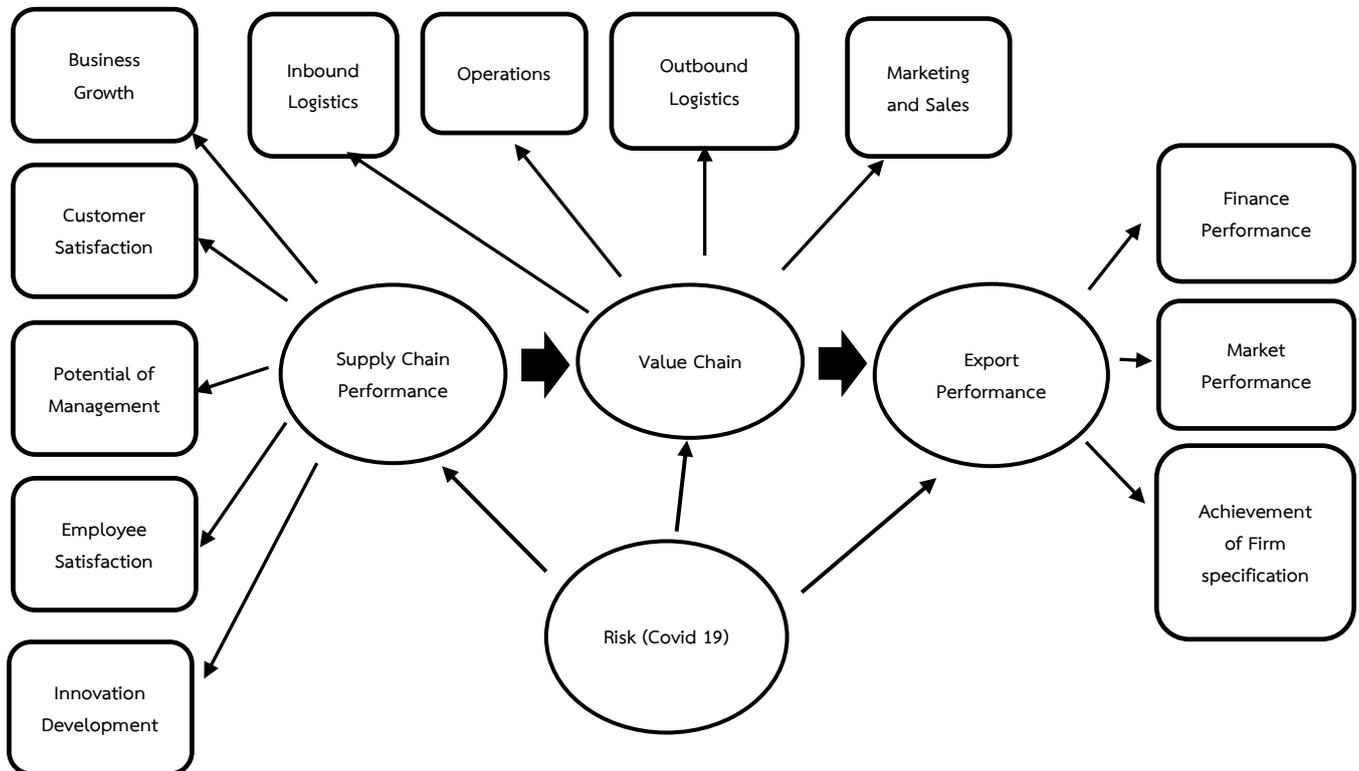


Figure 1: The proposed conceptual model

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ENHANCEMENT OF TOURISM LOGISTICS EFFICIENCY OF AYOTHAYA FLOATING MARKET, PHRA NAKHON SRI AYUTTHAYA PROVINCE

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Abstract

This study aims to 1) To study the level of tourists' satisfaction towards the logistics components and the tourism logistics optimization in Ayothaya floating market, Phra Nakhon Si Ayutthaya 2) To compare the tourist's satisfaction towards the efficiency of tourism logistics enhancement in Ayothaya floating market, Phra Nakhon Si Ayutthaya 3) To find ways to increase the tourism logistics efficiency in Ayothaya floating market, Phra Nakhon Si Ayutthaya 4) To study tourism behavior in Ayothaya floating market, Phra Nakhon Si Ayutthaya. In the view of tourists, the sample was 384 tourists from Ayothaya Floating Market. The tools, used for data collection, were questionnaires, statistics, using for data analysis, including frequency distribution, percentage values, mean, standard deviation, t-test, and F-test, using One-Way ANOVA. The benefits of this article can be used to improve tourism logistics management for departmental duties and concerns.

Key Words: Logistics Optimization , Tourism , Ayothaya Floating Market.

Introduction

The tourism industry is a large industry and high growth. They play a very big role in the economic and social growth of Thailand. The tourism industry is a source of income, significant employment, and prosperity distribution to the region. So, tourism of Thailand can adapt to various situations (Tourism Authority of Thailand Marketing Strategy Division, 2017)

Thailand is a charming and unique country with a mix of food and culture perfectly. The infrastructure is continually developed and widely spread in tourism areas. In addition to foreign tourists having attention to Thailand, tourists in Thailand tend to travel more domestically. Nowadays, the government encourages Thai people to travel domestically.

The results of the survey of Bangkok resident's domestic tourism behavior in the last 3 months of 2019, plan to travel domestically more than the same period of the previous year. The government's plan to issue measures to stimulate tourism Phase 2 may be a factor to support the people of Bangkok. There is an increase in traveling for the rest of the year. In addition, under favorable weather conditions, (The survey results show that Climate factors have a strong influence on decision-making or changing travel destinations) would be a positive force for tourism during the final curve of this year. It is likely to generate income, including domestic tourism, worth 60 billion baht, or an expansion of approximately 3.0 percent compared to the same period last year. While in 2019, people in Bangkok travel domestically should generate income, including domestic tourism, worth about 227,300 million baht, a 2.6 percent increase from 2018 (Ministry of Tourism and Sports, Estimated by Kasikorn Research Center, 2020).

Thailand is abundant. There are a variety of natural resources. In the past, many countries have been interested in and want to conquer the kingdom of the golden ax. Thailand has been known as a hotbed as the saying "Wet, wet soil" "In the water, there are fish, in the fields, there is rice" with a location adjoining many rivers. Most traffic involves water and sidewalk travel. Most of the population careers in farming and feeding livestock. In the past, there was a trade and exchange of goods in the mouth of the river and at the temple, where many people were traveling. For this reason, in the old days, there were different kinds of marketing calls as will be discussed below.

The Thai Encyclopedia for Youth (2015) states that human society has a self-supporting economy. Each family can produce crops for their households. Household appliances are not difficult to do because they rely on raw materials that are mainly natural. Even clothes are woven for themselves. As society develops, people can produce crops as

well as necessary appliances in the amount that is much more than needs. Until the rest is in excess, therefore, they would bring the excess product to exchange for things or food which the family could not produce. This could be an exchange between villages or the distant cities by relying on foreign traders, caravan, and exchanging in person. A place to buy and sell goods during that period still was an uncertain place.

Later, the society became a large city and urban society, the use of training and teaching gradually expanded, increasing demand and need. There is a place to trade those commodities, that is a marketplace where people in the community are easily connected to and accessible as well as being a means of transporting both land and water. The market will be big or small depending on the community size where the market is located or products. The nature of the market also depends on the condition and preferences of those communities. For example, If the community mainly uses water traffic called the "floating market", or if using land transport to contact called "market land".

Nowadays, the floating market is more active due to the changing environment and the transportation of land that is more convenient than water transport. So, the canal was filled to build roads. However, the floating market trade is still supported by local authorities in accordance with the government's tourism promotion policy in order to promote houses and farms along the riverside and canals. Agricultural products and local handicrafts were released to help increasing income. The current floating market still exists and is known as the Damnoen Saduak floating market, Ratchaburi, Amphawa floating market, Samut Songkhram, and Ayothaya floating market Phra Nakhon Si Ayutthaya, etc.

Phra Nakhon Si Ayutthaya is a land of historical significance, prominently in both ancient and civilized times. There are still remains as an indication Of the glory in the past and the United Nations city (UNESCO) as a world heritage in the community. As a result, Phra Nakhon Si Ayutthaya is a city where activities both Thai and foreigners are interested in visiting cultural, cultural, lifestyle, and tourism attractions.

However, most tourists' trips impact the environment and resources in the provinces negatively. The tourist attractions are deteriorating, especially the elements of tourism services that need to be continuously developed because it affects the satisfaction of tourists in various fields and results in tourists traveling to Ayutthaya. The tourist may not be comfortable and unimpressed with the identity of the way of life of the people in Phra Nakhon Si Ayutthaya (Thanarat Rattanapongthon, 2011)

Now, travel liquidity with no transportation arrangement causes some tourists to lack the opportunity to travel to this place. As public transport is very small and the location is not the main road causing a lack of opportunities for traveling for some groups of tourists. The income of the people at the Ayothaya floating market also decreases. The proper transportation management can serve tourists to attractions in various regions of Thailand on a number of routes and also support the number of tourists both Thai and foreigners entering Ayutthaya. Good management could impress tourists to revisit and generate income from tourism in the province, increasing the proportion of income from tourism to the gross domestic product (GDP) higher at the national level. From the study of the research data throughout tourism, the results are used to develop the tourism industry to be sustainable and able to generate income for the country. The local area must have tourism attractions that attract tourists. The attractions can satisfy the tourists while traveling until revisiting. Those attractions usually include various types of tourist attractions, activities that encourage the desire to travel, such as transportation management, and travel facilitation.

Ayothaya Floating Market, Phra Nakhon Si Ayutthaya is the largest eco-tourism destination for Thai culture in Ayutthaya. The objective is to make this place a tourist destination and a conservation study of Thai cultural arts since the Ayutthaya period in terms of dress, beautiful architecture, unique traditions, play and folk performances, old-fashioned food, and simple Thai way of life. The researcher hopes to bring about the creation of jobs, income, and occupation for the local population.

For this research, The researcher is interested in the situation of tourism logistics optimization in the Ayothaya floating market, Phra Nakhon Si Ayutthaya. To study the overview of tourism logistics efficiency enhancement in the Ayothaya floating market, Phra Nakhon Si Ayutthaya which currently studies the satisfaction of tourists that affect the efficiency of tourism logistics in various fields and the way to optimize tourism logistics from the perspective of the tourists directly. Therefore, it is very important to plan the sustainable tourism development of the Ayothaya floating market, Phra Nakhon Si Ayutthaya.

Research Objective

Tourism Logistics Optimization Research Ayothaya floating market Phra Nakhon Si Ayutthaya. There are some important objectives as follows

1. To study the level of tourist satisfaction with the logistics components and tourism logistics optimization in Ayothaya floating market, Phra Nakhon Si Ayutthaya

2. To study and compare tourists' satisfaction towards tourism logistics efficiency enhancement in Ayothaya Floating Market, Phra Nakhon Si Ayutthaya. Classified by personal factors
3. To find ways to increase the efficiency of tourism logistics in the Ayothaya floating market, Phra Nakhon Si Ayutthaya
4. To study tourism behavior in Ayothaya floating market Phra Nakhon Si Ayutthaya Province in the view of tourists

Literature Review

In this research, the researcher has studied concepts and theories related to logistics, travel logistics ideas concepts, and theories of tourist satisfaction.

Concepts and theories related to logistics

Logistics refers to the system of handling the delivery of goods, information, and any other resources of everything that is transported or moved from the origin point to the consumption point according to the customer's requirements. Logistics involves the combination of logistics information, material management, inventory, raw material handling logistics packaging is a channel of the supply chain that increases the value of the use of time and space. Everything about transport involves all logistics. The definition of logistics is to reduce costs. Reduce the time of transport, reduce all problems that will arise with the lowest cost (Umaphon Maniniem, 2016).

In summary, logistics refers to the cost of transportation of the country, the production of goods or services must be transported such as transporting raw materials from the source of raw materials to the factory through the production process until it is a product then the product must be transported to the market in order to distribute it to consumers.

Concepts related to tourism logistics

Tourism logistics is the coordination management between different activities in order to make the tourists flow from source to destination without error and to achieve maximum satisfaction. While managing the tourism supply chain is more than that. There is a lot of background in each activity such as bus activities, there are sub-activities, namely purchasing cars, purchasing gasoline, the training of drivers, Car tax. Accommodation activities include small activities such as food preparation, laundry, tax payment, wastewater treatment, employment and training of employees, etc. These are the functions of supply chain management, not the function of travel logistics (Khomsun Suriya 2009).

Tourism logistics are similar to tourism transportation but more broadly, tourism logistics covers three big things: tourists transportation and objects, giving and receiving information, and receiving payments while tourism transportation covers only the matters of transporting tourists and objects.

Phairat Pibulrungraj (2009) Consideration of tourism logistics management is the integration of the concept of logistics management with the concept of tourism management which considers the model of tourism logistics management. It is imperative to understand the tourism supply chain because the concept and model of logistics is the flow management within the supply chain consisting of the management and service of the physical, financial, and information circulation for maximum efficiency and effectiveness.

Concepts and theories of tourist satisfaction

The service business is very important in many businesses focusing on the customer and finding the needs to satisfy the customer that is the heart of the service because the ultimate goal of service is to create satisfaction for customers or service recipients. In order to make customers like and stick with them to revisit, the service business will be successful and stable in operation smoothly.

Satisfaction is feeling happy or pleased to be meeting the needs of what is missing or something that causes the imbalance. Satisfaction is what determines a person's behavior which affects his choice to perform in any activity (Supalak Chai-anan, 1997).

Research Methodology

1. Population and the sample selection are Tourists in Ayothaya Floating Market, Phra Nakhon Sri Ayutthaya province 384 people by accidental selection method with a simple sampling method.

2. The instruments used in this research were questionnaire and interview information which has general information for tourists who came to travel in Ayothaya Floating Market is divided into 4 parts as follows: 1) General information about respondents. 2) Information about tourism behavior resulting from tourist satisfaction. 3) Information about tourist satisfaction with the components of the logistics system for tourism. 4) Other suggestions.

3. In this research, the researcher has compiled data from data sources as follows: 1) Primary data from the survey questionnaire from tourists in Ayothaya Floating Market, Phra Nakhon Sri Ayutthaya province. 2) Secondary data obtained from researches from journals, research articles related from various government agencies, including from various websites.

4. Data Processing, the researcher will investigate all issues and queries that have been selected to complete a questionnaire to 384 samples and analyzed using computer software.

5. Data analysis and statistics will use are percentage (Percentage), score average (Mean), standard deviation (S.D.), t-test, and F-test by using one-way ANOVA defining the significance level at 0.05.

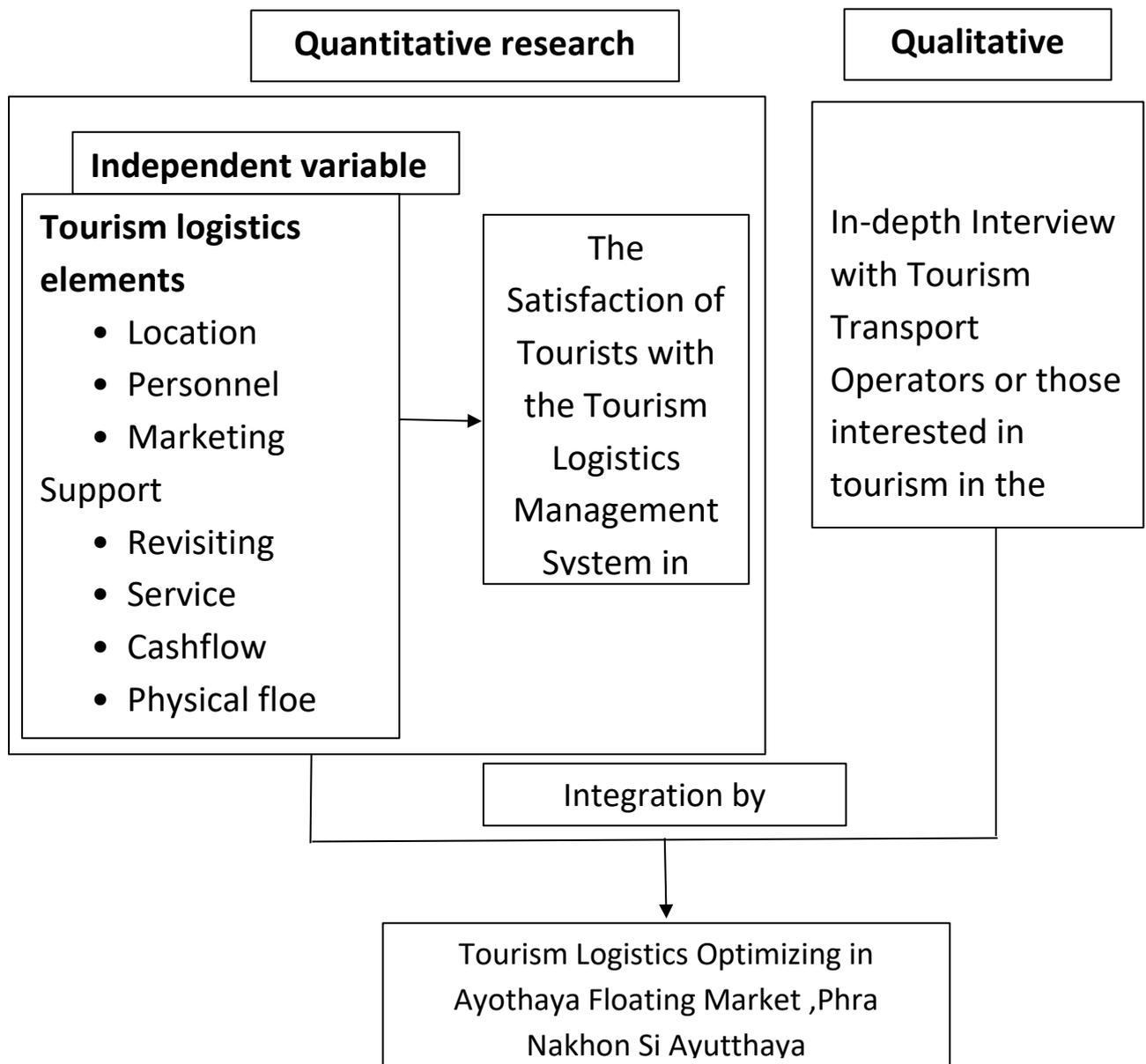


Table 1 : The conceptual framework of the study

Expected Benefits

1. We can bring logistics optimization factors that satisfy tourists developing better until there is the potential to attract more tourists to visit the Ayothaya floating market.
2. Guidelines for logistics optimization for the readiness development to accommodate tourists in Ayothaya Floating Market, Phra Nakhon Si Ayutthaya.
3. The data studied will be able to become a database for the public and private sectors to develop entrepreneurs effectively. It is also a way to promote more new entrepreneurs.

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SUPPLY CHAIN MANAGEMENT AND BUSINESS COMPETENCY OF AIRPORTS OF THAILAND PUBLIC COMPANY LIMITED (AOT)

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Abstract

The current study aims to investigate the variables affecting the business competency of Airports of Thailand Public Company Limited (AOT) as well as to compare the company's business competency before and after its business revolution through the application of mixed method study (i.e. a qualitative study and an experimental study). The participants of the qualitative study were purposively selected from board committees, heads of departments, and operational officers working for 6 sub-companies of AOT. There were 3 participants selected from each company, and the total participants of the qualitative study were 18 AOT staff. For the participants of the experimental study, they were 36 operational officers from 6 sub-companies of AOT, and they participated in the study based on the volunteering basis. The 36 participants were randomly divided into 18 participants in the control group and 18 participants in the experimental group. The data were collected through the in-depth interview and the training course about supply chain management. The collected data were analyzed using the Data Organization, F test, Two-way repeated measure ANOVA, One-way repeated measure ANOVA, Three-factor mixed ANOVA, and Post Hoc test.

Keywords : Investigate the variables affecting the business competency of Airports of Thailand Public Company Limited (AOT)

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Introduction

The air transport industry provides significant impacts on the social and economic development of Thailand. According to the country's annual revenue report, the air transport sector is responsible for 1.5% of the country's Gross Domestic Product (GDP) as well as 7.5% of the GDP in the tourist and services sector. In addition to national income, the air transport industry also increases the country's employment rates by offering 393,000 positions in the air transport and services industry. This employment rate accounts for adding the value to the national labor cost about 5.8 % of GDP (Office of the National Economic and Social Development Council, March 2013). As Thailand has been regarded as one of the most popular tourist destinations in the world, there are many international flights with cargoes coming to Thailand throughout the year. For this reason, Thailand can gain more opportunity in term of logistics administration and performance. There are also several airports located in many tourist cities apart from the two main airports (i.e. Suvarnabhumi Airport and Don Mueang International Airport), and all of these airports are well recognized by the world leading airlines.

According to air transport statistic during the past 10 years (2010-2019), the number of airline passengers visiting Thailand have been continuously increasing since 2010. The Compound Annual Growth Rate (CAGR) from 2010-2019 is 11.38% classified into 10.77% for international passengers and 12.13% for domestic passengers. The annual growth rate, however, has been decreasing since 2016, especially in 2019. The total number of airline passengers in 2019 is 165 million divided into 88.82 million international passengers and 76.25 million domestic passengers. When comparing the number of passengers in 2019 with that number in 2018, the statistic shows that the number of international passengers is increased by 7.16%; on the other hand, the number of domestic passengers is decreased by 3.02%, and the lower number is considered the first decline in the number of domestic passengers for the past 10 years. In addition to the number of airline passengers, the amount of air freight is also decreased in 2019. In 2019, there were 1.41 million tons of the international freight and this amount is decreased by 7.30% when compared to the previous year. For the domestic freight in 2019, there were 77,828 cargoes shipped domestically which is lower than the previous year by 17.97%. The relatively low number of the domestic freight is resulting from the decline in the number of the domestic flights, while the world economy crisis and the appreciation of Thai Baht lead to the significant decrease in the number of the international freight in 2019.

Airports, therefore, are considered one of the main factors required for fulfilling the development of air transportation. The airports also contribute to the enhancing in the full potential and high competitiveness of the country and they can make Thailand the hub of

Southeast Asia. Currently, the Airports of Thailand Public Company Limited (AOT) is responsible for managing and operating six main airports in Thailand including Don Mueang International Airport, Chaingmai International Airport, Chaingrai International Airport, Hat Yai International Airport, and Phuket International Airport. As the AOT is regarded as the leading Thai company owning the six main airports, the researchers conduct the in-depth interviews with 6 airport managers, 6 heads of departments, and 6 operational officers to obtain the data regarding the problems of organizational management, coordination with other organizations, IT system, and airport management.

Based on the above concerned problems, the researchers aim to investigate the variables and factors affecting the business operation efficiency of Airports of Thailand Public Company Limited (AOT). The findings of the study can be applied as the reference for the development of the curriculum entitled Supply Chain Management for Working Efficiency so that the objectives and outcomes can be successfully achieved.

Literature Review

The relationship between the business operation and the procurement process is considered one of the variables significantly affecting the working performance of Airports of Thailand Public Company Limited (AOT). The procurement process has some effects on security services, punctuality, and being business hub. According to Porter (2016), the study shows that the procurement process needs an effective managing plan so that the company's purchased materials and resources will be utilized and implemented for the working performance effectively. Voss Etal (2016) further explains that the procurement is resulted from the company's needs. That is the immediate needs for using the company's purchased resources and materials instantly. Christopher (2013) exerts that it is necessary that the procurement process needs to be conducted along with the application of effective IT operation system so that a company will receive the ordered materials faster. Also, Lambert and Cooper (2012) indicate that the orders resulting from the company's needs should be considered, and the needs can be either immediate needs or delayed needs.

Based on the aforementioned reviews, it can be concluded that the procurement process significantly effects working performance, punctuality, product quality, and immediate response, and all of these can create the company's trustfulness.

The relationship between the business operation and the services performance is regarded as one of the important variables affecting the working performance of Airports of Thailand Public Company Limited (AOT). The IT capability provides significant impacts on the working performance of AOT in term of the company's services performance, security, punctuality, and being hub. Several scholars like Spinger (2015) conclude that the working management is associated with the whole IT system of the organization. According to Rohde

(2015), the working management of the company has to have the connection with IT system such as security system and connecting to hubs.

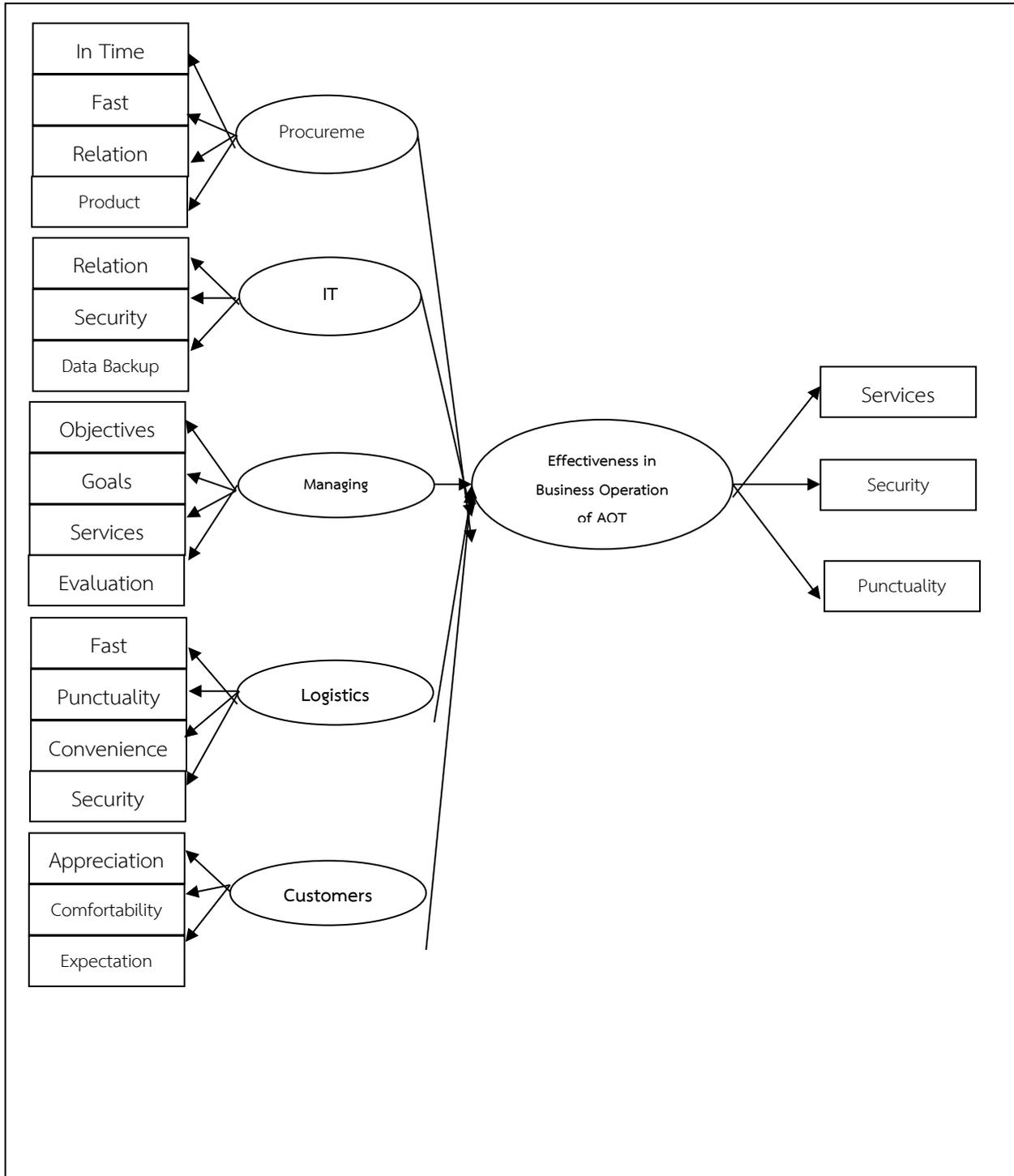
The relationship among variables (i.e. services performance, security, punctuality, and management system) affects the effectiveness in business operation of Airports of Thailand Public Company Limited (AOT) in term of the company's services performance, security, and punctuality.

The American Administration Institute (2018) expresses that the planning system is regarded as the allocation of the company's resources in order to encourage employees to achieve the same ultimate goal. The evaluation of the company's working performance is also considered essential instrument for the company's plan for creating customers' satisfaction towards the services. The security plan is another dimension that the company needs to consider so as to provide reliability and comfortability to customers. Apart from the punctuality, the management system for providing services on time is also considered an important factor leading to making the organization being a business hub. The readiness for decision making and being evaluated is significant as well. Anthony (2015) indicates that to make the company plans, the company should make a prediction about the customers' needs. These needs might be services security, clear plan, and the evaluation of security.

Based on the relationship among variables including services performance, security, punctuality, and being a business hub, the logistics capability affects the effectiveness in business operation of Airports of Thailand Public Company Limited (AOT) in term of the company's services performance, security, punctuality, and being a business hub. Teff Adams (2017) explains that the logistics system within the organization is important because it can make the working procedures in the organization faster. That is products and materials can be delivered to the destination within timeline (Just in Time). Normally, the products and materials should be stored at the center and then they should be shipped to each destination. By doing this, it will be more convenient and faster for the company's logistic system.

With reference to the relationship among variables including services performance, security, punctuality, and being a business hub, customers affect the effectiveness in business operation of Airports of Thailand Public Company Limited (AOT) in term of the company's services performance, security, and punctuality. The company's success depends on how the company provides services to customers in order to receive customers' satisfaction. According to Horowitz (2013), the quality of services performances leads to customers' satisfaction.

The framework of the current study is developed based on the concept of the integration of supply chain management to the business operation of Airports of Thailand Public Company Limited (AOT)



staff working at Suvarnabhumi Airport, Don Mueang International Airport, Chaingmai International Airport, Chaingrai International Airport, Hat Yai International Airport, and Phuket International Airport through the application of qualitative study and experimental study.

The researchers conduct the study according to the following research methods:

1. Qualitative Data Analysis

2. Quantitative Data Analysis

1 Qualitative Data Analysis

1.1 Population and Participants

The participants of the qualitative study are the officers working at AOT main 6 airports. They are considered the key informants provide important information about their working experiences at AOT.

1.2 Subject Selection

The 18 participants of the qualitative study are purposively selected from board committees, heads of departments, and operational officers working at the six main airports belonging to Airports of Thailand Public Company Limited (AOT).

1.3. Research Instrument

The main instrument utilized in the present study is interview questions and observations during the in-depth interview sessions.

1.4 Review of Literature and Related Studies

The documentation of theories and previous studies related to the business operation of Airports of Thailand Public Company Limited (AOT) is conducted prior the actual study. The interviews using the guided questions related to the research objectives also conducted in advanced.

1.5 Data Verification

The current study employs the Triangulation of Data, Investigator Triangulation, and Method Triangulation to verify the validity of the collected data.

1.6. Data Analysis, Data Organization and Data Presentation

The data analysis, data organization and data presentation are applied in order to summarize, conclude, and interpret the obtained data and achieve the conclusion of the study.

2. Quantitative Data Analysis

2.1 Population and Participants

The participants of the quantitative study are the officers working at AOT main 6 airports. They are selected from board committees, heads of departments, and operational officers working at the six main airports belonging to Airports of Thailand Public Company Limited (AOT).

2.2. Subject Selection

The 18 participants of the quantitative study are selected based on the volunteer basis. There are 36 participants divided into 18 participants in the experimental group and 18 participants in the control group.

2.3 Quantitative Research Design

The researchers design the research methods into two main types as follows:

For the training program for effective business operation, the researchers utilize Randomized Pretest-Posttest Control Group Design (Creswell, 2003: 170 as cited in Thanawat Phamornpornanan. 2008: 76) as follows:

Table 3.1 Research Design (Randomized Pretest-Posttest Control Group)

Group	Pretest	Treatment	Posttest
ER	T1	X1	T2
CR	T1	-	T2

E: Experimental Group

C: Control Group

R: Random Assignments

T1: Pretest

T2: Posttest

X1: Treatment

2.3 Research Instrument

The main instrument of the quantitative study is the training program for effective business operation

2.4 Data Collection and Data Analysis

The pretest score and posttest score are collected and calculated to mean scores for comparison. The comparison of the mean scores between the control group and the experimental group is conducted and analyzed through the application of F – test, Two way repeated measure ANOVA, One way repeated measure ANOVA, The Three – factor mixed ANOVA, One between and two within design, Post Hoc test.

3. Evaluation

Statistical analysis of the ability to conduct business by training program. Statistical analysis of content validity using the conformity index formula (Item - objective congruence). (Booncherd Pinyoanantapong. 2011: 179)

$$IOC = \frac{\sum R}{N}$$

IOC of the Conformity Index during Training Program and operational definition.

R of the opinion of a qualified person

$\sum R$ of the sum of the opinion scores of all experts

N of the number of expert

- Comparative analysis of overall business mean values before experiment, after experiment and after follow-up of experimental and control groups using F-test statistic (Two way repeated measure ANOVA) (Steven.2013: 198)

- Comparative analysis of the two component business mean values before experimentation, after trial and after follow-up. Using the F-test statistical analysis of the three-factor mixed ANOVA, one between and two within design (Steven.2013: 210).

- A comparative analysis of the mean of overall business operations individually by using F - test analyzing one-way variance (One-way repeated measure ANOVA) (Steven.2013: 210).

- Comparative analysis of post-hoc testing of overall business mean and individual components before, after, and after the Bonferroni method (Steven.2013: 210).

4 Result

Result of the study were as Follows :

1.The Business Compretency Training intregation program consisted of Three Staged : The witial stage the working stage and the ending stage. The Training intregation theories and techniques and also theories techniques were applied to develop the Business

2.Statistically significant difference in Business Competency score of the experimental group existed before and the after participatina in the Training Program at .05 level The results of this study indicated that the training program was key factor in increasing positive change in the Business competency the airport of Thailand Pliblic company Limited. No significant Differences in Business competency scores of the airports of Thailand Publics company Limited in the Expeerimental group existed after particidated in the Training Program and after the follow-up Period.

3.Statistically Significant Difference in Business competency Score of the experimental Group and the control Group existed Before and after the exferimental and after the follow-up period at .05 level

Discussion

1. Suggestions for applying research results to a training program for business ability and applicable as appropriate as follows:

1.1 Training programs for the ability to operate business. Those who will apply it should have a detailed study of the components of the business operation and should study and understand the training theory and techniques. Including getting good practice in order to enhance the training experience before applying for business development.

2. Suggestions for the next research

2.1 Post-trial performance should be followed up every 3 months or 6 months to determine the effectiveness of the training program if it continues to affect the development of business ability.

2.2 This training program should be applied to employees in other groups, employees in companies with service or production departments that rely on business. The format, content and methods of the training may be adapted to suit the objectives of the training as well as the nature of the trainees.

2.3 Should study and develop factors related to business ability, such as attitude towards work and ability to face obstacles, etc.

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IMPROVING PURCHASING EFFICIENCY UNDER THE COVID-19 SCENARIO

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Abstract

The objective of this article is to 1) to study the variables affecting the efficiency of purchasing management under the COVID-19 scenario; 2) to study the guidelines for improving the efficiency of purchasing management under the COVID-19 scenario. Presenting contents of purchasing management efficiency measures under the COVID-19 scenario will focus on measurement in 3 areas, where 1. is the effectiveness, will focus on measuring the quality of work To create an impression on the customer on the quality of the product or service that he receives. Side 2. cost. It will focus on cost measurement of logistics activities. By the activity base cost method to propose a cost management approach and 3. aspect of time will focus on measuring response time. The good procurement management must be able to respond to the uncertainty of the market and the changing customer demand as the situation arises today. To guide businesses to develop in order to increase competitiveness throughout the supply chain.

Keywords : Efficiency, Purchasing, Covid-19

Introduction

From the situation of the COVID-19 outbreak this has resulted in changes in almost every business supply chain. Businesses are trying to adapt to survive and prepare strategies to cope with the changes that have resulted from the outbreak. Organizations in the economy should be vigilant because the old purchasing model has proven that it is no longer reusable. Past crises may be limited to certain countries or regions. This means businesses can turn to suppliers elsewhere. But this outbreak is different as the global impact is affecting B2B and B2C services. Deepening the main supply chain of the organization

New changes challenging procurement departments is finding ways to work with suppliers around the world who are unable to work offsite. Work remotely with your team or work by staying at home. Business organizations focus on the limited resource management for maximum efficiency. Establishing a systematic action plan in accordance with the current situation will result in the business competing all the time one way to help compete in business is to create reliable self-service workflows that can be operated securely and safely from anywhere. By increasing the efficiency of work for people To support working with automation and AI effectively

Therefore, procurement is one of the most important activities in logistics and supply chain. It is an important link in the supply chain. Can influence the overall success of the organization in many organizations have realized the importance of procurement and have established departments to perform various tasks efficiently. More and more companies are trying to transition from competitive relationships to more partner-like or allied relationships. A mutual benefit-oriented relationship Although both sides have to generate profits to survive, there are various sectors that can work together to reduce costs out of the supply chain (Promphatsorn Poonyaban and Warin Wongmanee, 2017)

Research objectives

1. To study the variables affecting the efficiency of purchasing management under the COVID-19 scenario
- 2 To study the guidelines for improving the efficiency of purchasing management under the COVID-19 scenario

Author Guideline

This article explores the concept of logistics management. Optimization and purchasing activities under the COVID-19 scenario

1. Logistics management concepts

Logistics management (Stock & Lambert, 2001) is the process of moving goods and services in both the manufacturing and service sectors. In the service sector, there are

government sectors, hospitals, banks, wholesale and retail trade. Which must consider the final management, eliminate the transformation, the logistics management has a higher scope of responsibility which is not only related to the production process but the logistics activities will be relevant in every activity.

Logistic management, it is an element of supply chain management in planning. Storage control Operation Procurement activities Moving collection and the distribution of raw materials, finished product services Efficiency and effectiveness There is coordination in the operation of information linking. Each step systematically under the appropriate total cost from the beginning to the end of consumption by taking into account the satisfaction and needs of customers is important.

In summary, logistics management refers to a storage control plan. And then proceed with the procurement operations and distributing raw materials, finished products efficiently and a systematic procedure from the beginning of work until the end of work.

2. Purchasing concept

Purchasing and Sourcing It is one of the very important activities of logistics management. Which in good procurement management Will focus on meeting the needs of customers. In purchasing and sourcing, there must be a process in which to decide on raw materials and select quality suppliers at acceptable prices. More importantly, there must be a system used to check the quality of raw materials and suppliers. This will be the basis for measuring the total cost of logistics. Reduce the total cost to meet the objectives of logistics management. The body of knowledge in matters of procurement and procurement is compiled from information sources, information systems And a range of interesting books aimed at explaining the fundamentals of effective purchasing management.

2.1 The meaning of purchasing

Lenders, et al. (2006) described the implications of procurement as a need study. Find a place to buy and select a supplier. Negotiate the price And set conditions to meet the needs Including tracking shipping In order to receive the product on time And follow up payment for goods Or service to the delivery person

2.2 Goals of procurement

In operations, procurement of raw materials, spare parts, machinery Including essential materials related to production To support the production process There are 7 goals and practices that are at the heart of the procurement work, known as 7 R's (Chitpong Ayasanond, 2018)

2.2.1 Buy products that meet the quality requirements. According to the requirements and qualifications The requirements of the various departments of the organization or the quality obtained from the use as desired. In addition, the procurement

must also be involved in helping to determine the required qualifications. To be able to acquire and compare properties accurately

2.2.2 Buying the product in quantity According to the need for the right amount of quantity The quantity supplied must match the demand quantity. Not lacking more than To reduce the problems and expenses that will arise from the purchase.

2.2.3 Buy products when you want. Set the time for delivery, where the steps are critical to activities in the manufacturing process. Delayed deliveries may result in processing disruption. Therefore, purchasing and sourcing are required to specify the exact delivery time.

2.2.4 Buy products with fair and reasonable price. Buying cheap things is just a factor. The basics are obvious. However, many factors that affect operating costs must be taken into account, such as quality, cost-effectiveness of raw materials. Product etc.

2.2.5 Delivery to the desired location. Specify the correct delivery location in order to obtain quality materials and products. Complete quantity Time that meets the needs

2.2.6 Buy products from reliable sources. Check the seller's background to determine its reliability.

2.2.7 Quality of service is reliable. Providing a service that can meet or exceed expectations. That causes satisfaction from the purchase of raw materials from the seller.

2.3 Strategic purchasing

Parniangtong (2009) defines strategic purchasing as "the process of developing material distribution with the lowest total cost, not just the lowest purchase price".

From this scholar's definition, it can be assumed that strategic procurement is an entity's procurement that builds a relationship with its partners. With the goal of achieving the organization's strategic objectives From this idea, it can be seen that strategic purchasing is not only focused on low-cost acquisition. Only good quality and delivery But also covers Quality management Determination of process capability in the procurement process; Activities management Design ability Develop products and reduce partner costs.

3. Optimization ideas

Simon (1960) gave an idea of efficiency: that is, to determine which work will be most efficient, look at the relationship between input and output. This view means Productivity minus the input factor, and if it is the governmental organization, the government is positive the satisfaction of the service recipients. Which may be written as The formula is as follows.

$$E = (O-I) + S$$

E = Efficiency is the efficiency of the work.

O = Output is the output or work that has been received.

I = Input is the input factor or resource.

S = Satisfaction is the satisfaction of clients.

From the above In conclusion, the meaning can mean that the work is accomplished. By saving time Cost and time, energy, operational factors refer to the results obtained from operations such as skills, knowledge, attitudes, expertise.

Noppadol Suwansup and Montalee Sasananthan (2014) have said that Procurement Concept and Purchasing Efficiency Procurement is a strategy that more and more organizations are paying attention. Because of efficient purchasing Can help reduce costs And increase the competitiveness of the organization. The present purchasing concept is different from the past purchasing concept. In the olden days, the purchasing person would adhere to the principle of getting the product or service delivered on time and at a reasonable price which is understood to mean lowest price but the lowest prices buyers are looking for may increase the cost burden that is invisible to the organization While current procurement is focused on reducing total costs. Adding Value to Meeting Customer Needs And building long term supplier relationships However, whether it is a traditional purchasing concept or modern purchasing ideas what organizations need is effective purchasing, and such effective purchasing must be measurable. Measuring purchasing efficiency Indicators can be separated into 4 groups: cost indicators, quality indicators, quantity indicators and indicators in the field of delivery. In which indicators on each side the details are as follows; Cost indicators Make a measure of the price of the product that has been reduced by negotiation and the competition of the supplier. The cost differs from the cooperation in the supplier's activities. The cost difference from the reduction of the procurement workflow measures the cost of shipping and inventory keeping costs Quality indicators Perform measurements of products that are detected as substandard. The level of acceptance in terms of quality from buyers. Compliant level of buyer's compliance Volume indicators Make a measurement of the number Delivering products that do not match the order quantity or does not meet the requirements Measure out-of-stock inventory resulting from purchasing. Make measurements over the time it takes for delivery. Accuracy in terms of timing and place of delivery

From the literature review, it was found that Performance indicators can be separated into 4 groups including cost indicators. Quality indicators Number indicators And indicators in terms of delivery time In which indicators on each side The details are as follows. 1. Cost indicators Measured by the price of the product being negotiated and the competition of the supplier lower costs due to reduced procurement work processes and the cost of keeping inventory. 2. Quality indicators, Measure results from products detected as non-standard. The level of acceptance in terms of quality from buyers. Compliant level of buyer's compliance 3. Volume indicators Measured by the number of deliveries that have not met the order or the demand. Measure the outage or excess of inventory as a result of purchasing. Measure the results of the time it takes to deliver. Accuracy in terms of timing and place of delivery

Conceptual Framework

Independent Variables		Dependent Variables
1. Planning in action 2. Control 3. Data management 4. Storage	Comment level, purchasing optimization	<u>Optimization</u> <ul style="list-style-type: none"> ● Quality of work ● Cost management ● Response time

Table 1 : The Conceptual Framework of the Study

5Conclusion

According to the study, it was found that improving purchasing efficiency under the COVID-19 situation. Will focus on measurement in 3 areas, where 1 is the effectiveness will focus on measuring the quality of work. To create an impression on the customer on the quality of the product or service he receives. Side 2, cost. It will focus on cost measurement of logistics activities. By the activity base cost method to propose a cost management approach and a third aspect of time will focus on measuring response time. By developing procurement operations must develop a pattern as well as adapting to changing suppliers and changing customer needs Increasing purchasing efficiency can help mitigate any impact that is currently occurring. Once a business recognizes the deficiencies and then uses information to improve their operations more efficiently and effectively.

In-text Citation

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SERVICE QUALITY OF E-COMMERCE FREIGHT FORWARDERS IN THE NEW ECONOMY: ROLE OF VALUE RECOGNITION

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Abstract

The objectives of this research are 1) To study the essential elements of the value of e-commerce merchandise transportation in the new economy. 2. To find out the value of transportation services and the perception of service value that influences the success of sustainable e-commerce logistics service. 3. To test the model of e-commerce merchandise transportation in the new economy to the creative way, social and environmental context that influences the success of sustainable e-commerce merchandise service in Thailand. Using mix method, both qualitative research and quantitative research. The qualitative data were studied through in-depth interviews with executives in the transportation business in Thailand who had direct experience in the transportation business. To use the data to support the questionnaire to build the model for quantitative research. and bring it to the discussion of the research results to be more credible. The structural equation model will be use to test the data. The result of the will be discuss and conclude to find the contribution of the research.

Keywords : Service Quality, E- commerce, Freight Forwarders Value Recognition

Background and importance of the problem.

In the new economy, the world has changed business models, coming to an era driven by innovation in communication technology and highly efficient information management systems. As a result, people's lifestyles are more comfortable. For example, wanting to know product information in order to make a purchase decision, then they would immediately find the information online. Or want to buy products, they can order online immediately. This is the way of electronic commerce (e-commerce) that is growing much today, with a domestic market value of approximately 748,000 million baht, ranking number 1 in the ASEAN region. The market has grown an average of 20-30% in the past 2017-2019, expecting more opportunities for growth in the future. (Economic base, 2020) This business is also a good response to the lifestyle of people in an age who must be careful about the health problems of the COVID '19 situation. Which there is no certainty when the situation will end. Which may become a habit of people. With 80% growth compared to March of 2019 (Krungthep Business, 2020)

The growth of e-commerce business coupled with the convenience of people today and the coronavirus situation '19 has created a freight forwarding business. That has a service model to support the growth of a huge market. And create maximum satisfaction for customers. Shipping is considered to be an important front line in customer service value. If customers are not impressed. It may turn to other online store services (Thanawat Malabupha, 2017). Transportation service transactions are operations aimed at meeting customer needs. (responsiveness) reliability (reliability), security and cost efficiency by integrating the relevant departments from Raw material suppliers, manufacturers, wholesalers, retailers, customers, warehouses, shippers and other stakeholders, through communication through computers and the Internet online to plan ahead. Then, the movement of products in every channel is determined to each department.

From the origin to the destination, to be punctual for production. Warehouse management. Distribution and transportation to the customer to give customers the most satisfaction (Thapana Boonla and Nonglak Nimitphuwadon, 2012, page 32)

Logistics or transportation business has become an important business for the overall economic development of the country. It is a mechanism for balancing Demand and Supply around the world. Beyond the basic features of the product. Consumers today also value a convenient ordering process, proper and efficient distribution of products, which becomes a measure of business performance. Response to customer needs in this respect are therefore defined as a logistics and supply chain management strategy. To create a competitive advantage in business (Pongsak Pibulsak, 2018) where economic competition in this globalized era. Logistics activities are a key strategy in the transportation of goods, which is an important tool in driving goods to the customer. And is an important factor in determining product prices (Thaweesak Theppitak, 2009 page 16), currently found that the logistics

business in 2018 is worth more than 314,200 million baht, divided into land transportation business the value of approximately 147.3 billion baht, with an expansion rate of approximately 7% from 2017, the warehouse business has a value of 76,700 million baht, with an expansion rate of approximately 7% from 2017. International cargo (Freight Forwarder) valued at approximately 57,700 million baht, with an expansion rate of approximately 2.1% from 2017, and the postal and delivery business. The value is approximately 31,300 million baht, with an expansion rate of approximately 11.3 percent from 2017, according to Figure 1.1 (Kasikorn Research Center, 2017)

research objectives

From the importance of the problem and such research questions researcher set the purpose of this research.

1. To discover the essential elements of the value of e-commerce merchandise transportation in the new economy.
2. To find the value of transportation services and the perception of service value that influences the success of sustainable e-commerce logistics service
3. To find the model, the value of e-commerce goods transportation in the new economy in the creative, social and environmental context that influences the success of sustainable e-commerce merchandise service.

Research scope

In this research to obtain research results covering research objectives in the subject value of e-commerce goods transportation services in the new economic era In the creative, social and environmental context influencing the success of e-commerce logistics services as well as the scope of presenting the research results the researcher then defines scope of the research as follows.

Scope of content

The scope of the content will cover topics about Value of e-commerce goods transportation services in the new economy in the context of creativity, society and environment this study is based on relevant research, along with in-depth interviews with logistics business executives on creative freight forwarding issues. Social development and environmental care In addition, it also studies content on how to receive a service value influenced by the service value of an e-commerce freight forwarder, and content about the success of the e-commerce logistics service that were studied from the past research practices both in the country and abroad.

Variable scope

From literature review and related research according to the content scope It was found that there were cause variables, transfer variables, and effect variables that were important to form a business success based on the service value of land logistics service

providers, medium and small in the new economy each variable has a different element of the variable.

Casual variables were the quality of service of e-commerce carriers in the new economy, consisting of 1) personnel quality 2) information quality 3) delivery management quality 4) Quality of distribution.

Transfer variables include the perceived value from the service of e-commerce freight forwarders in the new economy. Perception of emotional value And perception of social value.

Effect variables include the business success of logistics, commercial goods, e-commerce in the new economy, which includes economic, social and environmental aspects.

Population scope

The population for this research are people who have used the internet and ordered online consumer products or e-commerce in Bangkok. 6,685,181 people, divided into age group 6-14 years 1.3%, range 15-24 years 25.7%, range 25 -34 years 33.1%, range 35 -49 years old 31 percent and over 50 years old, 8.9 percent, derived from the classification of who previously booked or purchased products via the National Statistical Office in 2018 (National Statistical Office, 2019 page 19).

Benefits expected from the research

This research will be useful for both academics and entrepreneurs in the context of logistics management as follows:

Academic benefits

1. Get a new model e-commerce freight forwarders can use indicators of service quality (Perceived Value) as a guideline for enhancing business performance (Business Performance) of customers, provide e-commerce product transportation service.

2. The results of this study will be of academic and professional benefit, by expanding knowledge and affirmation in promoting business success, that have been influenced by the quality of service and the recognition of the value of e-commerce freight forwarders in Thailand. This is because researchers have developed a conceptual framework resulting from a synthesis of related theories. This research builds on the factors that are appropriate for the business operations of road-container carriers in Thailand, the results of this research also provide empirical evidence supporting the concept of service quality and recognition of value. The impact of business performance (Business Performance) from the design of research methods using Structure Equation Model (SEM) is a statistical technique for testing and evaluating the relationship of variables. This makes it possible to accurately answer complex research questions.

Practical benefit

The findings will provide the organization with useful information. Management considers the relationship of service performance as relevant to service quality and perceived value. In applying to improve the efficiency of the organization's operations. It can also be used as a guideline in formulating corporate strategies and business strategies to enhance business success.

Policy benefits

In the government sector such as the Department of Land Transport Department of Business Development Department of Industrial Promotion And the Department of Primary Industries and Mines. The results of this study can be used as a guideline for organizing a training program on the service provision of e-commerce freight forwarders.

Theories and concepts of service quality Perception of value and business success

Service quality It is an idea that has been applied as a tool to measure service performance and as a way to improve operational efficiency. Quality of Service from the perspective of Ross, Goetsch & Davis. (1997, p. 11-13), the quality of service It is a control for the quality of service. This is different from the quality of the product or product because the method of controlling the service quality is difficult, because the service has little control or management, but at the same time, they are very important and often impossible to make predictions because they depend on a number of factors, including service provider behavior (Behavior of the Delivery Person), image of the organization's reputation (Image of the Organization) by service recipients will be inspected. From the start of the service to the end of the service by serving will be even better. If the service recipient evaluates the service at that time from the perspective of such scholars. The study of service quality is one of the important issues, and is an important qualitative perspective that deserves attention.

Gronroos (1982); Smith & Houston (1982); Parasuraman et al. (1988) defined service quality as the difference between expectation and delivery. (Expectation-WHAT THEY WANT) and perception (Perception-WHAT THEY GET) while Lewis & Bloom (1983) defines the quality of service. that it is a measure of the level of service delivered by the service provider to the customer or the recipient as to how well they meet their needs.

Gronroos (1990, p. 17) defined the quality of service as being classified into two aspects: Technical Quality with respect to the outcome, or what the service recipient receives from that service they can be measured as if they were evaluated product quality, functional quality is involved in the assessment process, as Crosby (1988, p.15) states that the quality of service or "Service Quality" is a concept that holds the principle of operating a service without flaws, and meet the needs of service providers that able to know the needs of customers or service recipients as well

Service quality is the concept and execution of the client's assessment by comparing the expected service (Expectation Service) with the perception service from the service provider. If the service provider is able to provide services that meet the needs of the

recipient or create a service that is higher than the client expected. This will result in the aforementioned services resulting in quality of service which will ultimately make the recipients satisfied from the services received. (Parasuraman, Ziethaml & Berry. 1988, p. 42; 1990, p. 18; Fitzsimmons & Fitzsimmons, 2004, p.78; Kotler & Anderson, 1987, p. 102)

Parasuraman, Ziethaml & Berry (1985) also pointed out that service quality It is a service that is more than or meets the expectations of the recipient. This is a matter of assessing or making comments about service excellence in an overall manner. In the perception dimension the research results of this group of scholars see that assessment of service quality based on consumer perceptions is in the form of comparing attitudes towards expected services and perceived service as they are consistent. Providing quality service means services that consistently meet the expectations of the recipient or the consumer, therefore, the satisfaction of the service, therefore, there is a direct relationship with the fulfillment of expectations or the failure to meet the expectations (Confirm or Disconfirm Expectation) of the consumer, their influence on organizational excellence and the service provided by the organization (Bitner & Hubbert, 1994) is more variable than product. It has an important intangible feature.

The quality of service is derived from the perceived realization minus the expectations that one would expect from that service. If the perception of the service received is less than expected Will make the recipient view the service quality as negative On the contrary, if the recipient perceives that the actual service is greater than what he expects, he or she is aware that the service is not of the desired quality. The quality of service is either a positive or a quality of service (Schmenner, 1995). The concept of a product or service that a potential customer buys. Can and may be assessed before he or she chooses to consume that product or service (Lovelock, 1996) is relevant to the client's expectations for quality after they have obtained information about the service and their needs. To use that service this includes assessing and choosing to use the service (Zineldin, 1996) and a diagnostic decision on service excellence (Wisher & Corney, 2001).

Weeraphong Chalermjirarat (2543) Service quality is the consistency of the needs of the customer or service recipient Or the level of ability to provide services that meet the needs of customers or service recipients, which makes customers or service recipients satisfied from the service received. Somwongphongsathaporn (2007) is described

Population and sample

For consistency with research in depth which the researcher studied and defined the sample population into two parts: the sample population of the qualitative study, and sample population of quantitative research according to the specified research model. Population is 6,685,181 people who have used the internet and ordered online consumer products or e-commerce in Bangkok, divided into 6-14 years old age group. 1.3, adolescent

group aged 15-24 years 25.7%, working-age group 25 -34 years old 33.1%, adult group aged 35 -49 years 31% and elderly group aged 50 years and over. 8.9 percent, which is derived from the classification of people who have previously booked or purchased products via the National Statistical Office in 2018 (National Statistical Office, 2019 page 19)

Research instruments

There are research studies including qualitative studies with in-depth interviews with small and medium business entrepreneurs. To bring information to consider and discuss research results combined with approximate research (quantitative research) is as follows:

Questionnaire

It is an approximate research tool. The questionnaire will examine the content validity of the questions with IOC values greater than 0.50 (Laddawan Petchroj and Atchara Chamniprasat 2004, pages 145-146). Construct validity) by using second order confirmation element analysis statistics (confirmatory factor analysis second order: CFA) and checks for confidence or validity (reliability) with a correlation coefficient of (Cronbach's Alpha Coefficient) greater than 0.80 (Kalaya Vanich Banacha, 2010 pages 34-36).

In-depth interviews

In-depth interviews by interviewing transport business operators In order to use the obtained information to be used as a research tool The researcher will conduct interviews with five transport business executives on the issue of service value of online freight forwarders or e-commerce e-commerce.

conclude

Subject research "Service quality of e-commerce service providers in the new economy era In the context of creativity, society and environment "is a survey research using questionnaires as a tool to collect data from population samples who have previously used the Internet and order consumer products via online or e-commerce. The e-commerce class had a sample size of 365 samples. Questionnaires were used as research tools. From in-depth interviews with the transport business executives. In order to use the data obtained in the construction of questionnaires to ask for opinions from the sample group with a comprehensive content with research topics.

The statistics used in this data analysis the researcher analyzed the data obtained from the questionnaire. By using statistical testing at 95% confidence level, using statistics such as descriptive statistic, questionnaire examination for construct validity by using Exploratory Factor Analysis (EFA), confirmation element analysis. (Confirmatory Factor Analysis (CFA), Structural Equation Modeling (SEM), Modeling (SEM), and qualitative research data analysis with content analysis).

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INCREASING EFFICIENCY OF PART PURCHASING PROCESS

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Abstract

Increasing the efficiency of parts purchasing process that has been continuously developed. In the whole business, the products included the parts or materials are around 70-80% in each business need to have the appropriate process for every process from upstream to downstream and the lowest cost of production cost than complete with the competitor. The good planning, service and make a good purchasing process, Planning is the first and important process to get the next process smoothly from purchasing, production, and selling to customers. Also, the purchasing process has to shorten lead time and procurement can procure the part for many areas to get a competitive price. To increase the efficiency of parts purchasing that business will get the parts with the cheaper price, good quality, shorten leadtime and the customer can believe the business have a professional control which is helping the business to reduce the cost and competitive in the market.

Keywords : Efficiency, Purchasing, Process

Introduction

In the present day, doing business in various industries regardless of the business, purchasing activity is one of the most important supply chain activities and contributes to cost reduction, One of business is Air conditioner which is grow up very fast due to the global warming and need to use air-conditioner in the manufacturing industry and used both internally and externally. home, office, Industrial plants and many others to adjust the temperature in that area to create a feeling of comfort and being able to live, work and rest, at the same time, it has been developed to be used for keeping the temperature to store things, medicine, food, etc. to extend its life for a longer time. Thailand air conditioner industry is constantly evolving, from production to replace importing into production for export and is an important export product of Thailand and Thailand as the base for the production of air conditioners of the world's leading brands especially Japanese citizenship which is famous for its quality and advances in air conditioning technology as a result, Thailand can manufacture and export smart air conditioners. China mainly focuses on the market in air conditioners with standard technology this is because the Chinese brand is still considered a new brand in the world air conditioner market. This may contribute to the competitiveness of the smart air conditioner market in some markets especially in the developed market segment although Chinese manufacturers have the technology and are able to produce smart air conditioners with the same level of technology as other leading brands Like a Japanese brand Which reflects that all most people still

Problems with purchasing raw materials and high costs as well as long ordering time. For this reason, the researcher is interested in studying the enhancement of raw materials procurement of companies that make air conditioning to reduce the cost of raw materials and purchasing time to support the production line for better efficiency It also has the ability to compete effectively within China and neighboring countries.

Research Objective

1. To study Purchasing Strategies
2. To study the problem of Purchasing
3. To guide the development of Purchasing

Hypothesis

1. Planning affects the development of strategies to increase purchasing efficiency.
2. The provision of services affects the development of strategies to increase purchasing efficiency.
3. The ordering process affects the development of strategies to increase purchasing efficiency.
4. Procurement affects the development of strategies to increase purchasing efficiency.

Literature Review

Literature review included the Planning Concept, Purchasing Concept, increasing efficiency of purchasing, cost and time concept and concept of conviction.

1. Planning Concept, Planning means setting the desired goals and selecting the working method that will be implemented in order to achieve the goals of the organization. And there is a set of operational guidelines that must consider the readiness of the organization as well as various factors that can make the organization achieve its goals. Managers are required to formulate strategies for organizational success by deciding on the best ways to allocate and use resources to achieve organizational goals. Which has both short term and long term goals and Administrative Academic was give the definition

Fremont, Cass (E. Kast), and James (James) Rosenzweig (1970, p. 435-436) explain that planning is a process of deciding what to do in advance. However, objectives, policies, programs and practices are selected to achieve that objective.

Harold, Koontz, and Cyril, O'Donnell (1968, p.81) say planning is the decision in advance of what to do, how to do, when and who does it? Planning can bridge the gap from the present to the future as needed and make things happen as needed.

Herbert, A.Simon, Donal, Smithburg, and Victor, A.Thompson (1961), p. 423-442) Explain that planning is an activity that relates to future proposals. In regard to the evaluation of various proposals That have to choose from and about different ways That must be followed to accomplish that particular proposal Planning is a matter of thinking that is rational and controlled to act.

Hicks (H.G. Hicks) (1981, p. 248) explains that planning is the first administrative duty to be performed for a particular activity. To have a successful plan. Analysis is needed Historical figures Making current decisions and making future assessments

2. Purchasing Concept, In supply chain management it is important to have management in purchasing raw materials. Good quality to meet the changing needs of customers from an emphasis on price to be good quality by in purchasing and procurement has to have a process to use to decide on raw materials and decide on a supplier of raw materials quality at an acceptable price.

Weele (2005) describes the implications of purchasing as the management of an organization's external resources, comprised of products, services, capabilities and knowledge that play an important role in its operations. And manage the main activities (Primary Activities) and Support Activities (Support Activities) for maximum benefit.

Monczka, et al. (2005) identified the objectives of purchasing. Of the global purchasing agency It is more detailed than the original purchasing objectives. That only want to receive products and services as needed With the following objectives 1. Supporting operational needs 2. Manage the purchasing process efficiently and effectively. 3. Select,

develop and maintain the source of products. 4. Strengthen the relationship between agencies.

5. Support the goals and objectives of the organization. 6. Develop purchasing strategies to support corporate strategies Leenders, et al. (2006) noted the purchasing process: Purchasing is the process of communicating in order to obtain a product. And services that require With the following steps 1. Understanding of product requirements 2. Convert the demand for goods to be a condition for procurement. 3. Manage to find good sources of products with potential as desired. 4. Select the product source according to the terms of purchase. 5. Make purchase agreement and contract and make purchase order. 6. Follow up on the delivery of goods according to orders 7. Receive and inspect the product to be correct according to the terms and conditions 8. Proceed to pay for the products to the delivery person.

3. Increasing efficiencies of Purchasing, Purchasing Efficiency is a measure of the performance of purchasing, which has to be reasonable cost and reduced time.

Peterson & Plowman (1953) gave the meaning of the word Efficiency in business administration In a narrow sense that means Production cost reduction And the broad meaning Refers to the quality of being effective. And productivity and in business operations that are considered to have Highest efficiency It is to be able to produce a product or service in the desired quantity and quality that is appropriate and at minimal cost to account for existing financial situations and obligations. Therefore, the concept of business efficiency has five components: cost, quality, quantity and method of production.

Simon, Herbert A. (1960) has commented on efficiency: If you consider which work is most effective. Lets look at the relationship between inputs and yields. Therefore, according to this viewpoint, it means Output minus the input factor And if it is a governmental organization, the satisfaction of the service recipient Which can be written as a formula as follows

$E = (O-I) + S$ E = Efficiency is the efficiency of the work.

O = Output is the output or work that has been received.

I = Input is the input factor or resource.

S = Satisfaction is the satisfaction of clients.

Research Methodology

This research will be Mixed Method Research included the Quantitative Research and Qualitative Research

1. Quantitative Research

Population and Sample are the resource of air-condition factory qty 272 persons and those persons come from each department concern are planning, purchasing, store,

warehouse, accounting and financial. Using Taro Yamane's prepared table according to the recipe with the likelihood of error tolerance 0.05

Research instruments, Researcher use the questionnaires and distributed to the population and the questionnaires were both open and close ended questions included 3 parts the first is the personal data information of the respondents, second is the opinion of the planning, service, purchasing process and purchasing activity, the third is the recommend of the strategic.

Researcher was create the tool to collecting the data by study concepts and theories from academic papers, textbooks, websites, and related research of similar nature to bring information from various sources as a guideline to create a draft questionnaire and bring to advisor for 5 persons for review and recommendations including evaluate the results of the decision to find the index of item objective congruence (IOC) to Complete the questionnaire for research.

Data collection the researcher collection from Primary data is a preliminary data that the researcher has created by the researcher by using tools that are thought to be appropriate for data collection and The tool to be used for this research is a questionnaire to collect data from the study sample and secondary data for this section focuses on information that the researcher has collected from reliable and dependable sources such as textbooks and books written by experts and used. Widely distributed Various research papers related to the researcher's research, including collecting information from journals and academic publications both for both online and documented systems.

2. Qualitative Research

This research conducted qualitatively which will consist of the study process and Analyze data from various documents, research textbooks, related to case studies. And in-depth interview process of Purchasing experience 3-5 years for 10 persons and selection by purposive sampling using structured interviews to verify the findings obtained from the above quantitative research.

The information has been obtained, the researcher will analyze the data in this section to verify the results of the quantitative research obtained. Therefore, the researcher chose to use Analytic Induction. Interpretation generated a summary of the data gathered from 10 sets of in-depth interviews by experts. And is to consider the common nature of the information in order to reach a common conclusion Using reasons not focusing on numbers

The data analysis was a statistical computer analysis program. Descriptive statistics includes frequency, percentage, mean and standard deviation were applied

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CUSTOMER RELATIONSHIP MANAGEMENT AND CUSTOMER LOYALTY INFLUENCING SUPPLY CHAIN PERFORMANCE OF BEVERAGE MANUFACTURERS IN THAILAND

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Abstract

The objective of this research are: 1) to analyze the appropriate components of customer relationship management, customer loyalty and supply chain performance of beverage manufacturing businesses in Thailand. 2) To examine the influence on customer relationship management to customer loyalty. 3) To propose the model of customer relationship management and customer loyalty to enhance the supply chain Performance of Thai beverage manufacturing business. Survey research were used Questionnaires were collected from management samples of Thai beverage companies 290 people. In-depth interviews with 17 executives in the beverage manufacturing industry in order to bring the data obtained. By asking opinions of buyers of industrial raw materials that are packaged for distribution.

Data were analyzed from the Questionnaire. By statistical testing using a 95% confidence level, which used statistics, descriptive statistics, Analysis of Confirmatory Factor Analysis: CFA. Statistical analysis of Path Analysis to find the model Customer Relationship Management and Customer Loyalty Influencing Supply Chain performance of Beverage Manufacturers in Thailand. The statistics used were Structural Equation Model: SEM.

Keywords: Beverage production business, Customer relationship management, Customer loyalty, Supply chain performance.

Introduction.

Customer Relationship Management: CRM is an important approach in marketing operations. Because making customer lifetime value. This allows the company to reduce the cost of investing in public relations budget, starting to find new customers all the time, and use the remaining costs from here to better maintain a customer base. It is a measure of the value of the customer who is likely to become a customer with a supplier in the future. Because it will give the organization a higher rate of business growth. Create opportunities for businesses. (Phrapratanporn and Wangkananon, 2015, pp.139-140) Affect profits and create a competitive advantage. (Auka, 2012, pp.185) Customer relationship management can also help develop accurate management decisions and also help analyze short-term and long-term problems and can lead to better marketing planning which will lead to an increase in customer satisfaction. (Tohidi and Jabbari, 2012, pp.565)

Past studies have shown that various customer relationship management activities can improve business performance. Whether it is sharing information such as marketing, production plans, product information. Or events that may affect the operations of the company. (Song and Liao, 2019) Long-term client partnerships, for example, the company's commitment to improving its management based on what the customer suggests or a company providing products and services according to customer needs in a systematic manner. (Shin et al., 2019) Engaging the Company's main customers in various company activities such as modifying products. Company operations audit. (Li et al., 2019) Collaboration between the customer and the company, such as solving problems together. (Pinho, 2016) and the use of various technologies to support activities such as using information technology to monitor sales processes, analyze information and exchange customer Including finding problems and help with management and work adjustments (Román and Rodríguez, 2015)

In addition, past research has found that conducting customer relationship building is one of the fundamental ways to build customer loyalty, which can have a positive influence on building customer loyalty. (Woraporn Wangkananon and Sudaporn Saawmuang, 2012 page 118) In addition to commitment, trust and satisfaction with the company. (Evanschitzky et al., 2006; Delgado-Ballester and Munuera-Aleman, 2001) In line with the wheel of loyalty concept of Lovelock, & Wirtz, (2007). There are guidelines for building loyalty with customers by dividing the strategy into 3 parts: building the foundation of loyalty. Building loyalty and reducing the things that cause change of mind. Therefore, if the entrepreneurs in the beverage production business in Thailand With the development of various types of beverage production businesses in the category of alcoholic beverages and non-alcoholic beverages. By conducting relationships with customers, it should help operators to improve supply chain performance to adapt to keep pace with the slowing economy. Because customer relationship management activities focus on integration

between the customer and the supplier. As well as suppliers which creates the bond between members of the supply chain which can enhance the performance of the business supply chain

From the above the researcher therefore is interested in studying the customer relationship management model of the beverage manufacturing business in Thailand. That influences the performance of the beverage supply chain in Thailand by using mixed research between qualitative study and quantitative study. This will collect information with the executive with decision-making power of beverage companies in Thailand. Since the management is the person who can reflect the information of the company very well. Therefore is a suitable sample this research is expected to serve as a guideline for improving supply chain performance of the beverage manufacturing business in Thailand to survive in a slowing economy. It is also a guideline for the government to direct policies to help the beverage production industry of Thailand to be sustainable in the future. When the beverage production industry is competitive, it will contribute to the economic development of the manufacturing sector of Thailand and lead to Thailand 4.0

Objectives.

1. To analyze the appropriate components of customer relationship management. Customer loyalty and supply chain Performance of beverage manufacturing businesses in Thailand
2. To examine the influence of customer relationship management factors Customer loyalty.
3. To propose customer relationship management and customer loyalty to enhance the supply chain performance of the beverage manufacturing business in Thailand.

Research scope.

To achieve the objectives of this research. The researcher has therefore defined the scope of the research in 4 areas, which are:

1 Content scope.

This research focuses on the content of customer relationship management. Customer loyalty and the performance of the supply chain of beverage manufacturing businesses in Thailand. Which will study concepts, theories and researches related to customer relationship management Customer loyalty and supply chain performance.

2 Population.

This research is limited to the context of beverage manufacturing business in Thailand. The researcher therefore studied population groups who are experienced working in the beverage production business. For a qualitative study and executive populations involved in

beverage production (Business owner, Purchasing Manager, Marketing Manager, Production Manager) of beverage production companies listed in the Department of Industrial Works database. Ministry of Industry, to conduct quantitative research. The researcher has compiled a list of beverage production companies from the website of the Ministry of Industry. Ministry of Industry of Thailand Using a sample group, the Company's management respondents are business owners or purchasing manager or marketing manager or production manager or senior management of 290 companies in which the person in these positions is the decision maker in the company.

3. Scope of study variables.

The variables in this research include is casual variables, mediating variables and effect variables each variable has a different element of the variable. With details as follows:

Casual variables is consists of customer relationship management factors of companies, entrepreneurs in the beverage production industry with elements including Information sharing, Customer involvement, Long-term partnership, Joint problem solving, and Technology-based CRM)

Mediating variables is Customer Loyalty Factors for Entrepreneurs Business in the Beverage Manufacturing Industry with elements Company Commitment, Company Trust and Company Satisfaction of customers, business operators in beverage production

Effect variables is such as the performance factor in the supply chain of entrepreneurs in the beverage manufacturing industry. There are elements including Supply Chain Reliability, Supply Chain Responsiveness, [Supply Chain Agility, Supply Chain Costs, and Supply Chain Asset Management)

4 Scope of the area and the duration of the research.

This study according to its objectives Researchers have established study areas in Thailand. It covers 6 regions: Central, Northeast, East, West, North and South with 1-year and 6-month commencement period. Later, all parameters obtained from the component survey were analyzed and developed into a customer relationship management model to enhance the supply chain performance of the beverage manufacturing business in Thailand. The results were then written to discuss the results and prepared a thesis booklet for 2020.

Research conceptual framework

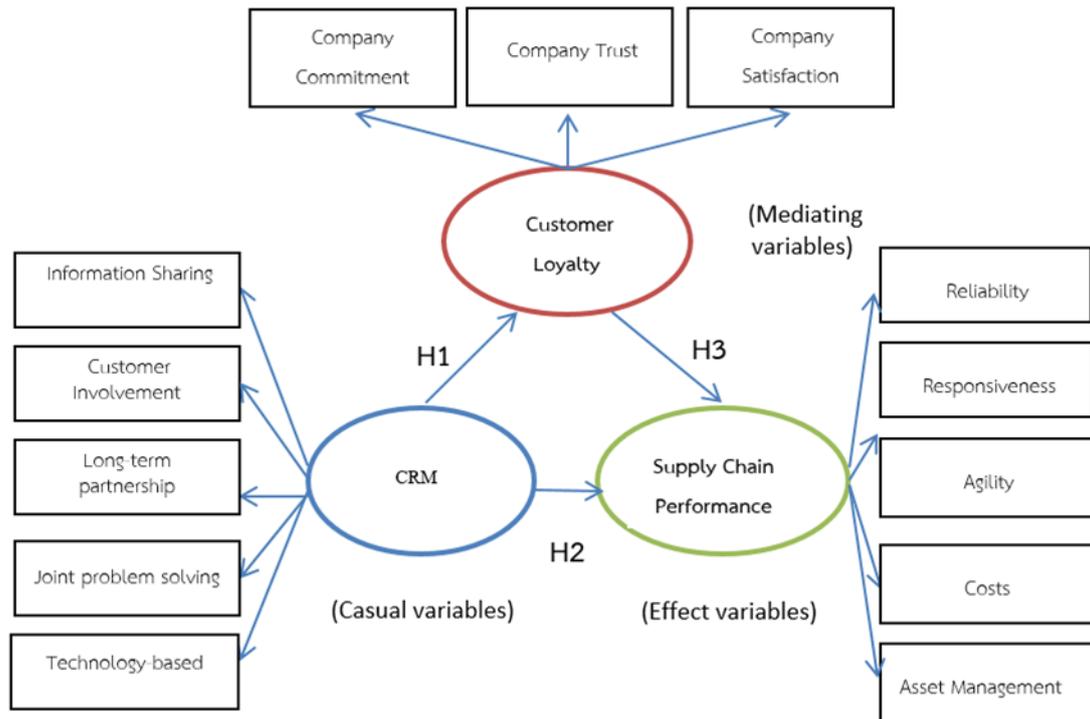


Figure.1 Concept of Customer Relationship Management and Customer Loyalty Influencing Supply Chain Performance of Beverage Manufacturers in Thailand.

Hypothesis

From the purpose of this research, the researcher has reviewed the concepts, theories and related research of many scholars. Therefore, it is a model for customer relationship management to enhance supply chain performance of the beverage manufacturing business in Thailand. This model may not be consistent with the empirical data and the interplay of cause and effect variables. Therefore, the researcher can hypothesize the research as follows:

H1: Customer relationship management has a positive direct influence on the loyalty of the beverage business operator.

H2: Customer relationship management has a positive direct influence on the performance of the beverage manufacturing operator's supply chain.

H3: Customer relationship management indirectly influences supply chain performance of beverage manufacturing business owners, influencing customer loyalty.

Review Literature

The literature review for the variables studied was based on the following framework.

Table 1 Summary of the literature review for the variables studied accord to the research framework.

No.	Academic (Year published)/Finding	Studied variables
1	Hassen and Abouaish (2018)	[X] CRM [X]LOY []SCP
	The analysis of the structural equation model was found that customer relationship management has a direct positive effect on customer loyalty. The sample group is the 193 customers of a mobile phone service company.	
2	Pozza et al. (2018)	[X] CRM [X]LOY []SCP
	The analysis of the structural equation model was found that customer relationship management has a direct positive effect on customer loyalty, with a sample of senior management, of companies operating in the manufacturing industry Service industry Chemical industry and the pharmaceutical industry of 350 people	
3	Santouridis and Tsachtani (2015)	[X] CRM [X]LOY []SCP
	The regression analysis showed that Customer relationship management has a direct positive effect on customer loyalty. The sample group consisted of 102 employees working at banks with the type of work involved in the customer relationship management system.	
4	Garrido-Moreno et al. (2014)	[X] CRM [X]LOY []SCP
	The analysis of the structural equation model was found that customer relationship management has a direct positive effect on customer loyalty. The sample group is 125 general managers of 3-5 star hotels.	
5	Soltani et al. (2018)	[X] CRM []LOY [X]SCP
	The analysis of the structural equation model was found that customer relationship management has a direct, positive effect on the performance of a business. The sample group was 150 employees working in the management system of taxation.	

Note: CRM = Customer relationship management, LOY = Customer loyalty, SCP = Supply chain Performance

Table 2 Summary of literature review for the variables studied according to the research framework (continued)

No.	Academic (Year published)/Finding	Studied variables
6	Kubina and Lendel (2015)	[X] CRM []LOY [X]SCP
	Analysis of current and relevant historical data Sampling questionnaires and interviews were collected. 207 senior managers of medium and large companies found that customer relationship management had a direct positive effect on business performance.	
7	Josiassen et al. (2014)	[X] CRM []LOY [X]SCP
	The regression analysis showed that Customer relationship management has	

	a direct, positive effect on the performance of a business. The sample group is 153 sales or marketing managers of hotel businesses.	
8	Šebjan et al. (2014)	[X] CRM [] LOY [X] SCP
	Literary review for conceptualization according to the Technology Acceptance Model (TAM) theory, it was found that there are factors within the organization that influence customer relationship management that directly affect business performance.	
9	Ghasemi et al. (2017)	[] CRM [X] LOY [X] SCP
	The analysis of the structural equation model was found that Customer loyalty has a direct positive, statistically significant effect on business performance. The sample group was 119 manufacturing and service business managers and experts.	
10	Ghazian et al. (2016)	[] CRM [X] LOY [X] SCP
	The analysis of the structural equation model was found that Customer loyalty has a direct positive, statistically significant effect on business performance. The sample group is LG customers working in 82 companies.	
11	Wang and Feng (2012)	[] CRM [X] LOY [X] SCP
	The analysis of the structural equation model was found that Customer loyalty has a directly positive, statistically significant impact on business performance. There is an example of a marketing manager. 180 senior executives of the hospitality industry	

Note: CRM = Customer relationship management, LOY = Customer loyalty, SCP = Supply chain Performance

Table 3 The results of the study of the relationship between various related variables according to the research framework.

No.	Relationships accord to the research framework	Academic in related research
1	CRM and Customer Loyalty	Hassen and Abouaish (2018), Pozza et al. (2018), Santouridis and Tsachtani (2015), Garrido-Moreno et al. (2014)
2	CRM and Supply Chain Performance)	Soltani et al. (2018) Kubina and Lendel (2015) Josiassen et al. (2014) Šebjan et al. (2014)
3	Customer Loyalty and Supply Chain Performance	Ghasemi et al. (2017) Ghazian et al. (2016) Wang and Feng (2012)

Research Methodology

1. Research instruments

Research studies are both qualitative studies. There were in-depth interviews with business executives in the beverage production industry and executives of the governing bodies of entrepreneurs in the beverage production industry in Thailand to bring information into consideration, create questionnaires and discuss research results. Combined with quantitative research. That take the questionnaire as a research tool. The questionnaire will check the content validity of question with the Index of Item – Objective Congruence: IOC value of every question must be greater than 0.50. (Laddawan Pechroj and Ajchara Chamniprasat (2004 page 145-146) In addition, this questionnaire must be validated for reliability with the Cronbach's Alpha Coefficient than 0.80, (Kunlaya Wanichbuncha, (2010 page 34-36) and when using the questionnaire to collect data according to the calculated sample size Must be brought to check the construct validity by using second order confirmatory factor analysis second order : CFA. All questionnaires must have a component weights affecting the empirical variable greater than 0.30 to be considered suitable for the analysis of structural equation models.

In-depth interview

In this in-depth interview, the investigators will conduct 17 sample interviews with executives at beverage production companies. The content of the interviews addresses the issue of managing customer relationships and customer loyalty in the business operator's supply chain performance. Beverage production industry by conducting interviews one by one to use the information obtained in order to formulate questions and to support discussion of the results of the research. The structure of the interview form as shown in Table 4 is as follows:

Table 4 In-depth interview structure from the qualitative study.

Issues	Question
1. General characteristics of the beverage manufacturing industry business organization.	This is a question about the details of the organization and the respondents.
2. Guidelines for managing customer relations of entrepreneurs in the beverage production industry.	This is a question for the interviewee to describe how to take action to keep customers for a long time.
3. Loyalty of consumers who are customers of entrepreneurs in the beverage manufacturing industry.	This is a question for the interviewed to describe the marketing results from the long-term customer retention activities of industrial business operators.
4. Supply chain performance issues of entrepreneurs in the beverage	This is a question for interviewees to describe the results of the supply chain

manufacturing industry.

performance measurement. Obtained from customer relationship management. And building consumer loyalty.

Questionnaire

This questionnaire has been prepared according to the research objectives. Its aim is to find customer relationship management and customer loyalty models that influence the performance of the alcoholic beverage production business, and without alcohol who want to know the tendency of customer loyalty that will lead to being a long-lasting customer And business success from activities that build relationships with customers It was built on a theoretical concept that sought to find consumer loyalty. In which there are interviews with executives in manufacturing companies. The results of the interviews were then used to support the design of the questions raised in the literature review. The questionnaire measures how to build relationships with customers has evolved from the concept of Sin et al. (2005) McEvily and Marcus (2005) and Lin et al. (2010). The customer loyalty questions developed from the concept of Evanschitzky et al (2006), Delgado-Ballester & Munuera-Aleman (2001) and Kotler (2003), and the questions that measure the performance of the business supply chain have developed from SCOR Model Version 12 (Supply Chain Council, 2017, p.15) and Aunyawong et al. (2018, p. 630)

2. Data Collection

To collect data in this research, the researcher divided the data into two parts: qualitative research data interviewed with management on the issue of marketing strategy. In the event of economic changes due to the opening of the ASEAN Economic Community and climate change from global warming problems and the quantitative research data using questionnaires according to research objectives. The details are as follows:

Collect to data from in-depth interviews:

Data were collected from interviews with management of beverage companies. When the information is completed. Bring the information to be compiled and integrated complete after that, the analysis was content analysis and summarized the results in descriptive data to describe the results from the interview.

Data collection from questionnaires:

Collect data from executives in the beverage manufacturing industry in Thailand With a step-by-step plan to collect information as follows;

- 1) Ask the graduate school a favor to issue a letter requesting cooperation in answer the questionnaire.
- 2) Bring the questionnaire to check the completeness of the questionnaire. The questionnaires were sent to the entrepreneurs via email to complete the required number.
- 3) The questionnaires were converted to statistical data by the statistical program Statistical Package for the Social Sciences (SPSS)

- 4). Further research objectives.
- 5) Summarize the analysis of the data.

3. Data Analysis and Statistics

The research Customer Relationship Management and Customer Loyalty Influencing Supply Chain performance of Beverage Manufacturers in Thailand. This time, the researcher analyzed the data obtained from the questionnaire on a predetermined number of 290 samples, after which the obtained data were converted to statistical data by SPSS program to use the statistics for other statistical analysis. According to research objectives. Which detailed statistics used for analysis as follows;

1) Personal Variable Characterization Building customer relationships Customer loyalty and business success using analytics to Descriptive Statistics Include percentage, mean, standard deviation. It also analyzes skewness, Kurtosis to measure the distribution of data suitable for the analysis of structural equations.

2) It was also analyzed the assertion factor of elemental factors according to the research conceptual framework with confirmatory factor analysis second order: CFA^{2nd} to check the structural validity of the questionnaire by confirm the question of each variable, observed in that latent variable is consistent or not, and use the results to analyze the equation

3) Analysis of direct and indirect influences between latent variables. The statistical analysis of path analysis was used to examine the research hypothesis of how causal variables directly and indirectly influence the outcome variables.

4) Search for a Customer Relationship Management Model of Small and Medium Business Entrepreneurs for Growth in the New Economy of Thailand with structural equation modeling: SEM, by take all the variables obtained from confirmatory factor analysis: CFA), and path analysis analyze simultaneously in the same structural equation.

Conclude

The research Customer Relationship Management and Customer Loyalty Influencing Supply Chain performance of Beverage Manufacturers in Thailand is the survey research using questionnaires was used to collect data from a sample group of 290 executives of beverage manufacturing companies. Questionnaire was a research tool. The results were obtained from in-depth interviews with 17 executives in the beverage manufacturing industry to use the data obtained in the questionnaire. To ask for opinions of buyers of industrial raw materials that are packaged for distribution with a comprehensive content with research topics.

Analysis of the data and statistics used in this time. The researcher analyzed the data obtained from the questionnaire by using statistical testing using 95% confidence level, using statistics such as descriptive statistic, questionnaire examination for construct validity by

Confirmatory Factor Analysis: CFA) Path Analysis to search for customer relationship management, and customer loyalty models for supply chain performance of the beverage manufacturing industry in Thailand. The statistics used were Structural Equation Modeling (SEM).

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A COMPREHENSIVE LITERATURE REVIEW ON THE RELATIONSHIP OF GREEN LOGISTICS AND LEAN MANAGEMENT ON FIRMS' PERFORMANCE

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Abstract

This paper aims to conduct the literature review regarding the relationship among three necessary components in the sustainable business practices which are green logistics, lean management, and firms' performance. The preliminary findings found that their relationships are still unclear stemmed from many reasons. For example, green logistics practices might have positive impact to firm's environment performance, on contrary they might have negative impact to firm's profit. Another obviously seen example, the just in time management might increase items ordering frequencies which possibly leads to negative impact to green logistics practices but in turn makes positive impact to firm's performance. Besides, there are existing conflicts among them. Therefore, obtaining crisp knowledge about their relationships is necessary for promoting sustainable organization development.

Knowledge obtained from this paper will be further investigated to design the casual relationship model. Also, the developed model then can be used as a tool to define appropriate guidelines for improving sustainable firm's operating performance.

Keywords : Green Logistics, Lean Management, Performance, Relationship

Introduction

The industrial growth and increasing consumption are two main causes that generate environmental problems. Since the economic development focused solely on industrial growth can deplete natural resources which can lead to dramatic environmental degradation. Hence, several organizations start to realize and pay more attention in collaboration to solve these environmental problems, (Daniel et al., 2020) by implementing the sustainable development approach.

Green logistics or logistics for environment play a significant role in transportation and storage activities related to environmental issues such as transportation management for energy saving, carbon emission, environmental-friendly packages, or alternative energy usage, (Sorat, 2009). Besides, green logistics not only focus on environment, but also it has a significant role in the development of an organization to enhance firms' financial performance, (Choi and Zhang, 2011).

Lean management, lean manufacturing, or lean production system is originated from that of Toyota production system (TPS) concept. It focuses to reduce not only wastes but also non-value added activities to lower quality costs and optimize the capacity and resources utilization (Pearce et al., 2018). Moreover, it provides a positive impact to other performance aspects such as market share, customers' satisfaction, (Almanei et al., 2017).

From aforementioned details, we can see that both green logistics and lean management have several alike concepts such as wastes reduction and optimization of resources utilization for enhancing both economic as well as environmental performances. From this reason, the researchers are interested to investigate how they impact firms' performance when implement them simultaneously. Therefore, this research aims to conduct literature review regarding concepts and components of green logistics, lean management, and firm's performance including their inter-relationships. While, the review outcomes will be used as our research conceptual framework to provide the methodology of how to improve firm operational performance and becoming a sustainable organization.

Green logistics concept

From literature review, green logistics management concept consists of fuel efficiency, carbon emission reduction, Eco-design, and waste management. Table 1 illustrates the summary of literature review on green logistics management.

Table 1 Literature review on green logistics management

Reference	Green Logistics Management			
	Fuel Efficiency	Carbon Emission Reduction	Eco-Design	Waste Management

Daniel et al. (2020)	√	√		
Cherrafi et al. (2018)			√	√
Rakhmangulov et al. (2017)	√	√		
Kumar (2015)			√	√
Zhang et al. (2014)		√	√	
Stolka (2014)				√
Choi (2012)	√	√	√	
Choi & Zhang (2011)	√	√	√	

Fuel efficiency is the major principle of green logistics management. Since, energy saving from using fuel effectively can alleviate air pollution, Daniel et al. (2020). Rakhmangulov et al. (2017) defined green logistics management as planning and controlling of transportation to minimize environmental impact and maximize fuel efficiency. In similar fashion, Choi (2012) and Choi & Zhang (2011) stated that the emission of logistics wastes can also be reduced by energy saving and pollutions originated from logistics activities.

In green logistics, carbon emission reduction is the main activity that most organizations implement, Daniel et al. (2020). Rakhmangulov et al. (2017), Zhang et al. (2014) demonstrated that carbon emission reduction generated from packages production and transportation management are significant driving force for achieving green logistics. Choi (2012) and Choi & Zhang (2011) identify that to successfully reduce carbon emission, the basic knowledges of carbon footprint are necessary as a calculation tools and information to help reduce and offset carbon emissions.

Eco-Design or green design is a product design process including economic and environmental-friendly considerations throughout its life cycle. Cherrafi et al. (2018) demonstrated that eco-design and life cycle cost analysis are the major components in green practices. Kumar (2015) defined the green logistics in cost dimension as the cost reduction of designing and development of green packaging, (Choi, 2012); (Choi & Zhang,2011); (Zhang et al., 2014).

In green logistics, waste management is defined as the management that reduce or eliminate wastes in every logistics activity. Kumar (2015) also defined waste management as the wastes reduction originated from transportation, expired product and packages, etc. Waste management is also main activity in reverse logistics, Stolka (2014).

Lean management concept

From literature review, the lean management concept consists of main components which are continuous improvement, pull system, just in time, and wastes reduction. Table 2 represents literature review on components of lean management concept.

Table 2 Literature review on lean management concept

Reference	Lean Management			
	Continuous Improvement	Pull System	Just in Time	Wastes Reduction
Rodrigues et al. (2020)	✓	✓	✓	
Dey et al. (2020)				✓
Iranmanesh et al. (2019)				
Tupamahu et al. (2019)	✓		✓	✓
Cherrafi et al. (2018)			✓	✓
Adetunji & Catherine (2018)	✓	✓	✓	✓
Agus & Hajinoor (2012)	✓	✓	✓	

Continuous improvement is an ongoing effort to improve products, services, or processes. These efforts can seek "incremental" improvement over time or "breakthrough" improvement all at once. Delivery (customer valued) processes are constantly evaluated and improved in the light of their efficiency, effectiveness and flexibility. Rodrigues et al. (2020) stated that continuous improvement activities can impact environmental performances. Tupamahu et al. (2019) stated that the main objectives of lean management are wastes reduction and continuous improvement which sometime called "Kaizen". Adetunji & Catherine (2018) defined the components of lean management as Just in time (JIT), set up time reduction, 5S activities, focus group, and continuous improvement. Agus & Hajinoor (2012) implement continuous improvement as driving force to promote products quality and firm's performance.

Pull production system is the improvement process of material and information flows that triggered by customers through Kanban system. When properly implemented, pull production systems result in less work in process (WIP) than push production systems, which in turn reduces warehousing and investment costs. Rodrigues et al. (2020) studied the implementing of pull production system to improve environmental performance. Adetunji & Catherine (2018) and Agus & Hajinoor (2012) stated that pull production system is the

important component of lean management and it can be used as driving force to promote product quality and firms' performance.

The just in time or JIT is an inventory management system wherein the material, or the products are produced and acquired just a few hours before they are put to use. The Just-in-time system is adopted by the firms, to reduce lead time or inventory to minimum amounts or zero. Rodrigues et al. (2020), Tupamahu et al. (2019), Cherrafi et al. (2018), Adetunji & Catherine (2018), and Agus & Hajinoor (2012) all stated that JIT is an important component of lean management.

The 8 wastes in lean management are wastes that stemmed from overproduction, unnecessary motion, excess inventory, defects from production, waiting time, unnecessary transportation of products and materials, extra processing, and underutilized people's skill and knowledge. Agus & Hajinoor (2012), Dey et al. (2020), Tupamahu et al. (2019), Cherrafi et al. (2018), and Adetunji & Catherine (2018) all stated that wastes reduction is the main component of lean management.

Firm's performance concept

Robert Kaplan and David Norton developed the balanced scorecard (BSC) in the year 1992, since then it has been implemented widely in research and businesses performance evaluation. The BSC considers not only financial perspective, but also the other three important perspectives namely customer, internal process, and learning/growth perspectives. Several researchers as (Daniel et al. (2020), Iranmanesh et al. (2019), Chong et al. (2019), Leksono (2019), Esfahbodi et al. (2016), Weng et al. (2015), Agus & Hajinoor (2012), Choi (2012), Choi & Zhang (2011), and Duarte et al. (2011)) all implemented aforementioned four perspectives as important components of firm's performance evaluation. Table 3 represent literature review summary on firm's performance concept.

Table 3 Literature review on firm's performance concept

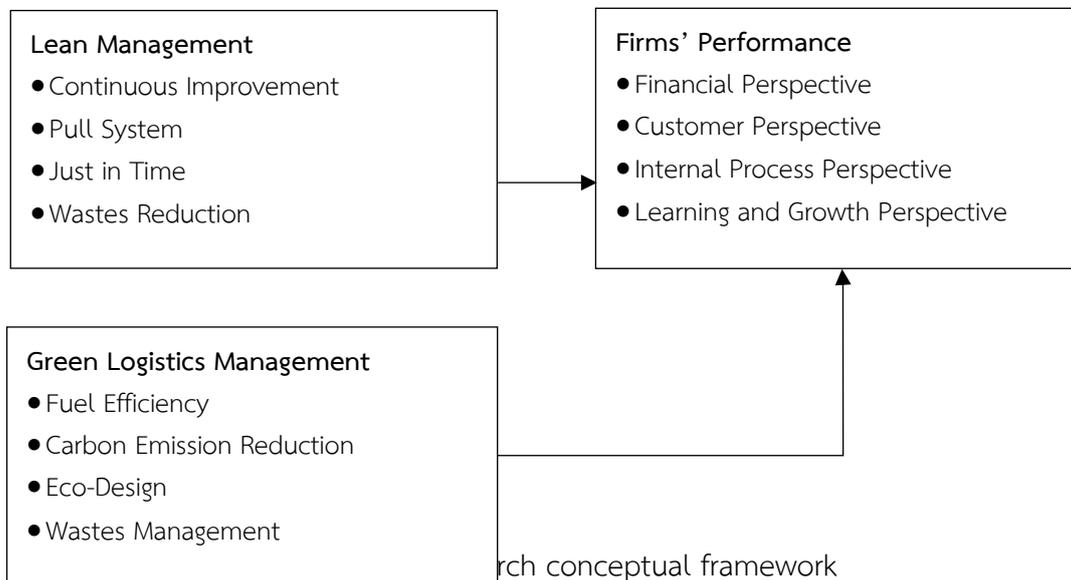
Reference	Firms' Performance			
	Financial Perspective	Customer Perspective	Internal Process Perspective	Learning and Growth Perspective
Daniel et al. (2020)	√	√	√	√
Iranmanesh et al. (2019)	√			
Chong et al. (2019)	√	√	√	√
Leksono (2019)	√	√	√	√
Weng et al. (2015)	√			

Agus & Hajinoor (2012)	√			
Choi (2012)	√			
Choi & Zhang (2011)	√			
Duarte et al. (2011)	√	√	√	√

The relationship of green logistics, lean management, and firms’ performance

Several research illustrate the relationships among green logistics, green management, and firms’ performance. Daniel et al. (2020) stated that green logistics practice have positive impacts to firms’ performance. Cherrafi et al. (2018) also demonstrated that lean management and green practices each has positive impacts to green supply chain performance. Rodrigues et al. (2020) stated that both lean and green concepts help enhancing logistics performance of an organization. Iranmanesh et al. (2019) presented that lean activities implemented in process and equipment, product design, supplier and customer relationships can increase sustainable performance. However, green practices especially green purchasing can give negative impacts to firms’ profit, Khan et al. (2016).

From literature review, the variables related to proposed research can be synthesized and the reseach conceptual framework can be developed as shown in figure 1.



Conclusions and Future Research

Green logistics or logistics for environment focuses on fuel efficiency, carbon emission, eco-design, and waste management. While, lean management is a guideline of continuous improvement, pull production system, just in time, and wastes reduction. Lastly, for firms’ performance, balanced scorecard considers four perspectives consist of financial, customer, internal process, and learning/growth perspectives.

Green logistics have positive impact to both lean management and firms' performance because lean management and green practices share similar objectives such as wastes reduction, unnecessary and non-value added activities elimination. This can lead to increase firms' positive image and customers satisfaction. However, green practices can cause negative impact to firms' profit due to green purchasing of more expensive environment-friendly packaging.

Knowledge obtained from this paper will be further investigated to design the casual relationship model. Also, the developed model then can be used as a tool to define appropriate guidelines for improving firm's operating performance and sustainable development.

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MARKETING COMMUNICATION OF THE CORONA VIRUS DISEASE STARTING IN 2019 AND THAI'S PEOPLE BEHAVIOR ON SELF-PROTECTION

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Abstract

Objectives of this research are 1) to study perception of information from the internet, knowledge of the novel coronavirus disease 2019 and disease prevention behaviors and 2) To analyze the relationship between knowledge and disease prevention behavior. The research was quantitative research. A research framework were marketing ideas, the research area is Thailand. The sample consisted of 400 people living in high-risk provinces in Thailand, using the simple random sampling method. The questionnaire were used. Descriptive statistics included; Frequency, Percentages, Mean, and Standard deviation. The hypothesis test uses inferential statistics that are a One-way Analysis of Variance (ANOVA-test) then compared each by Scheffe, moreover, Pearson's Chi-square were used. The research result met that; perception of information from the internet (facebook) were different by age, perception of information from facebook is related with knowledge, knowledge is related to self protection behavior at the .01 leveled.

Keywords: Marketing, Communication, Covid -19, Behavior, Self-protection

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Introduction

There are various aspects to succeeding in a business. The primary factor of a good business is about how good their communication strategies are formed. As a brand, there are various forms of interaction necessary to keep the cogs moving. As a company, there are even deeper aspects to have effective communication within your own working team. Perhaps the best way to understand the system is for you to ensure that you use the Internet for all the different avenues of commercial contact. Social media arrived since the year 2000 with chat rooms and private messaging protocols. However, the system only had all the digital additives in gradual stages. People began to access the net for more than just information, education, or work. Social media became a platform with over a billion people ready for you to get in touch with. That also opens up business opportunities for the smart people. Social media marketing is a vital factor to have in your business communication strategies if you are seeking to fight the immense competition online (Mattshadows, 2020) So, the linking of the right marketing mix involves the four P's i.e. Product, Price, Place and Promotion. In the field of marketing communications, must be coordinate efforts towards the last P of the marketing mix – Promotion. Many companies also recognize the need to integrate the various efforts related to marketing communication mix as media advertising, direct marketing, sales promotion and public relations to achieve more effective marketing communications. (G. Todorova, 2015) while, the novel coronavirus disease 2019 took the marketing communications became important on communicated to public. On November 19, 2020, there were the novel coronavirus disease 2019 reported that cumulative diseases 3,888 person, new diseases 8 person, and 60 person were died. Continue to, the diseases who were from the foreign countries cumulative diseases 929 person, new diseases 8 person, and 2 person were died. (Ministry of Public Health, Department of disease control, 2020) Then, there were support from the World Health Organization in Thailand. The World Health Organization of Thailand is in direct contact with the Thai government by Ministry of Public Health, share the data on important development and guild on science. The WHO supports the prevention of the novel coronavirus disease 2019 of the United Nations in Thailand and other alliances, help the migration in Thailand and suggestion for the staff of the United Nations in Thailand. (The World Health Organization of Thailand, 2020) From the cooperative of all sectors, communication is the most important especially the internet are use in the communication process and affecting to perception of information from internet and self-protection behavior. So we interested to study the marketing communication of the Corona Virus disease starting in 2019 and Thai's people behavior on self-protection after received the information from the internet, knowledge and disease prevention behaviors.

Objectives

1. To study perception of information from the internet, knowledge of the novel coronavirus disease 2019 and disease prevention behaviors.
2. To analyze the relationship between knowledge and disease prevention behavior.

Research Scope

1. **The populations** are people who live in the risk provinces as ∞ people.
2. **The variables:** Independent variables are demographic factors, information from the internet and dependent variables are knowledge of the novel coronavirus disease 2019 and disease prevention behaviors.
3. **The time of studies** while March to August 2020.

Methodology

This research is descriptive research by using the marketing concept to hypothesis testing study then to predict self-protection behavior of Thai people.

1. Populations and sampling

- 1.1 Populations are people who live in the risk provinces.
- 1.2 Sample was sampling by Taro Yamane formulation with confident .05, there were 400 samples (Silpjaru, 2020)
- 1.3 Simple random sampling were used.

2. Research Instruments

- 2.1 The questionnaire for the samples included;
 - 1) Section 1 Demographic factors (gender, ages, education, career, disease), the characteristics of the question is checklist.
 - 2) Section 2 Perception of information from the internet factors as rating scale question.
 - 3) Section 3 Knowledge is checklist within 3 choices; right, wrong and unknown.
 - 4) Section 4 Self-prevention behavior the characteristics of the question is rating scale question.

2.2 The conceptual theories.

This questionnaire met by Armstrong and Kotler (2011) in the topic of perceived and Belch and Belch (2001) in the topic of integrate marketing communication, then took to the 5 experts (expert on marketing 2 people, medical 2 people and statistics 1 people) selected the item within I.O.C. more than 0.60, the total I.O.C. was 0.99.

3. Data collection

- 3.1 Primary data were collected by researcher team and the Google form from March to August 2020, the response right and data management, we told about them right

to answer or not as human ethic by Belmont Report. After received the questionnaire, check the completed of the data, coding, and analyzed.

3.2 Secondary data were collected from the books, newspaper, thesis, research, journals, magazines, internet etc.

4. Statistics

4.1 The descriptive statistics; they were frequency, percentages, mean, and standard deviation used to analyzed the data in section 1-3

4.2 The inferential statistics; that are a One-way Analysis of Variance (ANOVA-test) then compared each by Scheffe, moreover, Pearson's Chi-square were used. Significant at .01.

1) Hypothesis: knowledge (K2 Avoid touching the others) relate to diseases prevention behavior.

2) Hypothesis: perception of information from the internet (facebook) are different by age.

Research Result

1 The respondent's Demographic Factors

Table 1 Frequency and Percentages of the respondents divide by Demographic Factors

n = 578

Demographic Factors	Frequency	Percentages
1. Gender		
Female	403	69.70
Male	175	30.30
2. Ages		
Least than 20 years	50	8.70
20-29 years	249	43.10
30-39 years	139	24.00
40-49 years	74	12.80
50-59 years	52	9.00
More than 59 years	14	2.40
3. Education		
Lower than bachelor degree	145	25.10
Bachelor degree	302	52.20
Higher than bachelor degree	127	22.00
No answer	4	0.70
4. Occupation		
Students	161	27.90
Government employees	87	15.10
Business owner	67	11.60
Entrepreneur employees	64	11.10

Demographic Factors	Frequency	Percentages
Government	51	8.80
General contractor	38	6.60
Factory employees	35	6.10
Agriculture	29	5.00
Others	46	7.80
5. Congenital diseases		
No diseases	460	79.60
Allergy	61	10.60
High blood pressure	9	1.60
Fat in blood	7	1.20
Thyroid	6	1.00
High blood pressure and Fat in blood	5	0.90
Diabetes	4	0.70
Diabetes and High blood pressure	4	0.70
Stroke	3	0.50
Others	19	3.20

The respondent mostly, Female (n=403, 69.70%), ages 20-29 years (n=249, 43.10%), Graduated Bachelor degree (n=302, 52.20%), They are students (n=161, 27.90%), and no diseases (n=460, 79.60%).

2 The hypothesis test.

2.1 Hypothesis: knowledge (K2 Avoid touching the others) relate to diseases prevention behavior.

1) perception of information from facebook is related with knowledge (K2 Avoid touching the others)

Table 2 Pearson Chi-square, p-value of perception of information from facebook and knowledge n = 578

Knowledge	Chi-square	p-value
perception of information from facebook		
K1 Avoid touching yourself (/)	16.56	.04
K2 Avoid touching the others Ex. Touch, Hugs (/)	21.21	.01**
K3 Body temperature must be over 38 degrees (X)	8.29	.41
K4 Avoid touching in public ex. Lift button (/)	14.03	.08
k5 Alcohol (more than 70%) is non-combustible (X)	7.32	.50
K6 Avoid entering crowd Ex. Department store, pub (/)	30.97	.00**
K7 Social distancing (1-2 meters) (/)	47.34	.00**
K8 Queued and group distancing 2 meters (X)	16.00	.04
k9 Avoid illness ex. Cough and sneeze (/)	40.54	.00**

Knowledge		Chi-square	p-value
k10 If get cough and sneeze must be wearing a mask or self-protection	(/)	24.04	.00**
k11 Cleaned your hand before enter the public	(/)	12.70	.12
k12 Avoid to close up with the unprotected patients respiratory disease	(/)	21.31	.01**

**Significant at .01 leveled

There were perception of information from facebook related to knowledge aspect, included; K2 Avoid touching the others, K6 Avoid entering crowd, K7 Social distancing (1-2 meters), k9 Avoid illness, k10 If get cough and sneeze must be wearing a mask or self-protection, and k12 Avoid to close up with the unprotected patients respiratory disease significantly at .01 leveled.

2) knowledge (K2 Avoid touching the others) is related to self protection behavior.

Table 3 Pearson Chi-square, p-value of knowledge and prevention behavior n = 578

Diseases prevention behavior	Chi-square	p-value
knowledge (K2 Avoid touching the others)		
b1 wear a mask	.23	.00**
b2 Social Distancing	.18	.00**
b3 Cleaned your hand with soap, gel, Alcohol (more than 70%)	.20	.00**
b4 Avoid touching in public ex. Lift button	.20	.00**
b5 Wash fruits and vegetables with mild soap and water thoroughly	.15	.00**
b6 Cook on high heat/eat hot food	.23	.00**
b7 Buy canned food because of the manufacturing process takes a higher temperature than the virus can survive	.13	.00**
b8 Uses Mobile Banking/credit card to reduce the chance of infection	.15	.00**
b9 Select sealed food packaging	.04	.00**
b10 Turn off the cell phone by cotton buds with Alcohol (more than 70%)	.12	.00**
b11 Always cleaned the cell phone by cotton buds with Alcohol (more than 70%)	.09	.04
b12 Avoid entering crowd Ex. Department store, pub	.18	.00**
b13 When you get home, wash your hands, change clothes and separate for wash, then take a shower immediately	.16	.00**
b14 Don't be too worried choose the right news	.19	.00**
b15 Take your time, do what you want to do	.20	.00**
b16 Focus on what you can control, do various activities in the home	.18	.00**
b17 If worried, seek help from the Mental Health, Hotline 1323	.11	.01**
b18 Social media were used	.16	.00**

**Significant at .01 leveled

There were knowledge (K2 Avoid touching the others) related to diseases prevention behavior all aspect, significantly at .01 leveled. Except b11 Cleaned your hand before enter the public.

2.2 Hypothesis: perception of information from the internet (facebook) are different by age.

Table 4 ANOVA Test

SOV	df	SS	MS	F	Sig.
Regression	5	40.21	8.04	12.34	.00**
Error	572	372.73	0.65		
Total	577	412.94			

**Significant at .01 leveled

From Table 4 Found that different ages had affecting to perception of information from the internet (facebook), significantly stood at .01 leveled.

Table 5 Scheffe Tests

(I) ages	(J) ages	M.D. (I-J)	Std. Error	Sig.
Less than 20 years	20-29 years	-.18	.13	.15
	30-39 years	.01	.13	.93
	40-49 years	.26	.15	.08
	50-59 years	.56*	.16	.00**
	More than 59 years	.91*	.24	.00**
20-29 years	Less than 20 years	.18	.13	.15
	30-39 years	.19	.09	.03
	40-49 years	.44*	.11	.00**
	50-59 years	.74*	.12	.00**
	More than 59 years	1.09*	.22	.00**
30-39 years	Less than 20 years	-.01	.133	.93
	20-29 years	-.19	.09	.03
	40-49 years	.25	.12	.03
	50-59 years	.54*	.13	.00**
	More than 59 years	.90*	.23	.00**
40-49 years	Less than 20 years	-.26	.15	.08
	20-29 years	-.44*	.11	.00**
	30-39 years	-.25	.12	.03
	50-59 years	.29	.15	.05
	More than 59 years	.65*	.24	.01**
50-59 years	Less than 20 years	-.56*	.16	.00**
	20-29 years	-.74*	.12	.00**
	30-39 years	-.54*	.13	.00**
	40-49 years	-.29	.15	.05
	More than 59 years	.35	.24	.15
More than 59 years	Less than 20 years	-.91*	.24	.00**
	20-29 years	-1.09*	.22	.00**
	30-39 years	-.90*	.23	.00**
	40-49 years	-.65*	.24	.01**

(I) ages	(J) ages	M.D. (I-J)	Std. Error	Sig.
	50-59 years	-.35	.24	.15

**Significant at .01 leveled

From table 5 Scheffe Tests met that there were 4 different included;

Ages Less than 20 years and 50-59 years were differed at .56, Less than 20 years and More than 59 years were differed at .91.

Ages 20-29 years and 50-59 years were differed at .44, 20-29 years and More than 59 years were differed at 1.09.

Ages 30-39 years and 50-59 years were differed at .54, 30-39 years and More than 59 years were differed at .90 .

Ages 40-49 years and More than 59 years were differed at .65.

Conclusion and Discussion

1. Conclusion

The respondent mostly, female, ages 20-29 years, Graduated Bachelor degree, They are students, and no diseases. There were perception of information from facebook related to knowledge aspect, included disease significantly at .01 leveled. Moreover, knowledge on avoid touching the others related to diseases prevention behavior all aspect, significantly at .01 leveled. The different ages had affecting to perception of information from facebook, significantly stood at .01 leveled. Then Scheffe Tests met that there were 4 different ages.

2. Discussion

2.1 The perception of information from facebook and knowledge;

1) Avoid touching the others consist of the National Research Institute and Faculty of Public Health, Mahidol University and the Superpole Research Office (2020) and chooses to perceived only what they want and will select specific data that supports personal beliefs (Armstrong and Kotler, 2011); McDaniel Lamb and Hair, 2006), so most of the respondents are get information by facebook, but picked up from a reliability source.

2) Avoid entering crowd or avoid non-essential travel (Australian Government Department of Health, 2020), social distancing by stay at least 6 feet away from others (Centers for Disease Control and Prevention, 2020a), avoid illness or avoid close contact with people who are sick. When you are sick, keep your distance from others to protect them from getting sick too (Centers for Disease Control and Prevention, 2020b). if get cough and sneeze must be wearing a mask or self-protection, and avoid to close up with the unprotected patients respiratory disease.

2.2 The knowledge and diseases prevention from COVID-19;

1) The knowledge on avoid touching the others related to diseases prevention behavior all aspect, significantly at .01 leveled. Consist to Zhi-Hao Li et al (2020)

the levels of knowledge (mean: 16.3 out of 20 points), attitudes (mean: 4.5 out of 6 points), and practices (mean: 5.8 out of 6 points) related to COVID-19 were high. People had high score on knowledge and behavior regarding self-care prevention from COVID-19 (Glomjai, Kaewjiboon, and Chachvarat, 2020). Except in term of cleaned your hand before enter the public, that mean the people interested in their self-protection more than to protect the others.

2) The different ages had affecting to perception of information from the internet (facebook), significantly stood at .01 leveled. The result consist to Ekowati and et al (2020) the dominant factor affecting COVID-19 transmission prevention practice is attitude and knowledge. Hence, it is necessary to increase community knowledge about COVID-19 better to change people's attitudes toward COVID-19 transmission prevention so they can implement good COVID-19 transmission prevention practice.

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THE LOGISTICS AND SUPPLY CHAIN MANAGEMENT FOR TOURISM OF DAIRY FARMING COMMUNITY, PAK CHONG DISTRICT, NAKHON RATCHASIMA

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Abstract

The research's objectives were 1) to study and analyze the components of the dairy farming community's logistics and supply chain management in Pak Chong, Nakhon Ratchasima; 2) to analyze the effects of the transportation service as well as infrastructural development in Pak Chong's dairy farming community, Nakhon Ratchasima; and 3) to analyze appropriate recommendations regarding the logistics and supply chain's development. The research was qualitative focusing on tourism demand and supply framework, effects of logistics and supply chain management on tourism. In particular, the related policies, namely, ministry of tourism and sport, ministry of transportation, including Nakhon Ratchasima provincial plan conducted. Pak Chong in Nakhon Ratchasima province was selected as the studied area. The sample were identified by the generalization concept emphasizing the study of logistics and tourism supply chain. The dairy farming community consisted of dairy farmers who gave data triangulation to collect reliable informations by purposive sampling: the 20 selected dairy farmers. Tools consisted of 1) participant observation 2) in-depth interview 3) content analysis. The descriptive writing was narrated.

The research found 1) Nakhon Ratchasima had been a northeastern province concentrating on dairy farming and its productions. There were the 3,981 farmers and the 134,907 cows; in fact, they were the biggest groups of the farmers and cows in Thailand (Information and Communication Technology Center in Department of Livestock Development, Ministry of Agriculture and Cooperatives, 2020). Pak Chong has been the most popular area of dairying in Nakhon Ratchasima according to 6,128-69,594 cows (Nakhon Ratchasima Provincial Livestock Office, 2016), 2,329 of dairy farmers, and 4 significant fresh-milk buyers such as Pakchong Cooperative Limited, Pak Chong Dairy Cattle Group Culture Community Enterprise Company Limited, Nongsarai Fresh Milk Group Co., Ltd., and Lamtakong Dairy Product Co, Ltd. The 4 fresh-milk manufacturers were Mary Anne Co., Ltd., Abico Dairy Farm Company Limited, Farm Chokchai Limited, Naipol Dairy Company Limited. It meant that the supply chain of dairying in Pak Chong had been quite plenty (upstream, midstream, and downstream). 2) The finding of the effect of infrastructural development in

Pak Chong's dairy farming community were: the transportations were charters; the infrastructure was rough or dirt roads with potholes, even more, some roads had no lights, and 3) the recommendations were the responsible sectors should improve the road's surface and add more lights so as to facilitate tourists' transportation.

The knowledge from this study was to recommend logistics and supply chain management for tourism of the dairy farming community in the area including benefited the dairy entrepreneurs in the aspect of stability, wealthy, and sustainability.

Keywords : Tourism Logistics, Community Based Agro-tourism, Dairy Farmers

Introduction

International Monetary Fund revealed the GDP of Thailand 2010-2017 rising as 4th in ASEAN above Indonesia, Philippines, Laos, Cambodia, and Myanmar, but below Singapore, Brunei, and Malaysia respectively. According to the table 1, it related to the macro economic report and the fiscal outlook in accordance with the draft of the annual expenditure budget bill for the year 2020. The cash flow tended to be better and encouraged the Government revenue during 2014-2018 to 72,156 million Baht according to Figure 1.

Table 1 Thailand’s GDP 2010-2017

Country	2553	2554	2555	2556	2557	2558	2559	2560
Singapore	46,569.4	53,238.5	54,716.7	56,389.1	56,959.3	54,939.8	55,241.2	57,713.3
Brunei	35,437.2	47,092.3	47,736.2	44,716.2	41,630.5	31,047.0	26,967.6	28,278.4
Malaysia	8,920.4	10,287.8	10,624.8	10,754.6	11,074	9,677.1	9,415.0	9,755.1
Thailand	5,065.3	5,482.3	5,850.2	6,154.4	5,932.9	5,830.6	5,970.3	6,590.6
Indonesia	3,178.1	3,688.5	3,744.5	3,684	3,533.6	3,369.3	3,604.2	3,875.7
Philippines	2,155.4	2,379.9	2,591.6	2,768.4	2,849.2	2,882.7	2,953.2	2,988.8
Vietnam	1,297.2	1,532.3	1,750.7	1,898.8	2,047.4	2,085.7	2,172.0	2,353.3
Laos	1,242.9	1,463.4	1,640.9	1,899.9	2,075.1	2,212.4	2,416.8	2,540.8
Myanmar	996.6	1,196.9	1,186.0	1,179.5	1,275.2	1,147.3	1,210.4	1,278.0
Cambodia	781.9	877.6	945.7	1,009.3	1,090.7	1,163.4	1,270.4	1,379.3

Source: International monetary fund

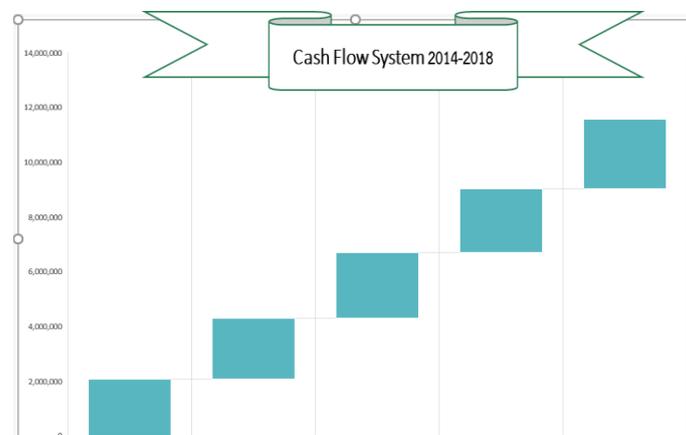


Figure 1 Cash flow system of Thailand's Net Government Revenue within the previous 5 years (2014-2018)

Source: Ministry of Fincance and Budget Bureau

A particular revenue was from tourism. During 2014-2018, the domestic tourism made revenue 11.09 percent per year and in 2018 was at 1,068,190 trillion Baht. The inbound tourist revenue was increased at 14.38 percent per year and in 2018 it was at 2,007,503 trillion Baht according to Figure 2.

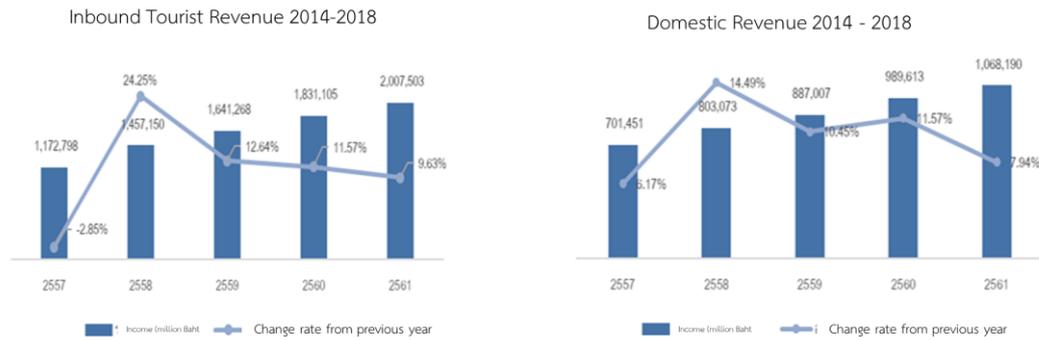


Figure 2 The Increasing Revenue Rate from the Previous 5-year Tourism Duration 2014-2018 **Source:** Ministry of Tourism and Sports

Pak Chong district in Nakhon Ratchasima was the most gathered dairy farmers’ area of the province from 32 districted. By the way, it was struggle with excessive cows, overflowed milks, insufficient cans; it referred to the products exceeded the demand or its shortage. This situation was called Bullwhip Effect in the context of Logistics and Supply Chain occurring Shortage or Inventory. These effects damaged supply chain and sustainability (Suharitdamrong, 2010). If the dairy farmers earned extra income, it would help the GDP. The Government stimulated the national economic by Travel Together Program (Rao Tiaw Duay Kan) and several campaigns following the Tourism Development Strategic Plan 2018-2021 of Department of Tourism’s strategy 1: the sustainable integrated promotion and development of tourism supply chain.

Purpose

1. To study and analyze the logistics and supply chain’s components of dairy farmers’ community
2. To analyse the effects of transportations’ service and its infrastructural development of dairy farmers’ community
3. To analyse the recommendations for the appropriate logistics and supply chain’s development

Research Scope

1. Population
Dairy farmers in Pak Chong, Nakhon Ratchasima
2. Duration
1year, from November 2019 to November 2020

Methodology

1. Research Methodology

The research was qualitative of tourism demand and supply, logistics effects on tourism analysis, and related strategies from ministry of tourism and sport, ministry of transport, and Nakhon Ratchasima province as the framework. The research area was Pak Chong, Nakhon Ratchasima. The samples were generalizationally pointed the logistics and supply chain of dairy farmers' community out. Thus, dairy farmers were generated the data according to triangulation theory for the quality and reliable data. The purposive sampling was used by representatives' identification more than 20 cows.

2. Research Process

The Logistics and Supply Chain Management for Tourism of Dairy Farming Community, Pak Chong District, Nakhon Ratchasima was conducted by the methodology as follows.

1. to study concepts, theories, policy, and related literatures

2. to area exploration and related basic information

3. to study and supply-demand analysis of dairy farmers' community

4. to interviewed 1st dairy farmers

5. to study the effects of its service and infrastructural development of the transportation

6. to interviewed 2nd dairy farmers

7. to analyse to find the appropriate tourism logistic process

8. to interviewed 3rd dairy farmers

9. to conclude the study and recommendation


Figure 3 Research Process

Source: Chukaew, 2019

3. Data collection

Research tools were 1) Participant Observation 2) Purposive Interview and

3) secondary data

4. Data analysis

Analytic induction, content analysis and descriptive research

Results

1. The research found the logistics components and tourism supply chain of dairy farmers' community in Pak Chong district, Nakhon Ratchasima that the province was an area in Thailand's Northeastern emphasizing on dairy farming and products. There were 3,981 dairy farmers and 134,907 cows which was the greatest number of dairy farmer of the country. Especially, Pak Chong district was the most crowded dairy farmers' area from 32 districts: 6,128-69,564 cows, the 2,329 farmers, and 4 raw milk collectors and process plants such as 4 significant fresh-milk buyers such as Pakchong Cooperative Limited, Pak Chong Dairy Cows Group Culture Community Enterprise Company Limited, Nongsarai Fresh Milk Group Co., Ltd., and Lamtakong Dairy Product Co, Ltd. The 4 fresh-milk manufacturers were Mary Anne Co., Ltd., Abico Dairy Farm Company Limited, Farm Chokchai Limited, Naipol Dairy Company Limited. Thus, the supply chain of dairy was quite plentiful according to Figure 4.

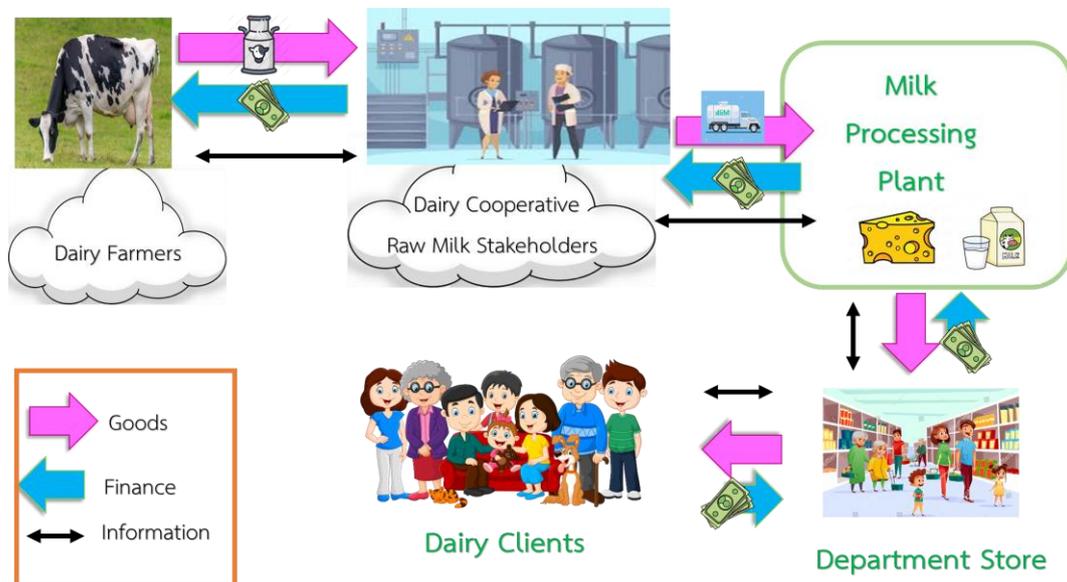


Figure 4 Dairy Products' Supply Chain
 Source: Chukaew, 2020

2. The result of the service and transport infrastructural development's effective analysis in Pak Chong could be concluded that tourists accessed the area by 3 modes as follows: 1) private vehicles directed to the destination; 2) a train stopped at Pak Chong

station's transit and public transports were stand by; 3) a bus took tourists to Pak Chong bus station and transferred to a public transport according to Figure 5. The transport modes to the dairy destinations in Pak Chong were in rental vehicles. The roads' surfaces were rough with big and small holes, dirt, and insufficient lights also according to Figure 5.

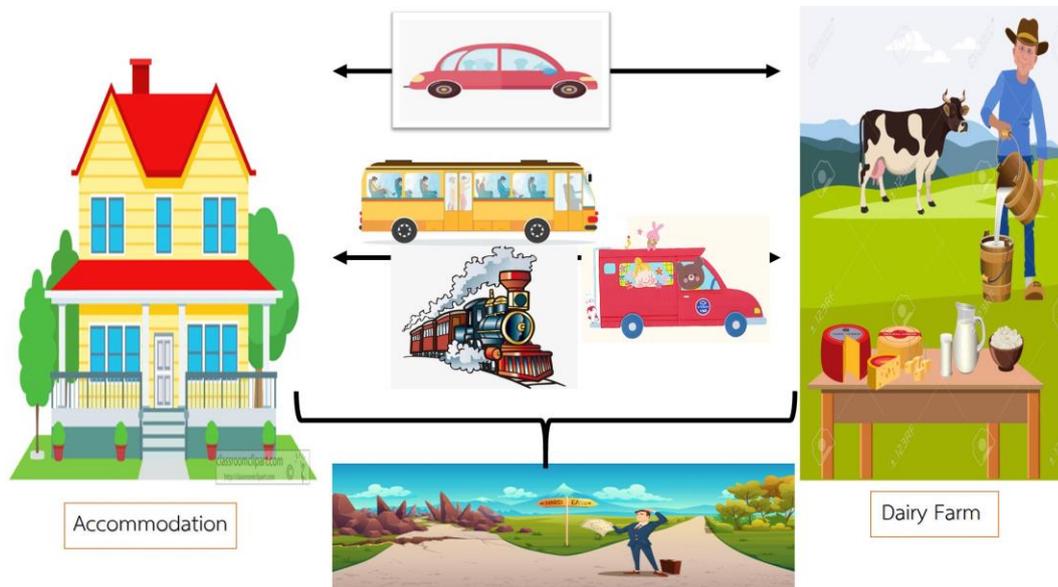


Figure 5 The Transpor Modes to the Dairy Farmers' Attractions and Accommodations in Pak Chong District, Nakhon Ratchasima

Source: Chukaew, 2020

3. The recommendations embraced that responsible sectors should improve and develop the roads and lights to facilitate tourists. Moreover, it was supposed to establish a prepared dairy cooperative for the service. The dairy tourist spots acquired these components: 1) GAP for livestock certificate; 2) accommodations; 3) food and beverages 4) creative dairy activities such as cow feeding, milking, and processing. The cooperative encouragement should include the subdistrict administrative organization and Nakhon Ratchasima provincial tourism and sports.

Conclusion and Discussion

The result of the research was to recommend a logistics development policy regarding dairy farmers' community tourism in Pak Chong district, Nakhon Ratchasima as well as the extra income in accordance with stable, wealth, and sustainable concepts.

According to the research, The Logistics and Supply Chain Management for Tourism of Dairy Farming Community, Pak Chong District, Nakhon Ratchasima, was related to Logistics and Supply Chain Management of Water Chestnut Farmers Group Suphanburi Province research (Lerdwiwachaiyaporn, 2018). It revealed the connection of supply chain among

dairy farmers, dairy cooperatives/milk collector, milk processing plants, milk distributors, clients, including the tourism aspect; the tourists walked to the attractions in purpose of leisure, namely, dairy farming activities, the service and souvenirs, for the farmers' extra income intention. To accomplish the goals, it was necessary to resort several factors such as the farmer cooperative, public relations, and the infrastructural development to serve the tourists.

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LABOR MARKETING: THE SECOND-ORDER CONFIRMATORY FACTOR ANALYSIS OF FACTORS AFFECTING TRUCK DRIVERS COMPETENCE IN ASEAN COMMUNITY

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Abstract

Objectives of this research are to analyze the Exploratory Factors and the influencing factors affecting truck drivers competency in the ASEAN Economic Community using the second-order confirmatory factor analysis. The findings from 368 respondents were mostly male, 45 to 50 years old, graduated elementary school and more than 10 years in their driving experience. Their works in business companies, more than 5 years driving experience in the field. Types of vehicle used mostly were trailers. They can use only Thai language to communicate. According to the Exploratory Factor Analysis (EFA), factors influenced their competency were knowledge of safety driving, driving skills, characteristics including; honesty and patience. The Pearson's correlation was .859 with KMO and Bartlett's test as .765. There were 4 factors using in EFA; knowledge, skills in communication with customers, skills in dealing with vehicles and managing skills. As for second-order confirmatory factor analysis, it consisted of 3 factors; knowledge, skills and characteristics. Competency in knowledge factors included; knowledge in goods and services, ability to manage right time for transportation, knowledge of appropriate types of transport and documentation of international logistics. Skills competency composed of language skills, communication and customer service skills. Competency in characteristics consisted of driving competency including honesty and patience.

Keywords: Competence, Truck' Drivers, Transportation

Introduction

The international transportation by road become important because of infrastructure was developed. The infrastructure can connected with neighbor country, there were ease to travel and transport, quickly and safety. Moreover, road infrastructure is more important for decision making in the future and consider on the future rule in Thailand. (Choojarukul, 2016) Thai government and private sector views transportation by truck is the lowest cost, and 80% of the truck are used. By the reason, Thailand logistics cost are higher than others (Chaimankon, Songsiriyot, and Mahapole, 2020) In the 2015 Thailand was joined the ASEAN Community and resulted in a great awakening in the business community especially the logistics businesses have managed to greatly expand the logistics trade and investment. Continue to, transport is a part of logistics business that is directly affected by the domestic and international consumption of goods and services were increased. The need of transport demand are affect to lack of the truck's drives. The President of the Land Transport Federation of Thailand told that lack of the truck's drivers problems continue rising causes of the foreign transport companies giving a higher income than the Thai entrepreneurs. The amount lack of the truck's drivers 15% out of 200,000 trailer truck. (Chearnyeunyongphong, 2013) The new driver is not enough to meet the needs of the expanding transport by truck, the company had managed by keep their truck's driver to reduce turnover. Moreover, uses human resource management for the driver career such as; selection, motivation, work 6 days per a week, work lower than 12 hours per a day etc. (Sanguansiri, 2014) From this situation, the amount lack of the truck's drivers remain increasing so, need the curriculum which included the new technology for the truck's drivers to increase their performance and income, Thai transport companies able to compete with the foreign transport companies. It is expected that there will be a labor demand of about 100,000 people. By the reason, the researcher interested to study the Exploratory Factor Analysis (EFA) and Second Order Confirmatory Factor Analysis (CFA) of the factors affecting truck driver competence in ASEAN Community for the purposes of the new curriculum and training courses that appropriate to the labor market.

Objectives

1. To Exploratory Factor Analysis (EFA) of the factors affecting truck drivers competence in ASEAN Community.
2. To Second Order Confirmatory Factor Analysis (CFA) of the factors affecting truck drivers competence in ASEAN Community.

Research Scope

1. **The populations** divided into 2 groups; the expert on international transport and the truck drivers.

2. The variables: Independent variables are demographic factors and the factors affecting truck drivers competence in ASEAN Community. Whereas, dependent variables are truck drivers competence in ASEAN Community. All factors were test by the EFA and CFA.

3. The time of studies while October 2015 to September 2016.

Methodology

This research is descriptive research by using the Structural Relationship Model, there were 2 processes of EFA and CFA to find out the appropriate competencies of the Latent Variable

1. Populations and sampling

1.1 Populations divided into 2 groups; 1) The expert on international transport and 2) The truck drivers that unknown exactly amount (Chearnyeunyongphong, 2013)

1.2 Sample divided into 2 groups; 1) The 5 experts on international transport selected by network sampling (Leekitchwatana, 2010 and 2) The 175 truck drivers which sampling by Boomsma formula (Christopher, 2010) with the robustness and large amount out 500 samples, there were 368 completed questionnaires.

1.3 Multistage Random Sampling all of geographic regions across the country there are 6 Checkpoints included; Hat Lek-Khlong Yai, Pakkard, Bann Laem (Chanthaburi), Khlong Leuk (Aranyaprathet), Chong Chom (Surin Province) and the 3 pagodas (Kanchanaburi).

2. Research Instruments

2.1 The questionnaire for the 2 groups;

1) The questionnaire for the experts on international transport there were the experts opinion on the truck drivers competencies 35 variables for 4 factors of knowledge, 5 factors of skills and 2 factors of trait totaling 11 factors.

2) The questionnaire for the truck drivers there were the truck drivers opinion on the international truck drivers competencies in term of ideal and the real competencies. There were the 35 Indicators for 3 main competencies; for 4 factors of knowledge, 5 factors of skills and 2 factors of trait totaling 11 factors.

2.2 Goodness of Fit Measures for test the overall of the model was consistent with the empirical data. The researcher used the statistical conformity criteria.

3. Data collection

3.1 Primary data were collected from the 2 groups; 1) The 5 experts on international transport selected and 2) The 175 truck drivers. The data was collected by myself.

3.2 Secondary data were collected from the books, newspaper, thesis, research, journals, magazines, internet etc.

4 Statistics

4.1 The Exploratory Factor Analysis: EFA; they were correlation matrix between variables after that test the different correlation from 0 by Bartlett’s test of Sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy: KMO closed to 1, the principal components analysis, the varimax rotation about 25 rounds, finally, principles analysis and give factor’s name for related variables within weigh by important of each member. Then the Second Order Confirmatory Factor Analysis: CFA were used to check the EFA

4.2 The statistics used to analyze the data

1) The percentages used for analyze the variables such as; gender, age, education, drive experience and the factors affecting truck driver competence in ASEAN Community included; type of business, driving experience in ASEAN Community, type of the truck, Language for communication.

2) Mean and Standard Deviation : S.D. used for analyze the variables of the truck driver competence in ASEAN Community

3) Exploratory Factor Analysis: EFA

4) Second Order Confirmatory Factor Analysis : 2nd Order CFA), Total Eigenvalues, % of Variance, Extraction Sums of Squared Loadings by Principal component, Initial

Eigenvalue and Rotation Sums of Squared Loadings to check the consist of the structure model.

Research Result

1 The respondent’s Demographic Factors

Table 1 Frequency and Percentages of the respondents divide by Demographic Factors
n = 368

Demographic Factors	Frequency	Percentages
<u>Gender</u>		
Male	366	99.50
Female	2	0.50
<u>Ages</u>		
Less than 30 years	20	5.40
30-35 years	55	14.90
35-40 years	60	16.30
40-45 years	68	18.50
45-50 years	92	25.00
More than 50 years	73	19.80
<u>Education</u>		
Primary School	221	60.10
Secondary School (grade 9)/certificate	96	26.10

Secondary School (grade 12)/diploma	49	13.30
Bachelor Degree	2	0.50
<u>Driving Experience</u>		
Less than 5 years	16	4.30
5-10 years	57	15.50
More than 10 years	295	80.20

Most of the respondent status are male (99.50%) Ages 45-50 years (25.00%) Education Primary School (60.10%) Driving Experience are more than 10 years (80.20%)

2. The factors affecting truck drivers competence in ASEAN Community

Table 2 Frequency and Percentages of the respondents divide by the factors affecting truck drivers competence in ASEAN Community status

n = 368

The factors affecting truck drivers competence	Frequency	Percentages
<u>Type of business</u>		
Sole owner	29	7.90
Partnership	96	26.10
Company Limited	211	57.30
Public Company Limited	32	8.70

Table 2 Frequency and Percentages of the respondents divide by the factors affecting truck drivers competence in ASEAN Community status

n = 368

The factors affecting truck drivers competence	Frequency	Percentages
<u>Driving experience in ASEAN Community</u>		
Less than 3 years	68	18.50
3-5 years	59	16.00
More than 5 years	241	65.50
<u>Type of the truck</u>		
Car (4 wheels)	5	1.40
Truck (6 wheels)	12	3.30
Truck (10 wheels)	13	3.50
Semi-Truck	25	6.80
18 wheels Trailer Truck	125	34.00
Trailer Truck	186	50.60
18 wheels Trailer Truck and Trailer Truck	2	0.50
<u>Language for communication</u>		
Thai	201	54.60
Khmer	53	14.40
Loas	53	14.40

Khmer and Loas	24	6.50
English	12	3.30
Others	25	3.70

The factors affecting truck driver competence met that most of drivers works at the company limited (57.30%) Driving experience in ASEAN Community more than 5 years (65.50%) Type of the truck mostly used is the trailer truck (50.60%) Language for communication is Thai (54.60%)

5.3 The EFA of the factors affecting truck drivers competence in ASEAN

Community

Table 3 Competence Mean Standard Deviation (S.D.) and Level of the competence
n = 368

Competence	\bar{x}	S.D.	Level
<u>Knowledge</u>			
k5 Safety driving	4.60	.70	the most
K9 Transport Laws	4.35	.86	more
K6 Product and Services	4.10	.93	more
K8 Transport Modals	3.59	.86	more
K7 Transportation Schedule	3.59	.98	more
K10 International Shipping	3.27	1.39	average

Table 3 Competence Mean Standard Deviation (S.D.) and Level of the competence
n = 368

Competence	\bar{x}	S.D.	Level
<u>Skill</u>			
s14 Driving	4.59	.67	the most
s15 Tools and Equipment on the truck	4.36	.80	more
s16 Tools and Equipment on the truck management	4.03	.97	more
s17 Priority and Urgent task	3.93	1.05	more
s13 Customer Service	3.37	1.13	average
s12 Communications	3.16	1.40	average
s11 Language	3.01	1.39	average
<u>Trait</u>			
t18 Truck drivers competence in ASEAN Community (Honesty and patience)	4.29	.81	more
t19 Service Habit (Friendly and caring towards others)	3.93	.95	more

The truck drivers opinion of competence in ASEAN Community found that knowledge on safety driving stood at the most leveled (\bar{x} 4.60, S.D. .70) skill on driving was

at the most leveled (\bar{x} 4.59, S.D. .67) and trait was truck driver competence in ASEAN Community (Honesty and patience) stood at more leveled (\bar{x} 4.29, S.D. .81) respectively.

Table 4 Correlation Matrix

	k5	k6	k7	k8	k9	k10	s11	s12	s13	s14	s15	s16	s17	t18
k6	.342													
k7	.143	.474												
k8	.241	.459	.570											
k9	.284	.231	.172	.209										
k10	-.046	.259	.329	.339	.275									
s11	.224	-.129	-.108	.016	.225	-.096								
s12	.236	-.095	-.045	.111	.182	-.009	.859							
s13	.247	.290	.195	.267	.256	.099	.527	.560						
s14	.247	.216	.092	.092	.134	-.123	.047	.072	.141					
s15	.073	.342	.293	.245	.200	.272	-.063	-.029	.092	.309				
s16	.206	.521	.465	.360	.234	.428	-.192	-.136	.223	.211	.567			
s17	.134	.277	.340	.226	-.170	.140	-.307	-.234	.021	.199	.358	.402		
t18	.282	.318	.219	.147	.049	.044	-.164	-.191	.046	.330	.398	.375	.588	
t19	.280	.377	.309	.411	.141	.290	.006	.097	.289	.121	.375	.488	.392	.458

The Correlation Matrix of Pearson Correlation met that the s11 Language and s12 Communication were the most related ($r^2 = .859$) so these factors could be in the same latent factor

Table 5 KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.765
	Approx. Chi-Square	1664.305
Bartlett's Test of Sphericity	df	105
	Sig.	.000

The KMO and Bartlett's Test met the Factor Analysis was .765 which is more than .5 and closed to 1 so, to sum up this data could be use the Factor Analysis Bartlett's Test of Sphericity for the hypothesis test there are variables such as k5, k6, ..., t19 had related. The Chi-Square = 1664.305 and Significance = .000 less than .01 means reject the H_0 : k5, k6, ..., t19 had related, so the Factor Analysis could be used.

4 The CFA of the factors affecting truck driver competence in ASEAN Community

Table 6 Communalities

Communalities	Initial	Extraction
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k5 Safety driving	1.00	.453
K6 Product and Services	1.00	.539
K7 Transportation Schedule	1.00	.558
K8 Transport Modals	1.00	.567
K9 Transport Laws	1.00	.757
K10 International Shipping	1.00	.609
s11 Language	1.00	.852
s12 Communications	1.00	.860
s13 Customer Service	1.00	.656
s14 Driving	1.00	.605
s15 Tools and Equipment on the truck	1.00	.462
s16 Tools and Equipment on the truck management	1.00	.664
s17 Priority and Urgent task	1.00	.741
t18 Truck drivers competence in ASEAN Community (Honesty and patience)	1.00	.695
t19 Service Habit (Friendly and caring towards others)	1.00	.574

From the table 6, All variables had initial communalities = 1 (the portion of variance of the variables could explain by Common Factor (k5, k6,.....t19) or Multiple Correlation of the variables and Factor). Meaning as Common Factor could explain variance of the variables. Whereas, the Extraction communalities met that k5 Safety driving had the lowest Extraction = .453 but can be group to some of factor.

Table 7 Total Variance Explained

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.31	28.727	28.727	4.31	28.727	28.727	3.46	23.083	23.083
2	2.69	17.918	46.645	2.69	17.918	46.645	2.52	16.799	39.882
3	1.54	10.262	56.907	1.54	10.262	56.907	2.18	14.544	54.425
4	1.06	7.041	63.948	1.06	7.041	63.948	1.43	9.522	63.948
5	.997	6.645	70.593						
6	.816	5.441	76.034						
7	.623	4.155	80.190						
8	.533	3.555	83.745						
9	.511	3.407	87.152						
10	.499	3.327	90.479						

11	.406	2.710	93.189
12	.356	2.376	95.565
13	.297	1.979	97.544
14	.248	1.655	99.198
15	.120	.802	100.000

Extraction Method : Principal Component Analysis

The Factor both before and after Extraction Method by Principal Component Analysis found 15 factors can be group to 4 Factors; knowledge, communication to customer skills, skill on the Truck and management skill

5 The result of The Exploratory Factor Analysis: EFA between the SEM Model and the Empirical data.

5.1 The Exploratory Factor Analysis (EFA) (Figure 1)

Check the SEM Model and the Empirical data by found $\chi^2=488.17$ df = 84 P-value = 0.000 (non-sig.) RMSEA = 0.134. To sum up the model does not consist of the Empirical data (factors affecting truck driver competence in ASEAN Community). The parameter of 4 routes met;

1) Knowledge affecting to the knowledge on K6 product and services = 0.67, K7 Transportation Schedule = 0.67, K8 Transport Modals = 0.55, K9 Transport Laws = 0.26, K10 International Shipping = 0.70, s16 Tools and Equipment on the truck management = 0.75, and t19 Service Habit (Friendly and caring towards others) = 0.60. Significant stood at 0.01 leveled.

2) Communication to customer skills affecting to the skill on s11 Language =

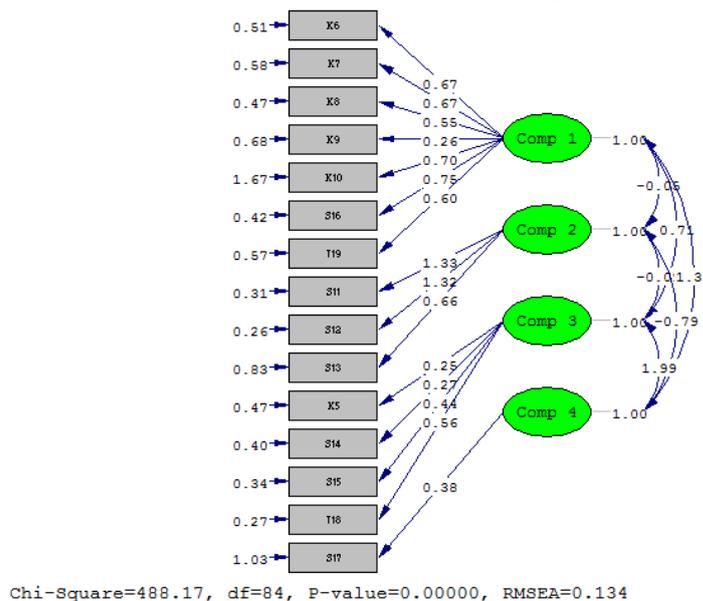


Figure 1 The parameter of the route factors affecting truck driver competence in ASEAN Community (EFA)

1.33, s12 Communications = 1.32, and s13 Customer Service = 0.66.

3) Skill on the Truck affecting to k5 Safety driving = 0.25, s14 Driving = 0.27, s15 Tools and Equipment on the truck = 0.44 and t18 Truck drivers competence in ASEAN Community (Honesty and patience) = 0.56. Significant stood at 0.01 leveled.

4) Management skill affecting to s17 Priority and Urgent task = 0.38. Significant stood at 0.01 leveled.

Knowledge had negative affecting to Communication to customer skills = -0.05, Communication to customer skills had negative affecting to Skill on the Truck = -0.01, Skill on the Truck had positive affecting to Management skill = 1.99, Knowledge had positive affecting to Skill on the Truck = 0.71, Communication to customer skills had negative affecting to Management skill = -0.79 and Knowledge had positive affecting to Management skill = 0.31. Significant stood at 0.01 leveled.

5.2 The Second Order Confirmatory Factor Analysis: CFA (Figure 2)

The researcher had adjusted the model by cut the variables included; k5 Safety driving, K9 Transport Laws s15 Tools and Equipment on the truck, s16 Tools and Equipment on the truck management, s17 Priority and Urgent task, and t19 Service Habit (Friendly and caring towards others). Then designed the new model and testing again. The result showed that; the SEM Model and the Empirical data by Chi-square=117.50, df = 24 P-value = 0.000 (non-sig.) RMSEA = 0.121. To sum up the model does not consist of the Empirical data (factors affecting truck drivers competence in ASEAN Community). The parameter of 3 routes met;

1) Knowledge affecting to the knowledge on K6 product and services = 0.62, K7 Transportation Schedule = 0.78, K8 Transport Modals = 0.65, K10 International Shipping = 0.64. Significant stood at 0.01 leveled.

2) Skills affecting to s14 Driving = 0.15, s11 Language = 1.28, s12 Communications = 1.37, and s13 Customer Service = 0.65. Significant stood at 0.01 leveled.

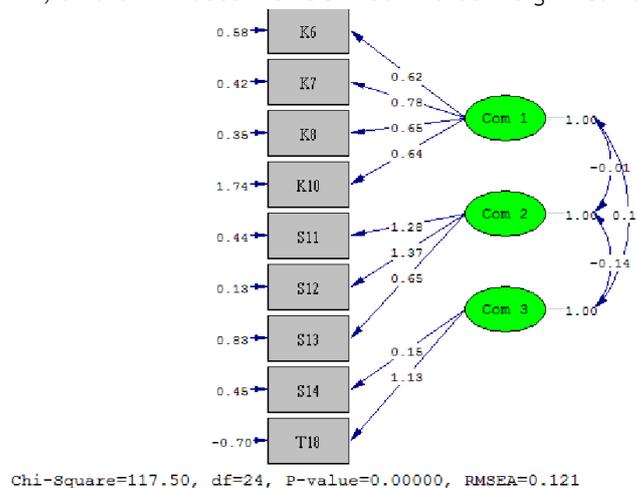


Figure 2 The parameter of the route factors affecting truck driver competence in ASEAN Community (CFA)

3) Trait affecting to k5 Safety driving = 0.25, and t18 Truck drivers competence in ASEAN Community (Honesty and patience) = 1.13. Significant stood at 0.01 leveled.

Knowledge had negative affecting to Skills = -0.01, Skills had negative affecting to Trait = -0.14, Knowledge had indirect affecting to Skills = 0.18. Significant stood at 0.01 leveled.

Conclusion and Discussion

1. Conclusion

The most of the respondent status are male, ages 45-50 years, graduated Primary School and driving experience are more than 10 years, works at the company limited, Driving experience in ASEAN Community more than 5 years, Type of the truck mostly used is the trailer truck, communication in Thai Language. Continue to, the most important competencies are; k5 Safety driving, s14 Driving, and t18 Truck drivers competence in ASEAN Community (Honesty and patience). However, s11 Language and s12 Communications hit the highest related by Pearson $r^2 = .859$ they were in the same factor. The KMO and Bartlett's Test met that the Factor Analysis Bartlett's Test of Sphericity could be used to the hypothesis test. Extraction communality showed that there were Principle Component 4 Factors out of 15 variables there are; knowledge, communication to customer skills, skill on the Truck and management skill

The Exploratory Factor Analysis (EFA) found the model does not consist of the Empirical data (factors affecting truck drivers competence in ASEAN Community).

The second-order confirmatory factor analysis (CFA), it consisted of 3 factors; knowledge, skills and characteristics. Competency in knowledge factors included; knowledge in goods and services, ability to manage right time for transportation, knowledge of appropriate types of transport and documentation of international logistics. Skills competency composed of language skills, communication and customer service skills. Competency in characteristics consisted of driving competency including honesty and patience.

2. Discussion

2.1 The truck driver mostly, male, Ages 45-50 years, graduated Primary School (Libhaichareorn, 2013; Chaidee, 2011; Duangratmaneechot, 2011; Chaichot, 2011 and Srikasaem, 1999) and driving experience are more than 10 years affecting to truck drivers competence (Charearnlarbanan, 2004), The truck drivers with 1-3 years, and 3-6 years, has lower trait than more than 10 years of experience related to Douglas, and Swartz (2016) met that drivers in early and late career stages harbor different perceptions of the burden safety regulations place on driving operations. The truck drivers works at the company limited, Truck driver

competence in ASEAN Community with 5 years of experience consisted of Charearnlarbanan (2004) Trailer Truck frequently uses (Duangratmaneechot, 2011) but the truck drivers can not uses the other language, communicate by Thai language, whereas, customs managed by the Shipping.

2.2 The most important factors affecting truck drivers competence in ASEAN Community is truck drivers experience, continue to important competency are knowledge, skills, and trait consisted to Worawattanaparinya (2019) said that the level of desirable competencies of a truck driver as perceived of road transport operators was in high level for overall. When considered deeply into each competencies aspect, there were high level in all aspects. The highest score was personal characteristics of truck drivers, followed by skills competencies and knowledge competencies, respectively.

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EFFECTIVE PROCUREMENT MANAGEMENT

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Abstract

This article aims to 1) to educate about procurement management 2) provide suggestions of procurement management to reduce the cost of purchasing. By presenting the content in this article comprising managing the procurement department, how to reduce the cost of purchasing.

However the knowledge of this article published can be utilized in the management of procurement within the organization. Which is an important aspect of the procurement work there must be an adequate supply of raw materials. At an affordable price quality as desired in the right place and at the right time make the procurement more efficient.

Keywords : Management, Procurement, Efficiency

INTRODUCTION

Purchasing is a very important element. Which will be an important driver and it is part of the strategy to increase the competitiveness of the business in procurement is classified as one of the most important professions. Purchasing and procurement, it is one of the activities that is very important and another activity of logistics. In the management of the supply chain, it is important to have management in purchasing raw materials. Good quality to meet the changing needs of customers from an emphasis on price. To be good quality in procurement, there must be a process to be used in the selection of raw materials. and decide on a quality raw material supplier at an acceptable price more importantly, there must be a system used to check the quality of raw materials and suppliers. Which will be the ones that result in cost the consolidation of logistics is lower, meets the objectives of procurement management and procurement to reduce costs.

RESEARCH OBJECTIVE

1. To educate about procurement management.
2. Provide suggestions of procurement management to reduce the cost of purchasing.

LITERATURE REVIEW

The meaning of procurement

Nowadays, the purchasing department is very important. This is an important driver and part of a strategy to increase business competitiveness. Purchasing is one of the most important professions. With auditors, factory engineers, lawyers, or security personnel, etc. The service provider must be assisted and should be supported and developed into a qualified and international standard procurement professional. Which seek personnel with knowledge and ability that should be promoted to have more knowledge and skills to support new technology and speakers all the time, which means and the importance of procurement. There are many meanings and definitions related to purchasing as follows.

Purchasing is the management of an organization's external resources, including goods, services, capabilities, and knowledge that play an important role in the operation, maintenance and management of core activities and support activities For the best benefit.
[1]

The definition of purchasing is the purchasing process. By studying the needs, find a place to buy and select a supplier. Negotiate the price and set conditions to meet the needs including tracking the product delivery in order to receive the product on time and follow up payment for goods as well, purchasing and managing packages and that supply are used interchangeably in the procurement of parcels and services in an efficient and effective

manner within the organization. It is not the only relevance to the standard procedures in the procurement process that containing [2].

- 1) Recognition of demand for products
- 2) Converting the demand for that product into a condition for supply
- 3) Seeking potential suppliers to meet the needs
- 4) Choosing a suitable product source
- 5) Arranging an agreement for purchase orders or sales contracts
- 6) Delivery of goods or services
- 7) Payment for goods or services to the supplier

Purchasing is a process by which companies. Enter into contracts with third parties to obtain the desired goods and services. To achieve business objectives in a timely and cost-effective manner from the above definition, it can be seen. This activity is part of parcel management because it is not just a purchasing event it also extends to planning and policy-making, covering related activities. Follow-up to ensure it is delivered on the agreed deadline. Inspecting the delivered product to ensure it is qualified and the quantity is exactly as placed as well as develop communication and coordination with other departments related, etc. [3]

Procurement is the process by which companies or organizations agree to trade in order to acquire the goods or services they need to achieve. Business objectives at a reasonable time and cost with the goal of obtaining products or services that quality and quantity is correct on time at the right price from a reputable source. [4]

In summary, purchasing means processes that are responsible for the procurement of raw materials according to the needs of various departments it is a process that links organizations in supply chain and serves to coordinate the flow of information between the organization and the suppliers. Having raw materials ready is the first factor that determines the ability to produce goods and services for delivery to the customer in due time [5]. The tools for wanting to achieve this business objectives are generally in business. There are two main types of procurement:

- 1) Buying for distribution
- 2) Buying for use or replacement

The purchasing process is critical to the level of logistics customer service. Moreover, the procurement cost or raw material cost is considered a high cost ratio compared to other costs of goods or services It is therefore important to have effective procurement management.

Purchasing strategy

In purchasing that material the company is the buyer department. The owner of the material source is the seller department. If any party has a high bargaining power, that side

will have an advantage. To prevent any disadvantage, the company has to try to maintain a balance of bargaining power. This may be done in several ways as follows

1) Distribution of purchasing one way to prevent bargaining power from lower than sellers is to distribute purchasing to multiple selected vendors. Each seller must be large enough to see the value that they should trade with the buyer in the long run. At the same time, if the seller offers a discount because of the bulk purchase. Should be taken into consideration of the purchase as well distribution of purchases; In addition to preventing the bargaining power from falling, it may also increase this power.

2) Creating additional sources of purchase, this method is commonly used in cases where a company has assessed the qualifications and it appears that a small number of sellers have passed the evaluation criteria. Using a purchase distribution strategy doesn't give you the confidence it should be. There need to create additional sources of purchase This can be done in a number of ways, such as providing technical advice to vendors who do not meet the criteria due to quality criteria but have the potential to improve. Make a forward purchase contract with a seller whose financial condition is not stable enough to invest in producing materials to deliver on time, etc.

3) Avoiding the cost of switching sources, many vendors use free means of providing engineering, machinery, or other assistance in order to enslave the purchaser of the technical or production systems. Because of such assistance required the purchase of other related materials. However, when receiving such a blank offer, the buyer must consider carefully as it can generate enormous costs in the future.

4) Standardization of materials products that are of the same standard will always have the same criteria, can be used interchangeably if all entrepreneurs in the same industry can set the standard of materials together to come out will reduce the bargaining power of each seller to a certain extent. Because the buyer can buy from any seller and materials are interchangeable. Moreover, the cost of changing the source of purchase is not available.

5) Retrospective reunification, it is a type of business expansion, one way to go from being a manufacturer to owning a source of raw materials used in another business. In this way, the bargaining power of the seller is reduced, because in addition to increasing the purchasing power of the buyer side, it also increases the competitiveness of the seller. Even if some raw materials are produced by yourself. Buying from some sellers, it is also an effective method. Sometimes, even just a study of a project to openly own a source of raw materials It may be a deterrent to the bad sales behavior of the seller department.

6) Expedited procurement It shows the buyer department to closely monitor and evaluate the performance of the sales department at all times. Causing the sales department to not dare to distort. This method is most commonly used in the case of hiring something that is different from the market standard, for example, to manufacture specially

designed machinery. The buyer will send relevant personnel to follow up with the production site. This is to ensure that

- Official order has reached the seller and the purchase order is being processed
- If it is an employment to do things Make sure the contractor has ordered the plant to produce it. The accelerator may request a work order number. Name of the supervisor and place of contact for reference and contact job progress
- The seller has no obstacles to prevent the processing of the purchase order temporarily. This is to ensure that the buyer will receive the items on time.
- The job progress is in accordance with the requirements in all respects. Those who will expedite purchasing must have knowledge and ability, have a keen sense of negotiation and the courage to recommend the seller to deal with any problems that arise [6]

Cost reduction ideas

Running a business needs to be the most profitable. As a return on work and reasonable business profits, it is an award that society gives to business organizations in return for the business organization has fulfilled its mission. And give good to society which strategies to reduce production costs is another option to increase the profitability of the business enterprise. It is a strategy that focuses on exploring and debugging within the business organization. This strategy can be applied for the survival of business organizations in the era of economic downturn and to increase the competitiveness of the economy.

Typically, the total cost consists of fixed costs approx. 20%, variable costs approx 80%. In practice, cost reductions at variable costs are easier than fixed costs. For example

1) Increasing product prices, this will result in more profits than reducing production costs. But be careful about the purchasing power of customers that may be reduced.

2) Efficient overtime management, which prefer to control overtime pay in the range of 7-15% of base salary.

3) Use only quality raw materials, not choosing only the best quality ingredients to get a cheaper price, to reduce waste from raw materials that cannot be used due to the characteristic fall quality (Specification). This must be considered that it does not affect the quality of the products delivered to the customer as agreed. Which using cheaper raw materials must first study the technical aspects of product quality and the quantity to be replaced.

4) Effective inventory management, by not having a large inventory or using the Just in Time system, which inventory management must be considered as well. You need to find the right inventory level and the impact must be considered, for example, if the inventory is too small may cause the quality not as expected or the main machine may have to stop if the raw material is insufficient and if the inventory is too small, it may affect the delivery of the product to the customer.

5) Reduce transportation costs, by choosing a short transport route transport at any time reduce repeated hairs many times. Make transportation routes convenient without wasting fuel or wasting tires or changing to a cheaper vehicle by comparison, such as by boat, car, rail or plane.

6) Lower fuel costs, by considering the fuel price per unit of heat or per ton, which should be choosen.

7) Lowest price, such as using industrial waste as raw material or fuel, using alternative fuels anthracite as a substitute for coal. The use of coal instead of fuel oil, the use of Petroleum Coke instead of coal, etc., which sometimes need to improve the machinery to be able to be used with those fuels.

8) Reduce electricity costs, by improving machinery to reduce electricity consumption, such as improving separator from 110 KWH / t to 101 KWH / t by studying the electricity tariff structure with Demand Charge and Energy Charge, which has to manage the electricity at the peak and manage the use of the machinery according to the time required cheap electricity cost [7]

CONCLUSION AND RECOMMENDATIONS

Procurement management was the importance of management in purchasing raw materials and supplying good quality raw materials to meet the needs of customers who have shifted from focusing on price to be good quality in purchasing and sourcing, there must be a process in which raw materials are selected and decide on a quality raw material supplier at an acceptable price more importantly, there must be a system used to check the quality of raw materials and suppliers. This in turn leads to lower total logistics costs, meeting the objectives of procurement management [8].

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REDUCING INVENTORY COSTS WITH AUTOMATED WAREHOUSE SYSTEMS

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Abstract

This article aims to provide knowledge about reducing inventory costs with automation warehouse systems and recommendation to use automated warehouse systems for staff performance enhancement. That warehouse is an important department, because it is the area to store finished goods and Raw materials and warehouse is a place to add value to the product, inventory costs are a critical cost that is often overlooked and can have a profound effect on business operations. Then, presentation of this paper contains 1) inventory cost management, 2) general information automated storage and retrieval system (ASRS), 3) reducing inventory costs with automated warehouse systems, 4) the development of automated warehouse technology in the future, and 5) recommendation to use automated warehouse systems

However, knowledge from this article can use for the management reducing inventory costs with automated warehouse systems, It is very important for businesses. Include inventory that is ready to be used in production, this is for the main goal of warehouse management to achieve a systematic operation that is worth the investment. Including prevention and reduction of losses from operations to provide the lowest operating costs, and this paper can be used as a basis for future empirical studies.

Key Words: Reducing Inventory Costs, Automated Warehouse Systems, Warehouse Management

Introduction

Logistics management is the work of procuring products or services according to customer needs. And deliver it to the right place at the right time with great cost the core of logistics management is to build a good relationship for communication Warehouse cost arises from the service activities within the warehouse. Product storage Selection of factory and warehouse locations this is the same as the cost of transportation that SME operators can operate themselves, called in-house and outsourcing to others. Or rent someone else's warehouse called Outsource In which the operator has to decide whether to choose to proceed by himself Or hire other people who have expertise to help in warehouse management Or may use the rental method, it must be up to the decision of the business management to choose which type In order to be effective in reducing the cost of the business as much as possible

Inventory cost management

DR. THOMAS + PARTNER. (2020). The first function of warehousing is storage, and one group of costs are those associated with "goods at rest," or those expenses that would occur even if the stored products were never moved. The second group of costs are those related to "goods in motion." These are the handling costs that occur only when materials are moved. To understand and control overall warehousing costs, it is best to make the distinction between goods at rest or goods in motion. Because the allocation of these costs is always a matter of judgment, there can be reasonable debate about whether any cost item should be applied to one function or another. Some warehouse operators assign all fixed costs to goods at rest because these costs cannot reduce, even when materials-handling activity decreases.

Trading companies and manufacturing companies usually have a warehouse or distribution Centre Raw materials and supplies, intermediate products, semi-finished products, finished products and spare parts are stored there. The storage of these goods causes costs, the totality of which is referred to as storage maintenance costs, warehousing costs or storage costs, which in turn make up a large part of the logistics costs.

Thomas W. Speh, (2019) Warehousing is nothing more than the management of space and time. The space management portion, storage has a cost per month, because there is a monthly cost for warehouse space. The time management component includes labor involved in handling materials as they moveing and out of the warehouse. If you are buying or selling warehouse services, or simply providing warehousing services for your own organization, the models that are presented in this article will enable you to isolate and analyze the costs of warehousing.

Kenneth B. Ackerman. (2015) Some warehousing costs tend to be ignored or misallocated, because the analyst does not recognize where they belong. In any costing system, allocation of overhead costs is a matter of judgment, and no specific formula will be correct for every user. The cost models shown here have been designed to ensure that no item is overlooked. We assume that each user will customize the models, and make individual judgments regarding allocation of administrative costs

1 Four Categories of Warehouse Costs

1.1 Handling all expenses associated with moving product in or out of the warehouse should be included in the handling cost center. The largest component is the labor used to handle the product that moves through the distribution center. It includes receiving, put-away, order selection, and loading. It also may include labor to re-warehouse, repackage, or refurbish damaged product. Handling also includes all costs associated with the equipment used to handle product in the warehouse, such as the depreciation of equipment cost, and the cost of fuel, or electricity to power the equipment

1.2 Storage expenses are costs associated with “goods at rest.” These costs would be incurred whether or not any product ever moved. Because storage expenses are related to the cost of occupying a facility, and these costs are normally accumulated each month, storage is expressed as a monthly cost. If an entire building is dedicated to an operation, storage expenses are the total occupancy cost for that facility.

1.3 Operations administration. These expenses are incurred to support the operation of the distribution center. Closing the facility would eliminate these costs. Included are costs for line supervision, clerical effort, information technology, supplies, insurance, and taxes

1.4 General administrative expenses. Expenses not incurred for a specific distribution center are included in this category. General management, on operating staff, and general office expenses are examples. Allocation of such expenses to each warehouse is a judgment call.

2. General information automated storage and retrieval system (ASRS)

Mike Clemens. (2017) Automated storage and retrieval systems (AS/RS) are computer- and robot-aided systems that can retrieve items or store them in specific locations. The system is usually comprised of predefined locations where machines can follow established routes to get items. As long as everything is stored in its proper location, these systems help to speed up manufacturing and shipping tasks. Typically, automated storage and retrieval systems are used when high volume loads must be moved rapidly and accurately. Let's explore the main types of AS/RS, how they work and their advantages and disadvantages.

2.1 The basic components of an ASRS

- Storage and retrieval machines
- Rack structure
- Conveyor (or AGV) interface
- Warehouse Control System

Storage and retrieval machines are designed to handle a wide range of load types, but for the typical warehouse, this usually means pallet loads, individual cases or totes, or both. An entire



Figure 1 Conveyor (or AGV) interface

ASRS design is focused on the load handling (dimensions) and speed of delivery for a particular load type. Key to the successful operation of the system is the passing of load movement information between the existing Warehouse Management System and the Automated Warehouse Control System (WCS). This WCS manages all of the automated equipment functions and tracks load movements into and out of the system.

2.2 Pallet Load Handling Options

In a pallet handling system, the most common configuration is a fixed aisle storage and retrieval machine that moves the pallets into and out of storage locations. These storage and retrieval machines can also incorporate shuttle cars for deep lane storage, and there are versions that can automatically change aisles. Less common, but very successful in the right applications, are pallet lifting or lowering devices that move loads between levels in the racking as well as shuttle vehicles that move pallets into and out of storage locations. This wide range of options allows an ASRS to be configured to match any load type, SKU density profile, and speed of delivery.

2.3 What are the benefits of ASRS warehousing

The biggest gains an ASRS offers in a warehouse are reducing the use of space and labor. The load handling tolerances are only limited by the uniformity of the pallet loads stored in the system. The only fixed requirement is the need for a rack structure. This could

range from single, double or triple deep with a fixed mast shuttle, or a deep lane configuration with an autonomous shuttle that drives off of the crane



Figure 2 rack-supported

An ASRS can either be a standalone structure inside of an existing building, or it can be designed as a “rack-supported” structure, where the building wall panels and roof are attached to the outside of the rack structure, making a denser footprint and possibly reducing over-all building/ASRS costs. This approach is commonly used for cold or freezer storage as well as large-scale, green field warehouses. Labor savings are the result of quantifying all of the load handling movement labor displaced by the equipment. Keep in mind, this type of equipment is most cost effective when it operates for multiple shifts. In many e-commerce applications, the use of tote handling ASRS solutions is the only way to match the speed of order fulfillment with real-time order demand

Other ASRS benefits include:

- Consistent handling of product in a safe and secure manner
- Storage put away rules managed by the WCS are always followed
- Real-time product tracking and identification is maintained
- Automated replenishment can facilitate order picking and consolidation
- Highly controlled storage environment, insuring no human access

Reducing inventory costs with automated warehouse systems

Chelsea Tarr.(2020)Reducing warehouse costs is a growing priority as costs continue to rise with the ever-changing economic environment and customer expectations. I don't just mean the cost of your physical space. The costs associated with operating a warehouse encompass a lot more than paying “rent”. Other contributing factors include labor and with that, the potential cost of injury and workers compensation, picking accuracy and productivity as well as the cost of processing returns due to picking errors and more.

Investing in automated storage and retrieval systems—such as horizontal carousels, vertical carousels, vertical buffer modules (VBM) and vertical lift modules (VLMs) – optimizes manual picking processes, which leads to reduced warehouse costs and increased profits. That’s because, by implementing automation, multiple areas of a manufacturing or distribution facility will benefit from savings in inventory accessibility, floor space, time, improved ergonomics and better accuracy.

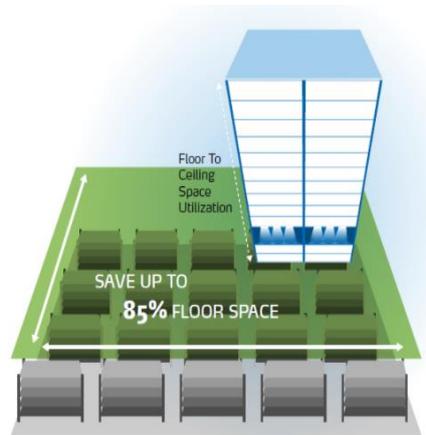


Figure 3 Reduce Capacity

1. Reduce Warehouse Labor Costs Because distribution centers are packed with pallets, cases and pieces, order fulfillment is frequently acknowledged as the most labor-intensive and costly activity. That’s because travel in a conventional, manual fulfillment operation can account for as much as 60-65% of a picker’s time. Implementing one or more automated horizontal carousel, vertical carousel, VBM or VLM lets your order fulfillment staff work smarter, not harder. That’s because these solutions present stored items directly to an operator. The “goods to person” method eliminates time spent walking from one pick location to another within a warehouse. These automated solutions are equipped with indicator lights that illuminate the item’s location and pick quantity required. This cuts the time spent searching for a specific stock keeping unit (SKU) upon arrival at the pick face. The result is more time to spend picking.

2. Reduce Warehouse Floor Space Costs Automated storage equipment opens your facility’s floor space by utilizing your building’s height to store inventory overhead. This eliminates both the footprint required by static shelving and pallet rack, as well as the aisles required to access them. Further, automated systems utilize tightly configured totes, bins, Dividers, drawers and specialty holders. These components separate and organize the maximum number of stored items possible in each of the system’s trays or bins. To further maximize every square inch of storage space within the automated system, inventory management software is integrated. Programmed to dynamically manage the cube space

within the automated storage system, the software keeps shelves holding the inventory as tightly compressed as possible. Because of this capability, automated storage systems eliminate the empty reach-in space required by shelving. As a result, the equivalent amount of inventory held in 120 bays of static shelving

The value of the freed-up floor space depends on its new use. Open space can be used to store larger volumes of the same SKUs or accommodate expanded inventory of new SKUs. Alternatively, the opened-up areas can be repurposed for other, revenue generating processes. Additional light manufacturing for customization, kitting of related items, or enhanced quality control processes are value-added activities that can positively impact the bottom line.

3 Reduce Picking Costs Operators picking manually are often restricted to filling one order at a time. Limited by paper pick lists and a lack of picking optimization software, they may visit the same popular SKU pick faces multiple times in a day. For a facility with static shelving or pallet rack, this translates into pick rates of approximately 50 lines per hour.

Alternately, an automated storage and picking solution facilitates batch picking. The process groups orders with a common item, or items, together. Multiples of the same item are picked, then sorted to their appropriate orders for shipping at a nearby workstation. This means multiple orders can be filled at one time—up to 750 lines per hour, as shown here. Because horizontal carousels, vertical carousels, VBMs and VLMs utilize integrated inventory management software, batch picks can be completed in a single rotation, or cycle, of the unit. Batch picking with an automated system eliminates bottlenecks associated with waiting for one last item to complete an order or finish a manufacturing process. Batch picking can also be used to prioritize orders by importance or by inventory availability. This enables customer order cut-off times to be extended, increasing a company's competitiveness and customer satisfaction. Time is money when it comes to picking orders. Therefore it's important to avoid unknown inventory shortages. Be sure to keep an eye on inventory regularly. Learn more about inventory shrinkage.



Figure 4 Golden zone (pick item)

4 Reduce Workplace Injuries and Absences Manual picking operations utilizing shelving or pallet rack for item storage can require a picker to reach, bend, lift, twist, stretch, push or pull to retrieve inventory. The storage units are characterized by: Wasted space due to inaccessibility Poor visibility of products in the back Last-in/first-out (LIFO) stock rotation Unsafe picks due to storage position (height or distance) to avoid potential injury, it is often recommended that workers pick items from the 'golden zone,' which extends from the belt height to the shoulder height of the average individual. Items within this zone can be grabbed or moved without either stretching or bending. In contrast, automated storage

Systems present stored items at the proper ergonomic, golden zone work height. This creates a safe working environment that minimizes injuries from bending, reaching and stretching. Further, walking and climbing are no longer necessary. Not only does this reduce fatigue, but also the chance of worker injury is substantially lessened. In turn, absenteeism, insurance premiums and claims for worker's compensation will be reduced.

5. Reduce Picking Errors The cost of a picking error includes not only the cost of the item, but also the expenses associated with shipping the item back, processing it upon receipt, returning it to inventory and loss of customer satisfaction. Further time is lost in correcting the mistake by picking, packing and shipping the correct item back to the customer. An estimated 35% of facilities experience on going miskicks rates of 1% or more. Although 1% sounds like a slim margin for improvement, it adds up quickly. Because automated storage systems incorporate advanced picking and real time inventory tracking technologies—such as light-directed indicators that pinpoint the precise SKU location and quantity to be picked—picking accuracy increases up to 99.9%. The storage system mitigates human error and produces better inventory control. Not only will this contribute to a dramatic reduction in picking mistakes, but it will result in tremendous cost savings. Further, customer satisfaction will improve, likely leading to an increase in repeat purchases.

The development of automated warehouse technology in the future

The Logistics IQ. (2019) Expect the growth of the material handling equipment market in general, and automated warehouse solutions in particular, to be driven by several key industrial and macro trends. Among the industrial trends, we see the adoption of new technologies relating to the (Industrial) Internet of Things, increased pressures on and demand for efficient and flexible distribution operations, and growth in use of automated solutions across key end markets:

1. Technology availability. As part of their efforts to boost productivity and margins, companies are increasingly adopting data analytics tools to identify areas of improvement,

which also holds true for logistics and warehouse operations. The combination of sensors, scanners and RFID tags with warehouse control systems and automated material handling equipment is increasingly seen as the way forward in terms of warehouse safety and operational efficiency. The same technology allows real-time identification and tracking of inventories, further helping to streamline the logistics process and reduce error potential.

2. Rising customer expectations. The rapid rise of global e-commerce and expectations for shorter delivery times are further increasing the pressure on distribution operations, particularly in high-volume areas like online grocery retailing where online penetration and proliferation should grow across several markets, in particular high-density urban areas.

3. Increasing manufacturing complexity. A move towards the Industrial Internet of Things and increased customization of products, e.g. cars, is a further growth driver for this industry as manufacturers require easy access to growing numbers of Components with very little room for material handling errors. Other industries where manufacturing and distribution needs are expected to drive increased demand for modern material handling solutions include Chemicals, Pharmaceuticals, and Food & Beverage.

Latest market research study “Warehouse Automation Market by Technology (AGV/AMR, AS/RS, Conveyors, Sortation, Order Picking, Automatic Identification and Data Capture, Palletizing & DE palletizing, Overhead Systems, MRO Services and WMS/WES/WCS), By Industry (E-commerce, General Merchandise, Grocery, Apparel, Food & Beverage, Pharma, 3PL), By Functions (Inbound, Picking, Outbound), By Geography – Global Forecast to 2025“,

Estimates that the global Warehouse Automation Market will grow more than 2x from \$13 Billion in 2018 to \$27 billion by 2025, at a CAGR of 11.7% between 2019 and 2025.

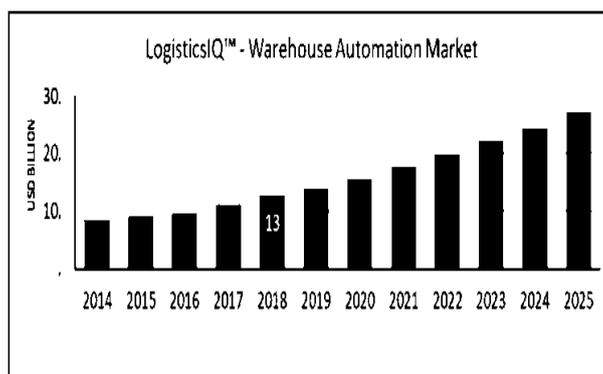


Figure 5 levels of automation. There are many ways

Recommendation to use automated warehouse systems

Varsha Saha.(2020) For warehouse leaders, pursuing automation is one of the best decisions to make. Warehouse automation effectively boosts the return on investment (ROI)

by decreasing labor demands, improving accuracy, and boosting efficiency. Warehouse automation also reduces costs and improves customer satisfaction by reducing mistakes due to human error. Yet, the vast majority of warehouses are run manually or have adopted the lowest. That warehouses can go about becoming automated. In fact, warehouse operations such as picking, barcode labels and scanning, vehicles, inventory, and back-office processes can be automated. Whether your warehouse remains manual or you are looking for ways to increase your efficiency and productivity, automation tips and best practices will help you implement automation that will significantly improve your bottom line.

WILL ALLEN. (2020). Warehouse automation can help you and your enterprise increase customer satisfaction to levels not otherwise possible through human-directed work alone. Automation is not only the future of warehousing but the badge of the modern warehouse, DC and manufacturing operation.

Warehouse automation comes in many forms, shapes and sizes. The important thing is to select the right types of automation for your company's individual needs. While that doesn't necessarily have to include physical automation with robots and automated material handling equipment, such as conveyors, sortation or storage equipment like carousels and AS/RS solutions, every warehouse can gain operational agility, flexibility and performance from some level of process automation

Conclusion

The ASRS system will receive and store products to the warehouse quickly and accurately. Which reduces the time Work and the number of employees in the ASRS system will calculate the storage of the Move quickly in an easy-to-reach position. ASRS system will help prevent product damage. Because of storing the products into the warehouse, the ASRS system measures the size of the products. Will be stored into the warehouse automatically to protect the storage of goods that are too large on the shelves and help to organize products more tidy. In addition, the ASRS system has automatic temperature and humidity control of warehouse and with good security system installed, there is no problem of product damage and loss from theft. When there is an order from the product manager, the ASRS system will prioritize the goods withdrawal / dispatch from the warehouse in a First In First Out (FIFO) manner, which is a tool to help the company In managing the aging of the goods And will first withdraw / discharge from the pallet Which helps in managing the space in the storage of products ASRS system is accurate in physical inventory. This is very important to the company because the company has many products. Which the system will count the products automatically at the end Days to count the products that have moved on that day Including the whole system of product counting At the end of every month, the ASRS system can also count products by brand. And according to the product storage

number (Stock Code) as well The ASRS day-end physical inventory allows the Global System to calculate the sales period of the inventory. (Inventory / Sales-Out Ratio) more accurately. This allows product managers to manage their inventory quickly. Make purchasing Products are more efficient and help reduce the time of the company's product storage.

For the reasons mentioned above automated warehouse system it will help improve warehouse management efficiency. And discounts on warehouse-related costs resulting in liquidity in all aspects of the business

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A CONCEPTUAL FRAMEWORK OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES FOR THAILAND MANUFACTURING FIRMS

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Abstract

Green supply chain management is significant to both the public and private sectors in many countries, especially Thailand, since Thailand's main exporting markets pay close attention to environmental effect as well as Thai government has the environmental policies. Therefore, this study aims to propose a conceptual framework of green supply chain management practices for Thailand manufacturing firms. The framework comprised the only exogenous latent variable, Green Supply Chain Management (GSCM) Practices, consisting of internal environmental management, green Purchasing, and environmental cooperation. In addition, three endogenous latent variables included Environmental Performance (EVP), containing waste management, energy consumption, and toxic release, Operational Performance (OPP), comprising cost, quality, and delivery time, and Organizational Performance (ORP), consisting of operational excellence, customer intimacy, product leadership, and financial achievement. The study depicted six hypotheses displaying the effect of GSCMP on EVP and OPP, the effect of EVP on OPP, the effect of OPP on ORP, and the mediating roles of OPP on the effects of GSCMP and EVP on ORP. The results of the study can be used for further research in which Multiple Regression Analysis (MRA), Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) are applied to discover the model on GSCMP that affects ORP of specific manufacturing industries in Thailand or other countries.

Keywords: Green Supply Chain, Green Supply Chain Review, Supply Chain Management

Introduction

The following study is designed to propose the conceptual framework on the mediating roles of Operational Performance (OPP) on the effects of Green Supply Chain Management (GSCM) Practices and Environmental performance (EVP) on Organizational Performance (ORP). Additionally, the moderating role of institutional pressure and supply chain traceability is also determined under this study. The adaptation of GSCM has gained the interest of recent investigations due to its association with the environment (Acock, 2013; Akgül et al., 2019; Anderson, 2014; Babazadeh et al., 2017; Bitektine et al., 2018; Bocquet et al., 2017). Additionally, the role of supply chain management itself is pivotal for indicating the performance of an organization (Brown, 2015; Carnevale, 2018). However, the association of societal responsiveness with organizational performance is also a critical concern of the recent studies (Choi et al., 2019; Chu et al., 2018). For instance, quality of production, eco-centralism, and sustainable development are some of the most common filaments adapted by market giants (Cousins et al., 2019).

Moreover, the adaptation of sustainable business development has also become another important competitive factor between contemporary businesses (Dubey et al., 2017; Golpîra et al., 2017; Hu and Feng, 2017; Jabbour and de Sousa Jabbour, 2016; Kiviet, 2013; Luthra et al., 2016; Mackey and Gass, 2015). Therefore, this study will propose the conceptual framework for hypothesizing the impact of GSCM practices on the ORP with reference to Thailand manufacturing firms. In correspondence, a quantitative research approach has been employed in this study to signify the mediating role of OPP on the effects of GSCM practices and EVP on ORP.

The role of GSCM practices on the performance of firms has been abundantly examined. In association with this, a contradicting view has been obtained from the literature. It is because GSCM poses intense financial consequences that are intensely influential on the performance of the organizations (Martínez and Mathiyazhagan, 2020; Moussa et al. 2017; Namagembe et al., 2019; Rad and Nahavandi, 2018; Raykov and Marcoulides, 2012). For example, Namagembe et al. (2019) determined in their study that adaptation of GSCM requires an upgradation of all the measures involved in the traditional supply chain. Hence, the impact of GSCM is negatively influential on the performance of the organization in the shorter-term as the organization has to deal with intense cost-effective measures. On the other side, Luthra et al. (2016) claimed that the adaptation of GSCM is indeed a cost-efficient measure for longer-terms. This is because GSCM rests on sustainable practices of product design, material induction, and end-of-life decision of the product.

In association with this, the adverse effect of the traditional supply chain cannot be neglected. Briefly, the environment is significantly getting destroyed with traditional supply chain practices as carbon emissions from traditional supply chain practices are altering the atmospheric compositions (Rezaee, 2017; Ringle et al., 2015; Bido et al., 2014; Suryanto et al.,

2018; Talaei et al., 2016). In regard to this crucial issue, the following study has been developed to list the impact of GSCM on the performance of manufacturing organizations with reference to the mediating effect of OPP. This study is significant as it contributes to sustainable environmental by encouraging Thailand manufacturing firms towards the adaptation of GSCM and eco-centralism to survive their business in eco-oriented situation today.

Literature Review and Hypothesis Development

1. Green supply chain management practices and operational performance

Firms that adopt GSCM practices are in a better position to achieve higher performance improvements compared to non-GSCM-practices firms. GSCM-practices enhances corporate image, improves business performance and enhances long-term financial performance (Golpîra et al., 2017; Martínez and Mathiyazhagan, 2020). However, Namagembe et al., (2019) tested the determinants of adaptation of GSCM in the manufacturing firms. The analysts listed that external pressure from the industry was the core filament that hinders the adoption of GSCM practices in the manufacturing firms:

H1: GSCM Practices have a direct positive effect on OPP.

2. Green supply chain management practices and environmental performance

GSCM is now a strategic imperative based on customer demands for products that are environmentally sustainable themselves and that have been produced by processes that are designed and operated to enhance environmental sustainability (Zhang et al., 2017). Evaluating the environmental performance leads to outcomes of the various stages of the product life cycle using an environmental performance matrix that assesses the collective impact of environmental practices throughout the supply chain (Acquah et al., 2020). The aim of GSCM, especially eco-design, is the reduction of a product's environmental impact without creating a negative trade-off with other design criteria, such as costs and functionality. Eco-friendly design and an emphasis on investment recovery will directly and positively influence environmental performance as the impetus of the designers will be on reducing the environmental impact of the design (Green et al. 2019):

H2: GSCM Practices have a direct positive effect on EVP.

3. Environmental and Operational Performance

Environmental management practices have a direct positive impact on the operational performance of the firm with respect to cost saving (Baah et al. 2020; Sari et al. 2020), as well as environmental performance (Famiyeh et al., 2018). As reduced cost is the nature of environmental performance, the environmental performance should lead to improved economic performance and both environmental performance and economic performance should yield improve operational efficiency:

H3: EVP has a direct positive effect on OPP.

4. Operational Performance and Organizational Performance

Operational performance generates cost savings and reflects an organization’s ability to satisfy changing customer demands for environmentally sustainable products and services. The cost and marketing implications of environmental, economic, and operational performance should lead to improvement in the overall financial and marketing performance of the organization (Cheng et al., 2020; Kebede Adem and Viridi, 2020; Ganbold et al., 2020):

H4: OPP has a direct positive effect on ORP.

5. Mediating Role of Operational Performance

The linkage of the hypotheses 1 and 4 (GSCM Practices -> OPP and OPP -> ORP) allows the researchers to account for the mediation effect of OPP on the effect of GSCM Practices on ORP. Moreover, the hypotheses 3 and 4 (EVP -> OPP and OPP -> ORP) allows the researchers to represent the mediation effect of OPP on the effect of EVP on ORP (Hayes, 2013):

H5: OPP mediates the effect of GSCM Practices on ORP.

H6: OPP mediates the effect of EVP on ORP.

Conceptual Framework

The conceptual framework, as shown in Figure 1, depicts the only exogenous latent variable, GSCMP, consisting of internal environmental management (IEM), green Purchasing (GP), and environmental cooperation (EO). In addition, three endogenous latent variables included Environmental Performance (EVP), containing waste management (WM), energy consumption (EN), and toxic release (TR), Operational Performance (OPP), comprising cost (CO), quality (QUA), and delivery time (DT), and Organizational Performance (ORP), consisting of operational excellence (OC), customer intimacy (CI), product leadership (PL), and financial achievement (FA). The framework portrays six hypotheses, as discussed in literature review part, displaying the effect of GSCMP on EVP and OPP, the effect of EVP on OPP, the effect of OPP on ORP, and the mediating roles of OPP on the effects of GSCMP and EVP on ORP.

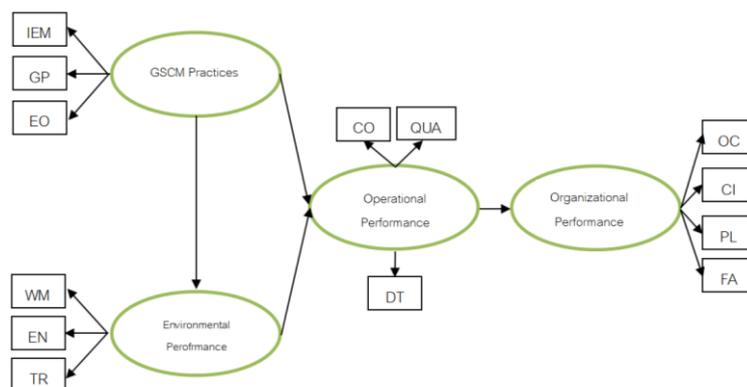


Figure 1 Conceptual Framework

Conclusion and Discussion

This paper provided a conceptual framework in the field of GSCM practices. The field has seen growth over the past two decades as it has expanded in scope and definition. The researchers utilized a framework to help identify and advance research in this field. The researchers have shown how GSCM practices relate to EVP, OPP, and ORP. The observed variables, besides, were identified.

Practically, managers, especially in Thailand, may be able to utilize this research to help them decipher the complexities faced when seeking to manage the greening of their supply chains. In this paper, the researchers relied on more recent literature in this field. Significant reviews of green supply chain and business practices have occurred previous to this article. Many of these were filtered out to provide some of the latest work in this area. It is an exciting time in business and supply chain research.

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THE IMPACT OF SUPPLY CHAIN MANAGEMENT PRACTICES ON FIRM SUPPLY PERFORMANCE : A REVIEW PAPER

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Abstract

This paper aims to study Supply Chain Management Practices affects to Firm Supply Performance. This study conducts a compile studies, analysis and synthesis concept, theories, academic article and research article related to Supply Chain Management Practices. The preliminary finding found that the Supply Chain Management Practices have four components: Strategic Supplier Partnership (SSP), Information Sharing (IFS), Information Quality (IFQ) and Customer Relationship (CR). All of these components had a positive impact on the Firm Supply Performance Knowledge obtained from this paper will be used in further study design the casual relationship model with survey research methodology. Also, the developed model then can be used a tool to define appropriate for Firm Supply Performance improvement.

Keywords : Supply Chain Management Practices, Firm Supply Performance

Introduction

Supply chain management (SCM) has nowadays become a crucial strategy for firms to enhance their profitability and stay competitive (Li et al., 2006). Thus, SCM has been recognized as an important phenomenon that has generated extensive interest among managers and academic researchers. Thus, over the last decade, scholars have increased the degree of attention paid to SCM. This has resulted in a rich stream of research, mainly focused on particular aspects of the field of SCM that include, among others, supplier selection (e.g. Igarashi et al., 2013; Inemek and Tuna, 2009). Supply chain management is the integration of business processes from the point of origin of the supplier. To provide products, services and information in order to be able to respond to customers effectively. It is necessary to have a partner to be involved in the formalities to achieve an efficient logistics integration (Cooper et al., 1997 ; Lambert et al., 1998). Supply chain practice guideline must be considered in areas of supplier strategy sharing of information, quality of information and integrating concrete forms (James W., 2011). In the studied logistics and supply chain factors, and found that the study of Supply Chain Management Practices (SCMP) and Supply Chain Integration (SCI) can increase business performance Supply Chain Performance (SP) for businesses (Sundram et al., 2016) and (Shadur and Bamber, 1994). supply chain management practices must be considered delivery of goods to customers, inventory management, lean strategies and integration strategies. SCM has suggested that a company's customer relations and purchasing practices all have an effect on the effectiveness of its SCM strategy and can positively impact performance in the market place (Choon Tan et al., 1998).

(Hogos ,2018; Vanichchinchai, et al., 2014) Supply Chain Management Guidelines needs to be comprehensive, both in practice and in terms of performance, that help achieve the long-term objectives of suppliers, manufacturers, distributors and consumers in order to achieve organizational goals, namely satisfaction of customers. Overall cost savings and supply chain quality management in the form of integrating management practices. Supply chain that needs to be considered over the long term in order to gain trust. Including the introduction of technology in the process to increase efficiency to accommodate the changing needs of customers because sugar is a product that is controlled for consumption. The company has to be prepared to deal with such situations. Strategies may be implemented in production operations. New product creation, however, if there is sufficient supply chain flexibility. The company will be able to create a sustained competitive advantage if the matter is not considered, it may lose market share to its competitors. It should focus on the relationship between Supply Chain Management Practices (SCMP) and Firm Supply Performance (FSP) in relation to cost (CT) Flexibility (FL) Relationship (RL) and

Responsiveness (RS). Research shows that Total Quality Management (TQM) has a direct positive effect on the efficiency of the Company's performance, and an indirect effect on Supply chain management practices (Vanichchinchai and Igel., 2011 ; Vanichchinchai, et al., 2014).

The purpose of this study of Supply Chain Management Practices affect to Firm Supply Performance. This conducts a compile study, analysis and synthesis concept, theory, academic article and research article related to Supply Chain Management Practices. The preliminary finding found that the Supply Chain Management Practices has four components: Strategic Supplier Partnership (SSP), Information Sharing (IFS), Information Quality (IFQ) and Customer Relationship (CR).

Literature Review

Supply Chain Management Practices (SCMP)

Table 1 Variable Factors of SCMP

Academic / Researcher	Finding Variable Factors.
Gawankar et al. (2017)	Study the relationship between two major constructs (supply chain management practices (SCMP) and supply chain performance measures). The results show that the implementation of SCMP are associated with supply chain performance measures, which leads to overall improvements; moreover, there is a statistically significant association between the five SCMP and eight SCPM. Supply Chain Management Practices has are five components: Information sharing (IS), Strategic supplier partnership (SSP), Information quality (IQ), Customer relationship practices (CRP), and Lean retailing practices (LRP)
Sundram et al. (2016)	They study Supply chain practices and performance: the indirect effects of supply chain integration. The results show that the implementation of Supply Chain Management Practices has five components :Supplier Strategic Partnership (SSP), Customer Relationship (CR), Information Sharing (IS), Information Quality (IQ), and Postponement (POS)
Al-Shboul et al. (2017)	Study of the effect of supply chain management practices on supply chain and manufacturing firms' performance. The results show that the

Academic / Researcher	Finding Variable Factors.
	implementation of Supply Chain Management Practices has seven components: Strategic Supplier Partnership, Information Sharing, Information Sharing, Customer Relationship Management, Internal Lean Practice, Postponement , and Total Quality Management
Hamister (2012)	This paper reports the findings from a research project on the implementation of supply chain management practices among small retailers. A theoretical model is developed based on the literature and tested with a sample of retailers from Western New York State. Supply chain management practices is composed of strategic supplier partnerships, information sharing, information quality, and integration intensity. Information sharing and information quality are both found to be highly related to performance in this context, while integration intensity was found to be less related
Li et al. (2006)	SCM practices are those managerial actions undertaken to improve performance of the integrated supply chain. For the purposes of this research, SCM practices have been identified as: strategic supplier partnership, level of information sharing, and quality of information sharing
Okongwu et al. (2015)	SCM practices have been identified as Supplier Strategic Partnership (SSP), Customer Relationship (CR), Information Sharing (IS), Information Quality (IQ)
Ince et al. (2013)	SCM practices have been identified as Strategic Partnership with Suppliers, Customer Relationship, Level of Information, Sharing and Quality
Sukati et al. (2012)	This study showed that the strong predictor of supply chain performance is strategic supplier partnership, customer relationship and information sharing. It should be noted that the supply chain management strategy that not implemented into supply chain management practices cannot generate the supply chain performance. The research finding shows that in order to do so, there is a need to integrate supply chain

Academic / Researcher	Finding Variable Factors.
	management strategy into supply chain management practices.

Results of studies research related to SCMP, therefore concluded that SCMP consists of 10 components: Strategic Supplier Partnership, Information Sharing, Information Quality, Customer Relationship, Cost reduction, Integration Intensity, Lean retailing, Internal Lean, Postponement, and Total Quality Management. The researcher then synthesizes the components / variables obtained from this study for use in this research shown as Table 2.

Table 2. Factors of SCM

Id.	Academic / Researcher	Factors of SCMP									
		Strategic Supplier Partnership process	Information Sharing	Information Quality	Cost reduction	Integration Intensity	Customer relationship	Lean retailing	Internal Lean	Postponement	Total Quality Management
1	Gawankar et al. (2017)	✓	✓	✓			✓	✓			
2	Sundram et al. (2016)	✓	✓	✓			✓			✓	
3	Al-Shboul et al. (2017)	✓	✓	✓			✓		✓	✓	✓
4	Hamister (2012)	✓	✓	✓	✓						
5	Li et al. (2006)	✓	✓	✓		✓					
6	Okongwu et al. (2015)	✓	✓	✓			✓				
7	Ince et al. (2013)	✓	✓	✓			✓				
8	Sukati et al. (2012)	✓	✓				✓				
Total frequency		8	8	7	1	1	6	1	1	2	1

From the Table 2, we can conclude that the factor of Supply Chain Management Practices (SCMP) has a total of ten factor and the details are as follows: *Strategic Supplier Partnership process* and *Information Sharing* are the most popular factor from the research and *Information Quality*, *Customer relationship* respectively. The factor is the least popular such as: *Cost reduction*, *Integration Intensity*, *Lean retailing*, *Internal Lean*, *Postponement*, *Total Quality Management*.

The relationship between SCMP and FSP

Hypothesis: Supply Chain Management Practices (SCM) have direct effects to Firm Supply Performance (FSP)

Table. 3 Supply Chain Management Practices affects Firm Supply Performance

Academic / Researcher	Finding Variable Factors.
Ibrahim et al., (2011)	This paper explores the SCM activities carried out by electronic manufacturing organizations in Malaysia and determines the correlation between SCM practices and firm performance. A self-administrated questionnaire based survey technique was employed to ascertain the status of SCM adoption and the practices in SCM that are significant for Malaysian electronics manufacturers. The findings suggest that the adoption of SCM activities is reasonably moderate.
Qi et al. (2011)	Worked on the relationship between supply chain strategy and firm performance and explored a positive relationship with arguments that supply chain strategy enhances supply chain responsive and increases production flexibility which in turn affects performance.
Hadrawi (2019)	The supply chain management practices had significant impact on the firm supply performance
Guasekaran et al. (2004) and Sufian and Habibullah (2010)	They found that management of key elements of information could play a significant impact on firm supply performance
Byrd and Davidson (2003)	Argued that knowledge and information technology had a significant impact on firm supply performance and with the implementation and adoption of information technology firm can boost the performance of its supply chain.

Academic / Researcher	Finding Variable Factors.
Okongwu et al. (2015)	They argue that the linkages between SCMPs and firm performance would depend on certain contextual variables such as business sector, market uncertainty, nature of products and services and the length of the supply chain, as well as on inter-organizational variables such as cultural closeness, power imbalance, level of trust and divergence of strategic goals between supply chain partners
Ince et al. (2013)	This paper has empirically tested a framework identifying the relationships among SCM practices, ERP systems, competitive advantage and firm performance. The results of this research support that SCM practices can have discernible impact on competitive advantage and firm performance
Sukati et al. (2012)	The finding showed that supply chain management practices have a significant relationship with supply chain performance statically
Vanichchinchai (2014)	The author found that the measurements of SCMP, TQMP and FSP are reliable and valid. The automotive companies in Thailand apply TQMP much more extensively than SCMP. Their SCMP still emphasize efficient flows of information and materials at operational level to minimize transaction cost. Overall, Japanese companies, large companies, first-tier suppliers and the companies with ISO/TS 16949 have more intensively applied SCMP and TQMP and achieved a higher level of FSP.

Concluding remarks

This study conducts a compile study, analysis and synthesis concept, theory, academic article and research article related to Supply Chain Management Practices. The preliminary finding found that the Supply Chain Management Practices has four components: Strategic Supplier Partnership (SSP), Information Sharing (IFS), Information Quality (IFQ) and Customer Relationship (CR). All of these components had a positive impact on the Firm Supply Performance. We construct as in following conceptual framework. (figure 1.)



Figure 1 : Factor of Supply Chain Management Practices affect to Firm Supply Performance

Source : Research synthesis of researchers

Further Study

Knowledge obtained from this paper will be used in further study design the casual relationship model

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MARKETING LOGISTICS MANAGEMENT FOR THE THAILAND TOURISM INDUSTRY

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Abstract

This article aims to present an appropriate logistics management approach to marketing logistics for the tourism industry Thailand to be used as a guideline for tourism area development operations. By focusing on the main goal towards creating a new style of tourism from communities and groups of entrepreneurs participating through the inheritance of knowledge within the community and create effective cultural tourism service operating guidelines.

Keywords: Logistics Management, Marketing, Tourism

Introduction

The management industry is an industry that is vital to the economy of the system because it is linked to other industries. The business of accommodation, food, entertainment, tourism business and various products distribution business has evolved into a more diverse form of tourism to meet the needs of tourists with different styles on the basis of the economic sector in Thailand has been analyzed and considered through the macro economy it has an index of market properties and overall economic growth (Pronchai) under today's changing economic and technological conditions, income, entry-exit of a country are considered to be an indicator of a country's success because it indicates a steady economy investment opportunity. The financial state of the country in which many years in the past, Thailand was faced with many factors from within the country, especially factors in natural disasters economic recession and political instability but the industry Travel despite being affected by such factors can still support the economic situation of country to a certain extent but the impact of trade protectionism between the United States and China has a greater impact on world trade than many have estimated.

The tourism sector is important to the development and administration of the country tourism industry is an important activity of all mankind each person wishes to travel in different places for different purposes. This is a factor that contributed to the growth of the tourism industry, having a very positive impact on the economy in early 2019 several analysts have estimated that the Thai economy will grow by about 4 percent or in the range of potential levels as a result. Thai export sector has contracted from the previously expected expansion, affecting more incomes and employment in the country. Until the Thai economy ends in 2019 became expanded below the potential level (Bank of Thailand, 2020). In the current global economic slowdown, inevitably affects the Thai economy however, the tourism sector is still a hero to support the Thai economy. With tourism income of Thai and foreign residents in the first half of 2019 It plays a key role at 17% of GDP, similar to the previous year. In addition, the tourism sector of Thailand is also a potential economic sector based on the ranking in the 2019. Tourism competitiveness Index by the World Economic Forum in which Thailand ranks 31 out of 140 countries worldwide And is ranked third in ASEAN after Singapore and Malaysia In the past, the government has issued a "tourism measure" with both the previous and the last 16 measures. To stimulate income from both foreign tourists and Thai nationals Such as extending the Free Visa on arrival measures, one hundred projects, traveling around Thailand, etc. From past experiences the stimulation of the tourism sector is clearly effective for the economy because the tourism sector is strong to a certain extent. Basic and respond quickly to the stimulus It also has good results. Spread across many sectors Whether it is a restaurant, large and small shops, farmers and transportation businesses, etc., but those measures are short-term measures. We must not forget that developing the potential of the tourism sector to be a true hero Helping

to drive the Thai economy sustainably measures must be taken long term as well In the past, the tourism sector face structural problems that may affect the capacity and Long-term growth is moderate (Ministry of Tourism and Sports, 2019). By 2020, the Thai economy opens a new era in hopes of returning to expand better than in 2019, but the "VUCA World" environment as a result, the Thai economy tends to slow down and below the potential level of 2 per year. Like the people originally expected to go jogging, it turned out to be just walking around to support the body because it is affected from coronavirus disease or COVID-19 more intense than expected thinking, which affects confidence the safety aspect of the health of the serious (COVER STORY ,2563)

From the study of past research data on tourism to be used to develop the tourism industry to be able to live sustainably can generate income for the country, provinces and localities there should be factors that can attract tourists to come and make tourists more satisfied while traveling. Until when traveling back, there is still a need to visit again next time those attractions usually include various attractions or activities that help encourage tourists to travel, such as the availability of accommodation local food, excellent service friendliness of the local people which of these things is the part that makes tourists happy in using the service, and make tourists come back to visit repeatedly he is-interested in studying the situation of the tourism logistics management system. To study the overview of the domestic tourism logistics management system currently, studies on the satisfaction of tourists have an effect on various tourism logistics management systems in order to make tourists return to travel repeatedly A Study of the Concept of Development of a Logistics Management System for Tourism in Thailand In the view of direct travelers Therefore, it is also very important to plan the sustainable tourism development of Thailand.

Research Objectives

1. To propose a suitable logistics management approach of management marketing logistics for the tourism industry.
2. To study the level of opinions of logistics management in service marketing for the tourism industry.

Author Guideline

This paper presents a guideline for tourism area development, focusing on the main goals towards creating a new model of tourism.

1. Tourism management concepts

1.1 Meaning of Tourists and Tourism

Tourists and tourism have come together, tourist is a person who travels from normal residence to another place must have an overnight stay in the destination, or the attraction which is a journey with 3 important conditions 1. travel voluntarily 2. travel temporarily from

normal residence to another place 3. travel for any purpose, but not for occupation or earning (Chalong Sripimon Sompong 2007)

1.2 Tourism Purpose

Tourism needs are divided into three categories including 1. Current demand means that the travel needs are ready and willing to pay for the goods and services that are set at that time. Travelers with this kind of need are ready to purchase goods and services and travel immediately 2. Prospective demand means tourists are more likely to travel, because there is already a need but it lacks other elements such as money, time and management to travel. This kind of demand can be persuaded to become an actual demand through the development of tourism services and marketing systems. 3. The need that may arise means the need to travel in the depths of everyone's mind. But without knowledge or there is no information on the attractions of interest, this kind of demand may induce it. By advertising public relations, sales techniques, facilitating various contacts as well as developing information systems may stimulate the need for tourism.

2 Concept of Service Marketing

Service marketing refers to the activities or benefits that one person offers to another. Which is not Can see or touch and has no effect on ownership which may have a product involved nowadays. The service business has played an increasingly important role in the economy. Most products with added services to create a competitive advantage for example, a car buyer will have a service at the same time. Both services before - after sales, or when you buy an electric appliance whether it is a television, washing machines, refrigerators, air conditioners, etc. The seller will also offer home delivery service. Financial services, warranty and maintenance etc. (Siripha Kitprapitkul 2013) explain that service marketing is a controlled marketing factor and is a modern marketing concept, to be used as a tool to meet the satisfaction of target customers and able to respond to the needs of the target market

3 The Marketing Mix of the Service Market.

Marketing mix refers to any variable or marketing tool that can be controlled. Companies are often used together to meet the satisfaction and needs of the target customers. Originally, the marketing mix had only four variables. These are products, prices, locations, or distribution channels. Marketing promotion, three additional variables were subsequently developed-person, physical and process-to align with modern marketing essentials. Especially with the service business So it can be summed up as a 7Ps Kotler marketing mix

4 Tourism Marketing Ideas

The tourism market is a service market where customers have the greatest freedom in choosing to consume products and services (Chalong Sripimol Sompong: 2017, page 15) The tourism market is different from the industrial product market (Saranya Warakunvit: 2003,

This is because it is an intangible product. Consumers didn't touch the product before making a purchase. It is an indivisible product. Production and consumption occur at the same time and are wastable products. The marketing of the tourism industry is constantly changing. One of the factors that must be taken into account in the development of the market is the advancement of technology various communication which can be done quickly and reach the population widely. It will encourage the population to become more interested in travel, making the population able to travel more.

Conceptual Framework

Independent Variables		Dependent Variables
Logistics elements 5. Physical flow 6. The flow of pine test 7. Service process 8. Location side 9. Marketing promotion 10. Personnel 11. Returning / sharing experiences 12. cost side	Opinion Level of Tourists	<u>Optimization</u> <ul style="list-style-type: none"> ● Quality of tourism marketing ● Logistics management

Table 1 : The Conceptual Framework of the Study

Conclusion

According to the study, found that the suitable logistics management approach of marketing logistics management for the tourism industry should serve as a guideline for the development of tourism areas to focus on a combination of factors most of the emphasis is on the effectiveness of the tourist attraction to measure the quality of tourism in terms of attractions, impression of tourists marketing promotion that is widely available to tourists have been thoroughly known and the various tourism expenses in the various areas must be reasonable too to impress tourists with word-of-mouth and return. In order to distribute various income to tourism sites, communities in that province and to develop suitable logistics management approaches for marketing logistics management for the tourism industry Improving operations, styles, as well as adapting to changing suppliers changing tourist needs, enhancing tourism efficiency can help mitigate the impact these days have when tourist attractions in Thailand are aware of the shortcomings, they use the information to improve and operate It will make it possible to develop a suitable logistics management of marketing logistics management for the tourism industry effectively and efficiently.

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A LITERATURE REVIEW OF SUPPLY CHAIN MANAGEMENT'S SCOR MODEL AFFECTS THE EFFICIENCY OF LOGISTICS SERVICE PROVIDERS

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Abstract

This article aimed to study factor of the supply chain management which is able to enhance the efficiency of logistics performance of logistics service providers. This conducts a compile study, analysis and synthesis concept, theory, academic article and research articles related to supply chain management's SCOR model which consists of 5 components: plan, source, make, delivery and return. These 5 components are expected to have a positive impact on the efficiency of logistics service providers.

The results from this study can be used for the further related research in logistics and supply chain management and also be able to develop for the statistical analysis or multivariate data analysis in the logistics and supply chain aspect

Keywords : Logistics Service Provider Efficiency, SCOR, Supply Chain Management

Introduction

Supply chain management (SCM) is a critical focus for companies that sell products, services, hardware and software. The supply chain includes everything involved in the flow of goods from a business to its customers, clients or to other businesses. It's not something that can be set up and left alone — your supply chain needs to be regularly evaluated so it stays efficient and productive for the business.

The supply chain operations reference (SCOR) model is designed to help maintain these processes and to evaluate them for effectiveness and efficiency. SCM is complex, but the SCOR model is intended to help standardize the process and create a measurable way to track results. It's meant to work across industries using common definitions that can apply to any supply chain process. Using the SCOR model, businesses can judge how advanced or mature a supply chain process is and how well it aligns with business goals.

The SCOR process can go into many levels of process detail to help a company analyze its supply chain. It gives companies an idea of how advanced its supply chain is. The process helps companies understand how the 5 steps repeat over and over again between suppliers, the company, and customers. Each step is a link in the supply chain that is critical in getting a product successfully along each level. The SCOR model has proven to benefit companies that use it to identify supply chain problems. The model enables full leverage of capital investment, creation of a supply chain road map, alignment of business functions, and an average of two to six times return on investment.

This paper is aimed to study factor of the supply chain management which is able to enhance the efficiency of logistics performance of logistics service providers.

Literature Review on SCOR

1 SCOR History

Supply Chain Operations Reference (SCOR) model is a process reference model developed and endorsed by the Supply Chain Council as the cross-industry, standard diagnostic tool for supply chain management. The SCOR model describes the business activities associated with satisfying a customer's demand, which include plan, source, make, deliver, return and enable. Use of the model includes analyzing the current state of a company's processes and goals, quantifying operational performance, and comparing company performance to benchmark data. SCOR has developed a set of metrics for supply chain performance, and Supply Chain Council members have formed industry groups to collect best practices information that companies can use to elevate their supply chain models.

SCOR was developed in 1996 by the management consulting firm PRTM, now part of PricewaterhouseCoopers LLP (PwC) and AMR Research, now part of Gartner, and endorsed by the Supply-Chain Council (SCC), now part of APICS, as the cross-industry de facto standard strategy, performance management, and process improvement diagnostic tool for supply chain management.

2. Pillar of SCOR model

By describing supply chains using process modeling building blocks, the model can be used to describe supply chains that are very simple or very complex using a common set of definitions. As a result, disparate industries can be linked to describe the depth and breadth of virtually any supply chain. SCOR is based on six distinct management processes: Plan, Source, Make, Deliver and Return.

- Plan – Processes that balance aggregate demand and supply to develop a course of action which best meets sourcing, production, and delivery requirements.
- Source – Processes that procure goods and services to meet planned or actual demand.
- Make – Processes that transform product to a finished state to meet planned or actual demand.
- Deliver – Processes that provide finished goods and services to meet planned or actual demand, typically including order management, transportation management, and distribution management.
- Return – Processes associated with returning or receiving returned products for any reason. These processes extend into post-delivery customer support.

3. Three levels of SCOR model

There are three levels used to measure supply chain performance. These levels help standardize supply chain performance metrics so that companies can be evaluated against other businesses, even if they're operating differently. A smaller organization can be compared to a bigger organization, or businesses can judge supply chain performance against companies in other industries. The three levels include:\

- Level 1: Defining scope, including geographies, segments and context. At this level, the focus is on the six main process configurations: plan, source, make, deliver, return and enable.

- Level 2: Configuration of the supply chain, including geographies, segments and products. At Level 2, metrics are high level and evaluated across multiple SCOR processes. This level includes subtype categories that fall under the “parent” categories found in Level 1.
- Level 3: Process element details, identifying key business activities within the chain. At this level, you can associate any Level 2 process or subcategory with a Level 3 process.

Literature Review on Logistics Service Providers’ Efficiency

1. Logistics Service Provider Definition

Logistic service providers’ management is the outsourcing of logistics operations to a third party. Companies, or clients, use these third parties known as logistics service providers (LSPs) to provide logistics services. LSPs may provide logistic services to one or more clients at any given time. Clients may choose to outsource a portion, or all of their logistics services to one or more LSPs. When sending information to an LSP, the client communicates the receipts or shipment to the LSP, which then runs the transaction on behalf of the client. Therefore, the client may be a buyer or seller for a transaction.

Logistics service providers can be defined as external suppliers which fulfill a portion or all of a company’s logistics functions of a company. Logistic functions released to third-party companies are services such as especially transportation, storage, and distribution. These functions are required a high level of business investment. The logistics service providers mostly focused their attention on transportation and warehousing, and so forth and these Logistics Service Providers should have professional experiences in each service.

2. Logistics Service Provider’s Efficiency

Supply chains can typically be categorized into either efficient or responsive supply chains (Fisher, 1997). Christopher and Towill (2002) make a similar distinction into lean and agile. Logistics service providers must be aligned with the supply chain they serve; measuring flexibility, efficiency and responsibility levels is a first step. Weber (2002) is using a hierarchical model to measure supply chain agility. The SCOR model further provides insight into metrics and indicators of supply chains (Stewart, 1995) However, the SCOR model was

originally developed for manufacturing processes and therefore it might not be directly applicable to logistics service provision (Lai et al. 2004).

Logistics service providers offer services in a wide variety of areas which are transportation, warehousing, inventory management, order processing and value added services. Lieb and Kendrick (2003) report that third party logistics service providers also offer services such as contract manufacturing, assisting customers with purchasing and offering financial services (e.g. insurances, real estate, et cetera). Engaging in e-commerce was perceived as the single most important business opportunity for the surveyed companies. Logistics service providers are further trying to expand their activities outside their home country (Lemoine and Dagnaes, 2003).

Discussions, Conclusions and future research directions

This study has put forward the problems and requirements of today's broadened, enabled SCOR model as the distinctive from the traditional performance measurement systems. The importance of the efficiency of the logistics service provider from the significance of the SCOR model as the foundation of the performance management system are highlighted during the study. Multidimensional nature of the issue is evident, involving the concepts of 'quality', 'fit' and 'excellence'.

The study was able to reveal that the supply chain measurement by the SCOR model is still a productive research area and very distinctive supportive statements have been traced for the need of further research on supply chain measurement during the review. The following are the main guidelines identified for future research:

- More research on the SCOR model for the 21st century business models which will need for the more precise development of the frameworks and also to go further into the empirical testing of the supply chain performance and efficiency research.
- Developing the proper measurement and performance systems in the form of new maturity models supported by SCOR, to fit and enable benchmarking.
- Need for cross-industry and cross-area studies.
- Need for development of performance measurement tools for measuring the performance and suitability of the logistics service providers in the supply chain.
- Performance measurement and metrics for the quick and more responsive SC.

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ANTI-AGING EFFICACY OF COSMECEUTICAL PRODUCT CONTAINING ESSENTIAL OILS FROM THAI HERBS

Kris Jangjarat and Pawis Weranapakul

Abstract

This study aimed to investigate the antioxidant activity of essential oil blended from neroli, rosewood and ylang-ylang (AG oil) and analyzed chemical compounds by GC-MS. The major compound linalyl acetate (24.5 %) and the other compounds including cedrenol (14.4 %), humulen (5.6 %), 3-carene (3.8 %), limonene (3.2 %), phellandrene (3.1 %), terpineyl acetate (3.0 %), hexamethylbenzene (2.2 %), eucalyptol (2.1 %) and nerol (1.7 %) were found in AG oil. The skin elasticity of products were evaluated on 12 volunteers, aged 45 - 50 years. The participants were randomized and divided into 2 groups. The first group applied a cream base containing 1 % AG oil (TC group) and the second group applied a cream base (placebo). Each group was instructed to apply on the upper arm at a specified area. Besides, all participants applied the AG oil cream on the facial. The skin elasticity was assessed using Cutometer. The results showed that the skin elasticity of the placebo showed little change (3.7 %) while the TC group increased 13.3 % for 12 weeks. The AG oil cream enhanced skin elasticity with 35.5 and 26.6 % on the forehead and cheek after product application (12 weeks) which showed a significant increase ($p < 0.01$) when compared to baseline. In conclusion, the AG oil showed potent to be an anti-aging ingredient that can use in cosmetic and cosmeceutical products.

Keywords: Antioxidant, Elasticity, Essential oil, Irritation, Thai herbs

Introduction

Skin aging was characterized by features such as wrinkle, loss of elasticity, laxity and rough-textured appearance. These aging processes were accompanied by phenotypic changes in cutaneous cells as well as structural and functional changes in extracellular matrix components, including collagens and elastins, that gradual loss of skin elasticity leads to the phenomenon of sagging (Mohiuddin, 2019). Aging of the skin has been attributed to 2 processes referred to as intrinsic and extrinsic processes. The intrinsic process occurred over time and appeared as wrinkles on the skin, including the theory of free radical, gene and mitochondrial DNA damage. The extrinsic process was often referred to as the effects of the environment such as sunlight and other exposures on the skin such as weather (Baumann, 2007; Li, 2015; Sadowska-Bartosz and Bartosz, 2014).

Essential oils, one of the natural products, were used to treat or alleviate the symptoms of both physical and mental disorders. The use of essential oils in psychoaromatherapy was very popular. Some studies showed that essential oils were used for mental strain or dullness and lethargy or exhaustion (Hongratanaworakit *et al.*, 2017).

Research objective

In this study, the blended essential oils were evaluated the chemical compounds. The antioxidant activity of oil was investigated by FRAP assay. The skin elasticity of volunteers were examined for 8 weeks of product application.

Literature review

Neroli essential oil was extracted from the flower of *Citrus aurantium* var. L., also known as bitter orange. It was an extremely expensive essential oil since for the production of 1 kg of oil or 850 kg of bitter orange flowers were necessary. Neroli essential oil was steam-distilled from the flower, petitgrain oil was produced from the leaves and orange oil comes from the orange peel (Khan and Abourashed, 2011). Neroli was a pale yellow to coffee brown essential oil with a sweet, fresh and floral odor. Due to its very fine fragrance, it was one of the most important oils in the perfume and soap industry. The oil has antimicrobial properties. In cosmetics, it was generally used to refresh tired skin, either sensitive or oily (Ammar *et al.*, 2012; de Groot and Schmidt, 2016; Sarkic and Stappen, 2018).

Rosewood was found in the Amazon region of Brazil, Guyana, Suriname, Peru, Colombia, and Venezuela (Amusant *et al.*, 2016). It was also reported that linalool-rich rosewood oil. Rosewood oil has several medicinal uses such as analgesic, anticonvulsant, antidepressant, antimicrobial, antiseptic, aphrodisiac, bactericidal, cellular stimulant, cephalic, stimulant, tissue regenerator, tonic, depressive sleeplessness and grief (Preedy, 2015).

Ylang-ylang essential oil was obtained by steam the mature flowers of *Cananga odorata*, family Annonaceae (Manner and Elevitch, 2006). It was extracted from *Cananga*

odorata which was a highly fragrant oil of great value in the perfumery and food industries. It was one of the few essential oils from fragrant flowers which was a reputation as an important essential oil. This oil was mostly applied in the manufacture of soap and aromatherapy (Benini *et al.*, 2012; Burdock and Carabin, 2008); Preedy, 2015.

However, the blend of essential oils has not been studied for their synergistic effects and their use in cosmetic products. This study used the concept to develop and promote the application of essential oils from Thai herbs with aromatherapy properties instead of using synthetic fragrances. Besides, to solve the limitations of essential oil such as strong odor and expensive by blending essential oils for enhancing the properties and providing a new scent of essential oil that is unique and satisfied by consumers.

Research methodology

1. Materials

Neroli oil, rosewood oil and ylang-ylang oil were purchased Royal Lotus. Cetyl alcohol was purchased from Amplus Chem. Butyrospermum parkii butter, glycerine, cetearyl alcohol, glyceryl dtearate, PEG-40 stearate, cetearth-20, dimethicone were purchased from Bronson & Jacobs International. Microcare PHC and Aquagel 45 were purchased from Chemico. Glyceryl Stearate SE was purchased from Intermed Chemical. Butylene glycol, Disodium EDTA, C12-15 alkyl benzoate, allantoin, isohexadecane and cyclopentasiloxane was purchased from Namsiang. Dipotassium glycyrrhizate was purchased from UP Chemical. Ferrous iron and Trolox was purchased from Sigma-Aldrich.

2. Blending of essential oils

The essential oils including neroli oil, rosewood oil and ylang-ylang oil were selected to blend in the concentration ratios of 20, 26 and 54 %, respectively. Neroli oil presented as top note. Rosewood oil showed middle note. Ylang-ylang oil was provided midle note (Preedy, 2015). The blended oil was analyzed the chemical compounds by Gas chromatography (GC-MS).

3. Identification of chemical compounds

The prepared essential oil was analyzed the chemical compounds using GC-MS according to the method was modified from Saeio *et al.* (2011). Chemical analysis of blended oil was achieved by gas chromatograph (GC-MS). It was carried out on a Thermo Focus GC + Polaris Q – auto injector fitted with a Thermo TG-5 silms column. The carrier gas was helium at 1.0 mL/min. Injector temperature was as follows: 100 – 150°C at 7°C / min initial temperature, increased to 190°C at 2°C / min and increased 300°C at 10°C / min. A split ratio of 50 : 1 was used. The chemical compounds were identified based on a comparison of their mass spectra database and spectroscopic data. The percentage amount of each component was calculated based on the total area of all peaks obtained from the oil.

4. Ferric reducing antioxidant power (FRAP) assay

FRAP assay was a reduction reaction of Fe (III) -tripyridyl triazine to be a Fe (II) -tripyridyl triazine with an anti-oxidant (reducing agent). In the extract, the Fe (II) -tripyridyl triazine solution had blue color which the color intensity varied with the concentration of the anti-oxidation (Alam *et al.*, 2013; Vichit and Saewan, 2016). The method was modified from Saraswathi and Revathi (2014), the blend essential oil at a concentration 1 % (250 - 300 mg) was mixed with FRAP solution (10 ml). Then, it was shaken with a vortex mixer and immersed in warm water at 37°C for 30 min. The mixture was compatible by using centrifuge at 1,100 rpm for 10 min. The absorbance was measure at 593 nm by a microplate reader to compare the standards, Fe²⁺ and Trolox.

5. Preparation of testing cream

The cream base (O/W emulsion) was formulated. Briefly, aqueous and oily phases were heated at 75°C separately. Then the water phase was added into the oil phase with continuous homogenizing using a homogenizer (IKA T25 digital ultra turrax). The emulsion was cooled down to 40°C and added preservative and cooled down to room temperature. The testing cream was prepared by incorporating essential oil blended.

6. Skin irritation

The protocol was approved by the Ethics Committee of Mae Fah Luang University. The inclusion criteria, all volunteers signed a written informed consent before participating in the clinical study which explained the type of study, the procedures to be followed, the general nature of the materials testing and any known adverse reaction which might result from participation. Twelve volunteers (2 males and 10 females, aged 45 - 50 years) were investigated the skin irritation by closed patch test (Geier *et al.*, 2003; Schnuch *et al.*, 2012). The result of erythema and oedema was observed by Finn chamber (8 mm) which was patched for a period of 24 h on the volar forearm of volunteers. The skin irritation score criteria were graded over a range of 0 - 3. The data collection was used to calculate the mean cumulative irritation index (M.C.I.I) which had values < 0.25, classified as non-irritation.

7. Clinical evaluation

All participants were divided into 2 groups by randomization. The first group received a cream base (placebo) while the second group received a cream base containing essential oil blended (TC group). Each group was instructed to apply on the upper arm at a specified area daily, in the morning and before night. Moreover, all volunteers applied the essential oil cream on facial skin daily. Modification of the facial skin-care habits and concomitant use of other skincare were not permitted during the study. The skin elasticity measurement was conducted under controlled temperature (20.0°C ± 2.0°C) and relative humidity (40.0 – 60.0 %) conditions. Before the examination, all volunteers washed their upper arm and facial with an assigned facial cleanser then allowed to acclimate to the room conditions for at least 30 min before measurement. The skin elasticity was measured using Cutometer Dual MPA 580

(Courage + Khazaka electronic GmbH). The skin elasticity values of each volunteer were recorded and calculated as the percentage of changing by the following equation:

$$\% \text{ Changing} = [(X_t - X_0)/X_0] \times 100$$

Where X_0 was the initial value measured before application (baseline) and X_t was the value measured during application (Fox *et al.*, 2014).

8. Skin photography

The skin photo was photographed the wrinkles and fine lines on the facial of volunteers. Then the results were evaluated by the changing of wrinkles and fine lines and compared between baseline and at the end of the experiment.

9. Statistic analysis

The skin elasticity values were performed in triplicate. The obtained data were statistically analyzed using SPSS program version 23 for window (SPSS Inc, Chicago, IL, USA). The differences were considered significant when $p < 0.01$. A paired sample t-test was used to determine the skin elasticity improvement during volunteer application which compared with the initial condition (baseline) and * indicated significant differences (Horn, 2014).

Result

1 The blended essential oil

The essential oils were composed of lipophilic, small and non-polar molecules that could easily penetrate into the skin (Sarkic and Stappen, 2018). The preparation of essential oil might use alone or blended two, three or more oils together to match an individual's physical and emotional needs (Hongratanaworakit *et al.*, 2017). The essential oils from nero oil, rosewood oil and ylang-ylang oil were blended and named AG oil. It provided a floral note which represented the light orange-yellow color (Figure 1).



Figure 1 The appearance of AG oil

2. Identification of chemical compounds

The chemical composition of the AG oil was investigated by GC-MS. The result was demonstrated in Figure 2 and Table 1. Thirty-one compounds were identified, making up

84.2 % of the total composition. The majority of this oil was linalyl acetate which comprised up to 24.5 %. The other compounds were cedrenol (14.4 %), humulen (5.6 %), 3-carene (3.8 %), limonene (3.2 %), phellandrene (3.1 %), terpineyl acetate (3.0 %), hexamethylbenzene (2.2 %), eucalyptol (2.1 %) and nerol (1.7 %), respectively.

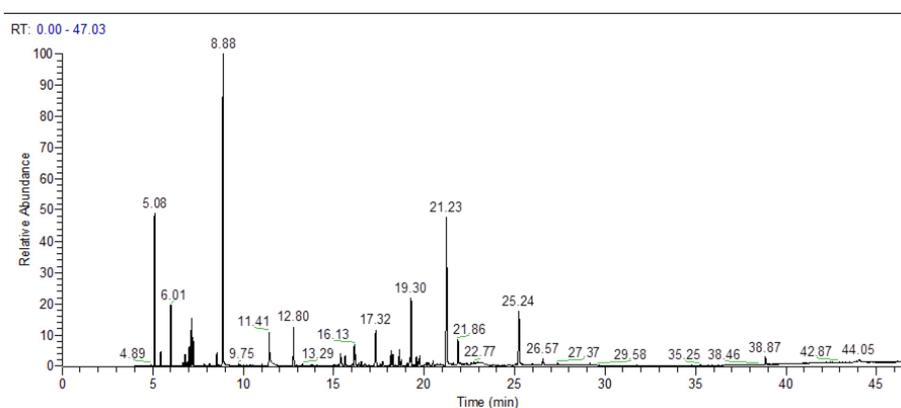


Figure 2 The GC chromatogram of AG oil

Table 1 The chemical compounds of AG oil

No.	Component	Retention times (min)	Peak area (%)
1	Camphene	5.43	1.01
2	3-Carene	6.01	3.85
3	Phellandrene	6.61	3.17
4	p-methyl anisole	6.92	0.31
5	p-Cymene	7.03	1.33
6	Limonene	7.15	3.29
7	Eucalyptol	7.23	2.07
8	Gamma-terpinene	7.85	0.11
9	Linalool oxide	8.15	0.19
10	Alpha-terpinene	8.54	1.04
11	Linalyl acetate	8.88	24.56
12	Camphor	10.17	0.11
13	Benzyl acetate	10.5	0.05
14	Terpinen-4-ol	11.04	0.11
15	Terpinenyl acetate	11.41	3.08
16	E-Citral	13.29	0.13
17	Hexamethylbenzene	14.74	2.27
18	Nerol	16.13	1.74
19	Germacrene-D	16.19	0.86
20	Delta-cadinene	16.37	0.25
21	Beta elemene	16.52	0.4
22	Caryophyllene	17.32	3.47
23	Humulene	18.2	1.33
24	Alpha-Curcumene	18.29	1

25	Gamma-Cadinene	18.65	1.41
26	Humulen	19.3	5.68
27	Delta-cadinene	19.69	0.4
28	Calamenene	19.77	0.93
29	Cedrenol	21.23	14.44
30	Benzyl benzoate	25.24	5.01
31	Gamma-elemene	26.57	0.62
Total			84.22

3. FRAP activity

The reducing power of bioactive compounds was associated with antioxidant activity. Antioxidants were related to aging which could slow down the aging process (Sadowska-Bartosz and Bartosz, 2014; Siddhuraju *et al.*, 2002). The result of AG oil blended was examined using FRAP assay. Ag oil (10 mg) showed equivalent to the standards Fe²⁺ and trolox with values 7.71 and 13.75 mg/ml. It concluded that AG oil in the concentration of 0.80 - 1.30 % was recommended to use in the formulation.

4. Skin irritation test

The skin irritation of volunteers was investigated in 4 samples including 0.2 % Sodium lauryl sulfate (positive control), deionized water (negative control), cream base and cream with 1 % AG oil. The result showed the M.C.I.I value of 0.2 % Sodium lauryl sulfate as 0.87 (slightly irritate) while the M.C.I.I value of cream base and 1 % AG oil cream as 0.00 and 0.04, respectively. Therefore, the products were classified as non-irritation.

5. Clinical evaluation

The clinical skin elasticity of AG oil cream was evaluated on the upper arm in 12 volunteers compared with the placebo for 8 weeks. The AG oil cream was applied on the facial of 12 volunteers for evaluating skin elasticity on the forehead and cheek which compared between weeks 0, 2, 4, 6 and 8. The results were calculated in percentage changing and analyzed statistically by comparing with baseline.

The loss of skin elasticity was the main problem of aging. As skin ages, it loses its natural elasticity and becomes thinner, more fragile and laxer, taking on a wrinkled appearance (Li, 2015; Saewan *et al.*, 2018). The skin elasticity was determined by using Cutometer. The skin elasticity of volunteers showed little change values in the placebo group (3.7 %), while the TC group was increased skin elasticity (13.3 %) during 12 weeks (Figure 3). After 12 weeks of application, AG oil cream enhanced skin elasticity to 35.5 % and 26.6 % on the forehead and cheek which significantly more than baseline (Figure 4).

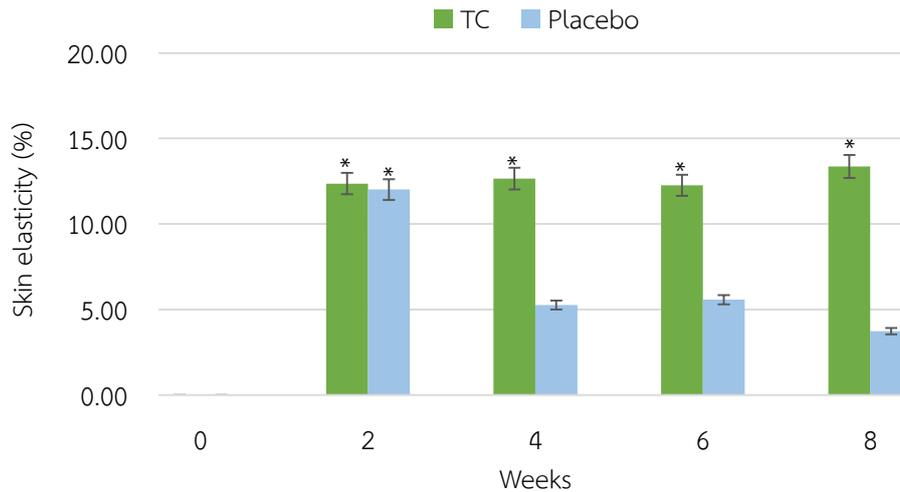


Figure 3 The change of skin elasticity on the upper arm during the experiment. The * value indicated a significant difference ($p < 0.01$) between the during the experiment and baseline (week 0).



Figure 4 The change of skin elasticity on the forehead and cheek during the experiment. The * value indicates a significant difference ($p < 0.01$) between the during the experiment and baseline (week 0).

6. Skin photography

Figure 5, the male and female volunteers showed wrinkles and fine lines before product application at baseline. After 12 weeks, the wrinkles and fine lines on the facial male volunteer was tightened which AG oil cream provided smooth skin. The female volunteers showed reduce in wrinkles and fine lines and the pores look tighter. The results corresponded to antioxidant activity and skin elasticity value in the previous study. Thus, the cream contained 1 % AG oil enhanced skin more flexible which could be observed by naked eyes.



Figure 5 Skin photography of wrinkle and fine lines on the facial of volunteer before and after applied AG oil cream for 12 weeks

Conclusion

The essential oil blended including neroli, rosewood and ylang-ylang provided antioxidant activity. The cream contained 1 % AG oil provided a significant ($p < 0.01$) improvement in the skin elasticity on the skin of volunteers. In conclusion, AG oil was a Thai herbal essential oil with potential for use as an anti-aging ingredient in cosmetic and cosmeceutical formulation.

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MOISTURIZING EFFICACY OF COSMECEUTICAL PRODUCT CONTAINING ESSENTIAL OILS FROM THAI HERBS

Kris Jangjarat and Pawis Weranapakul

Abstract

In this study, the essential oils including jasmine oil, damask rose oil, lavender oil and Wan Sao Long oil were blended in the concentration ratio of 20, 10, 28 and 42 % (MZ oil). The MZ oil contained chemical compounds such as trans-p-(1-butenyl) anisole (67.1 %), linalyl acetate (7.7 %), benzyl acetate (1.5 %), caryophyllene (1.2 %), eucalyptol (1.1 %), limonene (0.6 %) and camphor (0.3 %), respectively which analyzed by GC-MS. The skin hydration properties of products were evaluated on 12 volunteers, aged 32 - 49 years. The volunteers were divided into 2 groups by randomization. The first group applied cream base (placebo) and the second group applied cream base containing 1 % MZ oil (TC group) which each group was instructed to apply on the upper arm at a specified area. Moreover, all participants applied the MZ oil cream on the facial. The skin hydration was assessed using corneometer. The results showed that the skin moisture content of the TC group was higher than the placebo group which represented 18.3 and 1.7 %, respectively. The MZ oil cream provided skin hydration on the forehead and cheeks as 77.1 and 20.2 % after product application for 12 weeks. The moisture content in the TC group was significantly different ($p < 0.05$) when compared between during the experiment and the baseline while the placebo group remained no changing. Thus, the results demonstrated that the essential oils can be used as a moisturizing ingredient for cosmetic and cosmeceutical products.

Keywords: Essential oil, Irritation, Hydration, Moisture content, Thai herbs

Introduction

Essential oils, one of the natural products, were used to treat or alleviate the symptoms of both physical and mental disorders. The use of essential oils in psychoaromatherapy was very popular. Some studies showed that essential oils were used for mental strain or dullness and lethargy or exhaustion (Hongratanaworakit *et al.*, 2017).

Dry skin was an extremely common problem that could be induced by complex interactions between environmental and individual factors including low environmental temperature, low humidity, exposure to chemicals, microorganisms, aging, psychological stress and atopic dermatitis (Sethi *et al.*, 2016). Stratum corneum (SC), the outermost layer of the epidermis and marks the final stage of keratinocyte maturation and development, was essential for healthy skin (Del Rosso and Levin, 2011). To maintain the integrity of SC, 3 types of chemical ingredients regularly serve as moisturizers including occlusives, humectants and emollients. These chemicals were either the same as or similar to natural components in the SC which were often used in combination for providing efficacy (Harding, 2004; Rawlings *et al.*, 2004).

Occlusive agents served to reduce transepidermal water loss (TEWL) by forming a hydrophobic barrier film over the skin surface to prevent evaporation of water from the SC, trapping water in the skin's uppermost layers (Levin and Miller, 2011). Humectants were hygroscopic substances that attract water and moisture. When humectants are present on the skin, water from the dermis was absorbed into the epidermis (Lee and Friedman, 2016).

Emollients were chemicals that improve the feel of the skin by filling the spaces in the corneocytes and also provide skin slip or lubricity, imparting a sense of softness and plasticity (Jownie, 2010). Thus, moisturizers were topical products designed to improve and maintain the skin barrier function and help to prevent dry skin (Greive, 2015; Spada *et al.*, 2018)

Research objective

The aim of the present study was to evaluate the effects of topical application of essential oils from Thai herbs on volunteers compared to placebo based on skin hydration.

Literature review

Jasmine (*Jasminum Sambac*) has been designated in folk medicines in many countries due to its multipurpose activities. The effect of jasmine oil presented evidence for its application in aromatherapy for mood improvement in humans and the relief of depression. It has stimulatory influences on the function of the nervous system. Therefore, jasmine oil could aid their utilization in the perfume or cosmetics industry (Phuc *et al.*, 2019).

Rose oil was extracted from the flowers of the *Rosa x. Damascena* Mill., also known as damask rose as the flower. The most common chemical compounds presented in essential rose oil including citronellol, geraniol, nerol, farnesol and androse oxide which were a

fragrance attributed to rose (de Grude and Schmidt, 2016). Rose oil showed the pharmacological such as numerous including hypnotic, analgesic and anticonvulsant, antidiabetic, antimicrobial, anti-HIV, anti-inflammatory and antioxidant (Jalali-Heravi *et al.*, 2008; Verma *et al.*, 2011).

Lavender essential oil was extracted by steam distillation from the flowering tops of *Lavandula angustifolia* Mill which had a characteristic odor. Most chemical compounds of lavender oil were linalyl acetate, linalool, terpinen-4-ol, camphor, limonene and 1,8-cineole (Bakhtshirin *et al.*, 2015). Lavender oil provided a sweet floral aroma and contained a high percentage of esters, mostly linalyl acetate. The oil was often used for its anti-inflammatory, calming, headache relieving, sedative and skin healing properties (Nikjou *et al.*, 2016).

Essential oils extracted from *Amomum* species were widely used as flavoring agents in traditional Thai food. All parts of the plants could be used and seem to have some fragrant properties. *Amomum biflorum* has been considered as an ingredient in Thai soap formulations, cosmetic products, and traditional Thai medicine. The previous pharmacological studied showed that extracts of the plant possess various pharmacological activities such as antimicrobial and anti-inflammatory (Singtothong *et al.*, 2013).

However, the blend of essential oils has not been studied for their synergistic effects and their use in cosmetic products. This study used the concept to develop and promote the application of essential oils from Thai herbs with aromatherapy properties instead of using synthetic fragrances. Furthermore, to solve the limitations of essential oils such as strong odor and expensive by blending essential oils. It enhances the properties and provides a new scent of essential oil that is unique and satisfied by consumers.

Research methodology

1. Materials

Jasmine oil was purchased from Hong Huat. Damask rose oil and lavender oil were purchased Royal Lotus. *Amomum biflorum* Jack (Wan Sao Long) essential oil was purchase from Thai - China Flavours and Fragrances Industry. Cetyl alcohol was purchased from Amplus Chem. Butyrospermum parkii butter, glycerine, cetearyl alcohol, glyceryl dtearate, PEG-40 stearate, ceteareth-20, dimethicone were purchased from Bronson & Jacobs International. Microcare PHC and Aquagel 45 were purchased from Chemico. Glyceryl Stearate SE was purchased from Intermed Chemical. Butylene glycol, Disodium EDTA, C12-15 alkyl benzoate, allantoin, isohexadecane and cyclopentasiloxane was purchased from Namsiang. Dipotassium glycyrrhizate was purchased from UP Chemical. Hexane was purchased from Union Science.

2. Blending of essential oils

The essential oils including jasmine oil, damask rose oil, lavender oil and Wan Sao Long oil were blended in the concentration ratio of 20, 10, 28 and 42 %. The blended oil was analyzed the chemical compounds by Gas chromatography (GC-MS).

3. Identification of chemical compounds

The chemical compounds of prepared essential oil were determined using GC-MS (Thermo Focus GC + Polaris Q - auto injector) according to the method was modified from Saeio *et al.* (2011). The analytical conditions were carrier gas helium with a flow rate of 1.0 ml/min). The GC oven temperature program was as follows: 100 – 150°C at 7°C / min initial temperature, increased to 190°C at 2°C / min and increased 300°C at 10°C / min. The essential oil (30 mg) was transferred into 10 ml of volumetric flask then diluted to volume with hexane. The sample (1 µl) was injected into a column (Thermo TG-5 silms) using a split technique at a ratio of 50 : 1. The chemical compounds were identified based on a comparison of their mass spectra database and spectroscopic data. The percentage amount of each component was calculated based on the total area of all peaks obtained from the oil.

4. Preparation of testing cream

The cream base (O/W emulsion) was formulated. Briefly, aqueous and oily phases were heated at 75°C separately. Then the water phase was added into the oil phase with continuous homogenizing using a homogenizer (IKA T25 digital ultra turrax). The emulsion was cooled down to 40°C and added preservative and cooled down to room temperature. The testing cream was prepared by incorporating 1 % essential oils.

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The protocol was approved by the Ethics Committee of Mae Fah Luang University. All volunteers signed a written informed consent before participating in the clinical study which explained the type of study, the procedures to be followed, the general nature of the materials testing and any known adverse reaction which might result from participation. The volunteers (2 males and 12 females, aged 32 - 49 years) were investigated the skin irritation by closed patch test (Geier *et al.*, 2003; Schnuch *et al.*, 2012). The Finn chamber (8 mm) was used for observations of erythema and oedema for a period of 24 h on the volar forearm of volunteers. The skin irritation score criteria were graded over a range of 0 - 3. The data collection was used to calculate the mean cumulative irritation index (M.C.I.I) which had values < 0.25, classified as non-irritation.

6. Clinical evaluation

All volunteers were randomized and divided into 2 groups. The first group received cream base (placebo) and the second group received a cream base containing 1 % MZ oil (TC group) which each group was instructed to apply on the upper arm at a specified area daily, in the morning and night. Besides, all participants applied the essential oil cream on facial skin daily. Modification of the facial skin-care habits and concomitant use of other

skincare were not permitted during the study. The skin hydration measurement was conducted under controlled temperature ($20.0^{\circ}\text{C} \pm 2.0^{\circ}\text{C}$) and relative humidity (40.0 – 60.0 %) conditions. All volunteers washed their upper arm and facial with an assigned facial cleanser then allowed to acclimate to the room conditions for at least 30 min before measurement. The skin moisture was measured using Corneometer CM 825 (Courage + Khazaka electronic GmbH) (Zuang *et al.*, 1997). The values of each volunteer were recorded and calculated as the percentage of changing by the following equation:

$$\% \text{ Changing} = [(X_t - X_0)/X_0] \times 100$$

Where X_0 was the initial value measured before application (baseline) and X_t was the value measured during application (Fox *et al.*, 2014).

7. Statistic analysis

The skin moisture values were performed in triplicate. The obtained data were statistically analyzed using SPSS program version 23 for window (SPSS Inc, Chicago, IL, USA). The differences were considered significant when $p < 0.05$. A paired sample t-test was used to determine the hydration improvement during volunteer application which compared with the initial condition (baseline) and * indicated significant differences (Horn, 2014).

Result

1. The blended essential oil

The essential oils preparation might use alone or blended two, three or more oils together to match an individual's physical and emotional needs (Hongratanaworakit *et al.*, 2017). Furthermore, essential oils consisted of lipophilic, small and non-polar molecules that could easily penetrate into the skin (Sarkic and Stappen, 2018). The essential oils from jasmine oil, damask rose oil, lavender oil and Wan Sao Long oil were blended and named MZ oil. It provided a floral and sporty note that showed the light brown color (Figure 1).



Figure 1 The appearance of MZ oil

2 Identification of chemical compounds

The chemical composition of the MZ oil was investigated by GC-MS. The result was demonstrated in Figure 2 and Table 1. Twenty-one compounds were identified, making up 85.6 % of the total composition. The majority of this oil was trans-p-(1-butenyl) anisole which comprised up to 67.1 %. The other compounds were linalyl acetate (7.7 %), benzyl acetate (1.5 %), caryophyllene (1.2 %), eucalyptol (1.1 %), limonene (0.6 %) and camphor (0.3 %), respectively.

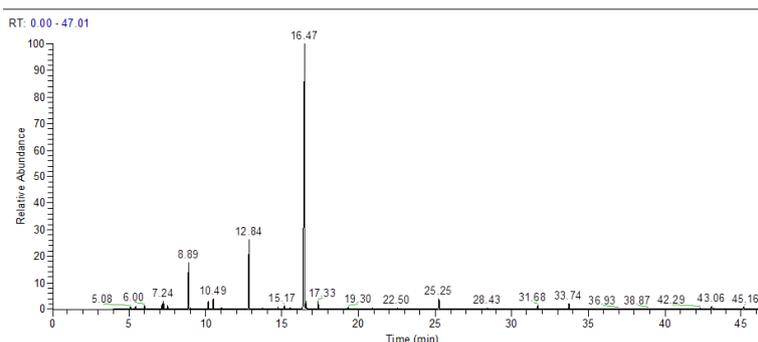


Figure 2 The GC chromatogram of MZ oil

Table 1 The chemical compounds of MZ oil

No.	Component	Retention times (min)	Peak area (%)
1	Camphene	5.42	0.33
2	3-Carene	6	0.49
3	Limonene	7.15	0.65
4	Eucalyptol	7.24	1.09
5	Beta-ocimene	7.51	0.44
6	Linalyl acetate	8.89	7.72
7	Camphor	10.17	1.15
8	Benzyl acetate	10.49	1.55
9	Terpinen-4-ol	11.04	0.17
10	Terpinenyl acetate	11.41	0.14
11	Anisaldehyde	13.01	0.11
12	Hexamethylbenzene	14.75	0.29
13	1-methoxy-4-(1-methyl-2-propenyl)-benzene	15.17	0.44
14	Isoeugenol	15.51	0.33
15	Trans-p-(1-butenyl)anisole	16.47	67.1
16	Caryophyllene	17.33	1.24
17	Beta-Selinene	19.02	0.12
18	Humulen	19.3	0.25
19	Cis-3-Hexenyl benzoate	20.89	0.14
20	Methyl jasmonate	22.5	0.16
21	Benzyl benzoate	25.25	1.74
	Total		85.65

3. Skin irritation test

The skin irritation of volunteers was evaluated in 4 samples including 0.2 % Sodium lauryl sulfate (positive control), deionized water (negative control), cream base and cream with 1 % MZ oil. The result showed the M.C.I.I of 0.2 % Sodium lauryl sulfate as 0.29 (very slightly irritate) while the M.C.I.I value of cream base and MZ oil cream as 0.00 and 0.04, respectively. Thus, the products were classified as non-irritation.

4. Clinical evaluation

The clinical skin hydration of MZ oil cream was evaluated on the upper arm in 12 volunteers compared with the placebo for 8 weeks. The MZ oil cream was applied on the facial of 12 volunteers for evaluating skin moisture on the forehead and cheek which compared between baseline and at the end of the experiment (week 8). The results were calculated in percentage changing and analyzed statistically by comparing with baseline. The skin moisture related to the honey layer (stratum corneum) water content which played important role in the skin function such as anti-inflammation and cell proliferation process. If the product improved the moisture of the skin, it could prevent skin dryness (Verdier-Sévrain and Bonté, 2007; Saewan *et al.*, 2018). In this study, the skin moisture was examined using corneometer.

According to Figure 3, the percentage changing of skin moisture in the TC group was significantly increased in week 2 (7.6 %) and continuously improved to 16.3, 17.7 and 18.3 % at weeks 4, 6 and 8, respectively while the placebo group showed no significant differences. Besides, all volunteers applied MZ oil cream on the facial showed a significant increase of skin moisture on the forehead in week 2 (48.4 %) and continuously improved to 58.4, 74.1 and 77.1 % at weeks 4, 6 and 8. The moisture content of the cheek provided a significant increase of 18.2, 21.2 and 20.2 % at weeks 4, 6 and 8 which represented in Figure 4.

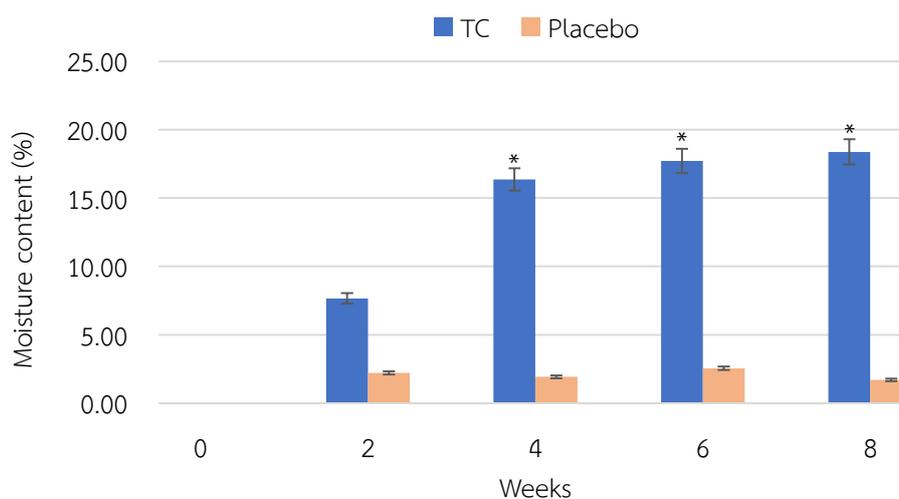


Figure 3 The change of skin moisture on the upper arm during the experiment. The * value indicated a significant difference ($p < 0.05$) between the during the experiment and baseline (week 0).

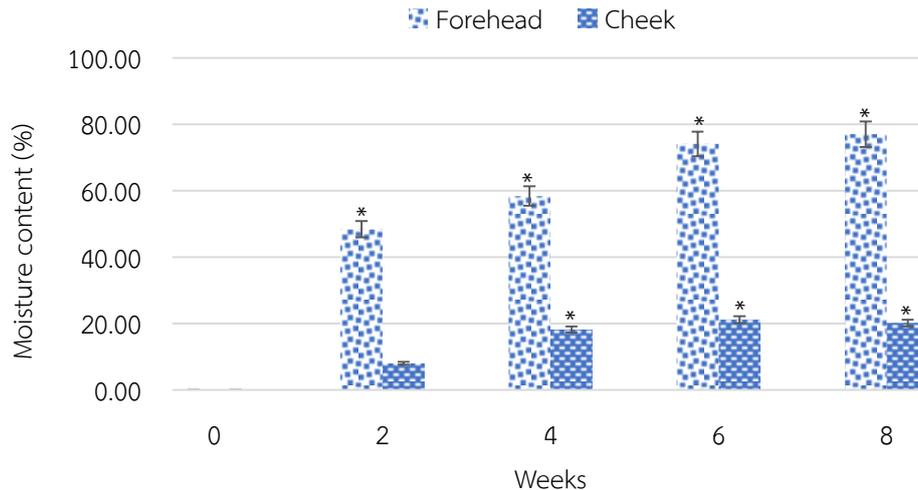


Figure 4 The change of skin moisture on the forehead and cheek during the experiment. The * value indicated a significant difference ($p < 0.05$) between the during the experiment and baseline (week 0).

Conclusion

The topical application of a product contained 1 % MZ oil offers skin hydration benefits. Statistical improvements were represented in its ability to provide moisture content against the baseline. Therefore, MZ oils in an effective ingredient for using as a moisturizing ingredient in cosmetic and cosmeceutical formulation.

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THE POTENTIAL OF TELEMEDICINE APPS IN CHINA: AN EMPIRICAL STUDY

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ABSTRACT

In the 21st century, the medical industry's goal is to provide quality, efficiency and convenience. Stakeholders in the global industry are looking for innovative methods with low cost and high efficiency, and provide patient-centric, technology-driven telemedicine services outside the hospital. However, China still has medical conditions, the quality of medical care varies greatly, poor referral coordination and low-risk treatment. At the "2018 China Health and Health Innovation Development Summit and the Fifth International Telemedicine and Health Service Conference", the Sino-Japanese Hospital Telemedicine Center said that at present, the synergies of telemedicine, Internet diagnosis and treatment and other businesses may become one of them. Ways to alleviate the problem of "seeking medical advice and medicine" in China There are currently two telemedicine models in China. One is the remote medical mode between medical institutions, and the other is the Internet clinic mode of medical institutions. The diagnosis and treatment mode of the Internet is currently limited to the recurrence of certain common diseases, that is, patients must go to the hospital to see a doctor. After the doctor understands the patient's condition and grasps the patient's medical record data, he can follow up or follow up through the Internet platform. In recent years, popular APP health consultation, online registration, query and examination results, and residents' health records are all medical auxiliary services. Patients can log in to the main medical platform for consultation. However, the medical auxiliary business is a market behavior and medical knowledge sharing behavior, which does not belong to the telemedicine category. How to make telemedicine comply with medical rules. How to make the medical industry need professional qualifications and medical quality management, an APP that meets the formal telemedicine standards will be essential, The main purpose of this research is analysis of the advantages of telemedicine APP in various performance. The most influential factors for telemedicine apps are the reputation of doctors, the quality of medical information, the quality of diagnosis and treatment services, the reputation of hospitals, and electronic health literacy. If you want to increase users' willingness to use health apps, you must improve

Key words telemedicine APP health information willingness technology acceptance model

Introduction

In this era of the rapid development of network technology, APPs in various industries are constantly emerging. In the health APP industry, the number of domestic health APPs is increasing, and in recent years it has shown an explosive growth trend. Now because of the widespread existence of health APPs, people are greatly facilitated in obtaining health information and services.”The foundation of the development of telemedicine” (Liu Changwen 2017 p.34)

Current status: Due to the serious homogeneity of the development of various health APPs in the Internet market, it is difficult to distinguish the health information provided by them, which leads to a relatively low usage rate of telemedicine APPs.

Desired state: Let the service quality of telemedicine APPs meet the needs of users, increase the utilization rate of telemedicine APPs, and allow telemedicine APP operators to have a broad platform to provide protection for people's health.

Based on the current status of domestic and foreign health APP research, literature research and empirical research, combined with user willingness to use, this paper sorts out the factors that may affect the user's health in the use of telemedicine APP. Medical APP factors, including doctor reputation, medical information quality, diagnosis and treatment service quality, hospital reputation, user electronic health literacy and perceived health threats, put forward research hypotheses and influencing factor models, using questionnaire survey method for data collection, and test the collected data Pay attention to the reliability and validity of the telemedicine APP, and use relevant analysis and regression analysis to analyze the data and factor analysis.

Research questions

1. How to meet users' health needs and user experience, increase user stickiness, and improve the utilization of telemedicine APP.
2. Does the reputation of doctors affect the willingness to use health apps?
3. Does the quality of medical the information affect on the willingness to use health apps
4. Does The quality of medical services affect the willingness to use health apps
5. Does Hospital reputation affect the willingness to use health apps
6. Electronic health literacy affect the willingness to use health apps
7. Is Perceived health threats have a positive effect on the willingness to use health apps

Research purpose

1. Improve the utilization of telemedicine APP.
2. Identify the factors that affect user experience, optimize and meet users' health needs.

Theoretical significance: This article studies the user's willingness to use the telemedicine APP based on the technology acceptance model and information adoption model, combined with the service characteristics of the telemedicine APP and the user's willingness

to use the relevant theories, aiming at the factors that affect the user's use of the telemedicine APP. Research one by one, put forward research hypotheses of telemedicine APP usage willingness and construct a model of influencing factors of telemedicine APP usage willingness, which enriches users' theoretical models of telemedicine APP usage behavior. Practical significance: This article studies the users' willingness to use the telemedicine APP, uses user interviews to conduct surveys, and discusses the influencing factors that affect the user's use. The influencing factors based on this are more practical, and are used as the telemedicine APP. Provides practical suggestions for the development of the Internet and helps telemedicine APP operators optimize their platforms to increase the utilization rate of telemedicine APPs.

Literature Review

2.2 Literature review

In this section, I will use cases and domestic and foreign literature to illustrate the role and necessity of government affairs APPs in responding to emergencies.

2.2.1 Current case study of TraceTogether APP

2019 years COVID-19 has become the focus of global attention, from a few countries began to spread around the world, the world has more than 30 million people diagnosed, this time is not IT but also for individual countries to make a corresponding telemedicine APP, the Singapore government's Science and Technology Bureau of communications and senior Minister of the Department of Public Health stand, at a press conference the government of Singapore Technology Bureau and the Ministry of health has launched a cooperation on coronaviruses tracking APP - TraceTogether. Download this APP users only need to turn on Bluetooth, the APP will allow users to exchange short distance between the phone via Bluetooth signal, which can be very convenient to know that people in the 21 days before the user's had contact record And save. Through this APP, the Ministry of Health will be much more convenient when it is tracked after a patient is diagnosed with an infection. This APP fully demonstrates the advantages of telemedicine APP

1. Telemedicine APP can greatly reduce the time and cost of obtaining information.
2. The telemedicine APP can well manage and distribute emergency medical services in remote areas, which can be achieved by transmitting photos to key medical centers.
3. The telemedicine APP can enable doctors to break through the limitation of geographical scope and share patient medical records and diagnostic photos, which is beneficial to the development of clinical research.

2.2.2 Marketing success of Dr. Chunyu APP in China

Dr. Chunyu's medical products have only started in 2011, but they have developed rapidly. In more than four years, "self-diagnosis" has launched an intelligent search engine for self-

examination of patients by accumulating millions of consultation data submitted by users. . The "Air Hospital" has achieved a 24-hour doctor consultation service on standby through a crowdsourcing mechanism, and has also launched a membership system. In addition, "Dr. Chunyu" also launched its own health tools and launched an information module. The service has not only become diverse, but also has considerable depth. The product positioning and user experience are very good. At present, there are more than 30 million users, 40,000 online doctors, more than 50,000 daily health consultations , and a lot of profits . Dr. Chunyu's marketing success illustrates several issues

(1) Accurate consultation of minor diseases has almost replaced the function of the hospital . The emergence of Dr. Chunyu has changed the medical habits of many users in China

(2) Due to the professionalism of medicine and medical treatment, users pay more attention to the problems of APP itself than other tools.

(3) Convenience of payment will greatly increase the payment rate of telemedicine , so that telemedicine has a huge market,

(4) Because they can solve practical problems, users have a strong willingness to pay.

The foundation of the development of telemedicine (Liu Changwen 2017 p.34)

The 2016 National Health and Wellness Conference proposed that national health should put people's health at the strategic position of priority development, develop the health industry, optimize health services, and promote the construction of a healthy China. In this context, the market size of the mobile health industry has expanded rapidly, and health APPs have ushered in vigorous development, helping more and more users to achieve self-management of health problems. As the most common group of mobile APP users, college student users have continued to use mechanisms to become the focus of attention and research. The purpose of this study is to help health APP designers and manufacturers to clearly determine the judgment mechanism that affects the long-term use of college students, help companies find their own software advantages among many competing manufacturers, grasp user needs, increase users' willingness to use continuously, and promote business innovation and development. : This study uses a combination of qualitative and quantitative research methods to study the influencing factors of college students' willingness to use health APPs continuously. First of all, in view of the current weak theoretical basis of the factors affecting the continued use of healthy APPs, the use of grounded theoretical methods, preliminary interviews through in-depth interviews and focus groups, through open coding, spindle coding and selective coding, found 4 dimensions In terms of user perception, APP quality, individual condition and objective situation, 9 factors namely perceived usefulness, perceived ease of use, information quality, system quality, service quality, health literacy, personal characteristics, conversion costs and objective

factors affect college students' health APP Sustained use willingness; second, construct a theoretical model of influencing factors for the continued use willingness of college students' health APPs, and put forward a total of 17 hypotheses including direct impact on continuous use willingness, intermediary influence, and moderating variable influence; third, 338 copies were recovered through a questionnaire survey Effective questionnaire, and analyze the distribution, reliability, reliability and correlation of samples through SPSS software; Finally, the structural equation model test is conducted through AMOS software. Concluded as follow:

Conclusion 1: College students have a higher overall acceptance of health APPs, and there are many different types of health APPs on mobile phones of college students with continuous use behaviors. Among them, fitness shaping has the largest number of users, followed by sleep relaxation, physical and psychological Categories, medical purchases and others.

Conclusion 2: The influence of moderating variables on the willingness to use continuously: college students who use medical APP purchases, fitness shaping, physiology and psychology, and other types of health APPs have stronger continuous use intentions, and the remaining categories have no effect on the continuous use intentions; There is no difference in the influence of different genders and educational levels on the willingness to use continuously.

Conclusion 3: The paths extracted from the grounded theory and tested by the structural equation model are: perceived usefulness, information quality, system quality, and health literacy significantly affect the continued use willingness, information quality significantly affects perceived usefulness, and system quality is significant Positively affect perceived ease of use, and objective factors significantly affect perceived usefulness and perceived ease of use.

Conclusion 4: The paths extracted from the grounded theory but failed the structural equation model test are: perceived ease of use, personal characteristics, conversion costs, the impact of objective factors on the continued use intention, and the impact of service quality on the continued use willingness and perceived usefulness . However, the correlation analysis of SPSS showed a moderate and strong correlation. The grounding theory of qualitative research methods and the empirical research method structural equation model are not exactly the same. The advantages of the combination of the two research methods are obvious in this study, that is, the reasonable range of independent variables is expanded, while individual The direct influence relationship between the variable and the dependent variable leaves room for subsequent research to determine the undiscovered influencing factors or influence paths, and also provides new ideas for user behavior research and other sociological fields.

" Research on the Factors Influencing the Willingness of Users to Continue to Use Knowledge Payment APPs " (Zhao Baoguo, Yao Yao 2017)

Methodology

The main research methods used in this article are literature survey method, questionnaire survey method and statistical analysis methods.

(1) Literature method. Document method mainly refers to the collection, identification and classification of documents to form a cognition. This article through a large number of collection and collation of relevant literature on the willingness to use, on the author's views and research methods conduct detailed analysis and summary to obtain the influencing factors of willingness to use, as a basis, combined with the telemedicine APP's the characteristic proposes the influencing factors of initial telemedicine APP willingness to use.

(2) Questionnaire survey method. This article mainly studies the influencing factors of willingness to use telemedicine APP, using questionnaire survey method to collect the user's feelings and opinions about the use of telemedicine APP in this study, which affect the user's use important factors. It is an important way to get users' opinions on a certain issue, so using the questionnaire method has great feasibility. In this study, the current users and potential users of telemedicine APPs are the subjects of investigation. Online questionnaires are collected online.

(3) Statistical analysis method. This article uses statistical analysis to analyze the data collected by the questionnaire survey. The SPSS21.0 statistical analysis tool is used for analysis, which mainly checks the reliability and validity of the collected questionnaires, and carries out analysis. After correlation analysis, further regression analysis was done to verify and prove that investigate whether the assumption is true or not. After the results of the regression analysis, you can find that various factors use the telemedicine APP for users the size of the impact.

Results and findings

4.2 Descriptive statistics

Correlate is an analysis method that deals with analyzing the relationship between various variables. In the current correlation analysis, the magnitude of the correlation coefficient obtained during the correlation analysis is generally used to measure the degree of correlation between the variables. This article uses Likert's five-level scale in the design of the questionnaire scale, so this paper chose the general coefficient of Pearson to measure the degree of correlation between them. In general, when the Pearson correlation coefficient is positive, it means that the previous two variables are positively related to each other, and when the Pearson correlation coefficient is negative, it means that the previous two variables are negatively related to each other. Generally speaking, if The larger the absolute value of

the coefficient between them, the higher the degree of correlation between them. In terms of significance testing, when the significance is lower than 0.05, the overall reliability and hypothetical reliability of the questionnaires recovered in this questionnaire are relatively high; if the significance is greater than 0.05, it indicates the correlation between the two variables It cannot be ruled out that chance is, the sample does not necessarily represent the population, the hypothesis may hold, but the reliability is not so high. Closeness between variables by R represents the value, R value in the range [-1,1], n is the number of positive correlation value is negative, then the correlation is negative, if the value is zero, it indicates that there is no correlation between them, Generally speaking, the larger the absolute value of R, the higher the correlation between the two variables. Pearson's correlation coefficient also defines the correlation coefficient for judging variables through the following range of values under normal circumstances. 0.8-1.0 very strong correlation. 0.6-0.8 strong correlation. 0.4-0.6 moderate correlation. 0.2-0.4 weak correlation. 0.0- 0.2 Very weak or no correlation. So in this experiment, The R value > 0.2 means that the variables are initially correlated, and the R value > 0.4 means that the variables are moderately correlated. R Values >0.6 indicate strong correlation between variables. The following is an analysis of the correlation between variables and willingness to use based on the model constructed in this paper.

This article is studying the influencing factors of users' willingness to use health apps, mainly analyzing the influences and users' usage. Use the correlation between willingness to measure the correlation between them through the size of Pearson's correlation coefficient the size of. Doctor reputation, medical information quality, diagnosis and treatment service quality, hospital reputation, electronic health literacy and perception. Health threats analyze the relevance of users' willingness to use, and the results are shown in the table 2-1

	Usage intention	
	Pearson correlation	significance (two-sided)
doctor reputation	598**	0
medical information quality	543**	0
diagnostic service quality	626**	0
hospital reputation	543**	0
electronic health literacy	594**	0
perceived health threats	387**	0

(1) Correlation between doctor reputation and willingness to use

There is a positive correlation between doctor's reputation and willingness to use, Table 2-1 can be seen physician Reputation and willingness to use the value of R = 0. 598, R> 0 . 4 indicate a positive correlation physician Reputation and willingness to use and significance

= 0.000 indicates a significant correlation and statistical significance. Therefore, it can be concluded that the assumption that the doctor's reputation is positively related to the willingness to use the telemedicine APP is established.

(2) Correlation between quality of medical information and willingness to use

There is a positive correlation between the quality of medical information and willingness to use. shows from Table 2 -1 that the R value of the quality of medical information and willingness to use=0.543, $R>0.4$ indicates that there is a positive correlation between the quality of medical information and willingness to use, and it is significant =0.000 indicates a significant correlation and statistical significance. Therefore, it can be concluded that the hypothesis that the quality of medical information is positively related to the willingness to use telemedicine APPs is established.

(3) Correlation between the quality of diagnosis and treatment services and willingness to use

There is a positive correlation between the quality of diagnosis and treatment services and willingness to use, from Table 2 -1, we can know the quality of diagnosis and treatment service and willingness to use. R value=0.626, $R>0.6$ indicates that there is a positive correlation between the quality of diagnosis and treatment services and willingness to use, and significance=0.000 indicates a significant correlation and statistical significance. Therefore, it can be concluded that the hypothesis that the quality of diagnosis and treatment services is positively correlated with the willingness to use telemedicine APP .

(4) Correlation between hospital reputation and willingness to use

There is a positive correlation between hospital reputation and willingness to use, Table 2 -1 shows that the R value of hospital reputation and willingness to use = 0.543, $R>0.4$ indicates that there is a positive correlation between hospital reputation and willingness to use, and significance=0.000 indicates a significant correlation and statistical significance. Therefore, it can be concluded that the assumption that the hospital's reputation is positively related to the willingness to use the telemedicine APP is established.

(5) Correlation between electronic health literacy and willingness to use

There is a positive correlation between electronic health literacy and willingness to use, from Table 2 -1, we can know the R value=0.594, $R>0.4$ indicates that there is a positive correlation between electronic health literacy and willingness to use, and significance=0.000 indicates a significant correlation and statistical significance. So it can be concluded that the user's electronic health literacy and telemedicine APP The assumption that the will to use is positively correlated holds.

(6) Correlation between perceived health threats and willingness to use

Perceived health threats are positively correlated with willingness to use .shows from Table 2 -1 that the R value of perceived health threats and willingness to use = 0.387, $R>0.2$ indicates that there is a positive correlation between perceived health threats and

willingness to use, and significance = 0 . 000 indicates a significant correlation and statistical significance. Therefore, it can be concluded that the assumption that the perceived health threat is positively related to the willingness to use the telemedicine APP is true.

4.3 List results and discussion for quantitative research

Through the test of reliability and validity, we can find that all variables have passed the test. The results of the correlation analysis in the previous section show that each influencing factor has a certain degree of correlation with the willingness to use, although in the above analysis, each factor and the willingness to use Have different correlations, but it is not possible to determine how much the independent variable affects the dependent variable, Therefore, in the next article, this method of regression analysis will be used to estimate it by establishing a regression equation.

Analysis is a more common method of analyzing data. It is mainly used to analyze the variables when there are many variables. The relationship between them is generally presented in the form of regression equations, mainly based on the sample and the number according to the establishment of regression equations, the coefficients of various variables in the equations can be obtained to help people understand the correct the specific influence of the independent variable on the dependent variable provides sufficient scientific basis for control and prediction.

When performing regression analysis, it is generally divided into unary and multiple regression analysis. Since this article involves multiple independent variables, therefore, multiple stepwise linear regression analysis method will be used to calculate the original data and fit the model, according to the data the results of regression analysis are shown in Table 2 -2

Model	R	R ²	Adjust R ²	Standard estimated error	Change statistics					Durbin-Model
					R side change	F change	df1	df2	Sig. F change	
1	.626a	0.392	0.389	0.51128	0.392	130.402	1	203	0	2.039
2	.691b	0.478	0.472	0.47522	0.085	32.819	1	202	0	
3	.724c	0.524	0.517	0.45485	0.046	19.413	1	201	0	
4	.744d	0.553	0.544	0.44167	0.029	13.111	1	200	0	
5	.752e	0.565	0.554	0.43686	0.012	5.408	1	199	0.021	

a. Predictor: (constant), quality of diagnosis and treatment service.

b. Predictor variables: (constant), quality of diagnosis and treatment, doctor reputation

c. Predictors: (constant), quality of diagnosis and treatment services, reputation of doctors, perceived health threats.

d. Predictor variables: (constant), quality of diagnosis and treatment, doctor reputation, perceived health threat, hospital reputation.

e. Predictor variables: (constant), quality of diagnosis and treatment services, reputation of doctors, perceived health threats, reputation of hospitals, quality of medical information.

f. Dependent variable: Willingness to use

It can be found from the analysis in Table 2-3 that R is the complex correlation coefficient, which shows the magnitude of the influence between all independent variables and the dependent variable in the regression analysis. This value is generally in the range of 0 to 1. If the value is larger, it means that the regression equation can reflect the actual relationship between them. The adjusted R square in it represents the true reflection degree of the regression equation on the sample data. According to the above table, it can be seen that the adjusted R square value is 0.554, that in general adjusted R-square value is larger than 0.5, it should meet the requirements.

	Model	Square sum	df	mean square	F	Sig.
1	Regression	34.088	1	34.088	130.402	.000b
	Residual	52.805	203	0.261		
	total	86.893	204			
2	Regression	41.5	2	20.75	91.881	.000c
	Residual	45.393	202	0.226		
	total	86.893	204			
3	Regression	45.516	3	15.172	73.336	.000d
	Residual	41.377	201	0.207		
	total	86.893	204			
4	Regression	48.074	4	12.018	61.61	.000e
	Residual	38.819	200	0.195		
	total	86.893	204			
5	Regression	49.106	5	9.821	51.462	.000f
	Residual	37.787	199	0.191		
	total	86.893	204			

a. Dependent variable: Willingness to use

b. Predictor: (constant), quality of diagnosis and treatment service.

c. Predictor variables: (constant), quality of diagnosis and treatment, doctor reputation.

d. Predictor variables: (constant), quality of diagnosis and treatment services, reputation of doctors, perceived health threats.

e. Predictors: (constant), quality of diagnosis and treatment, doctor reputation, perceived health threats, hospital reputation.

f. Predictors: (constant), quality of diagnosis and treatment, doctor reputation, perceived health threat, hospital reputation, medical information quality.

It is found from the research in Table 2-4 that the numerical value of F obtained in the regression analysis in this paper is 51.462 , where the probability of significance is 0.000 , which is less than 0.05 , so the model is statistically significant.

Model	Unstandardized coefficient		Standard coefficient	t	Sig.	95% coefficient interval for B		confidence statistics	
	B	Standard error	Trial version			Lower limit	Upper limit	Tolerance	VIF
Constant	1.467	0.221		6.629	0	1.031	1.904		
Quality of diagnosis and treatment	0.626	0.055	0.626	11.419	0	0.518	0.734	1	1
Constant	0.791	0.237		3.337	0.001	0.324	1.259		
Quality of diagnosis and treatment	0.442	0.062	0.422	6.784	0	0.299	0.544	0.671	1.489
Doctor reputation	0.372	0.065	0.356	5.729	0	0.244	0.499	0.671	1.489
Constant	0.446	0.240		1.856	0.065	0.028	0.919		
Quality of diagnosis and treatment	0.312	0.064	0.313	4.844	0	0.185	0.439	0.572	1.749
Doctor reputation	0.289	0.065	0.277	4.459	0	0.161	0.417	0.616	1.625
Electronic health literacy	0.278	0.063	0.273	4.406	0	0.154	0.402	0.621	1.609
Constant	0.176	0.245		0.720	0.472	0.306	0.659		
Quality of diagnosis and treatment	0.265	0.064	0.265	4.144	0	0.139	0.391	0.548	1.825
Doctor reputation	0.205	0.067	0.196	3.051	0.003	0.072	0.337	0.541	1.847
Electronic health literacy	0.266	0.061	0.261	4.343	0	0.145	0.387	0.62	1.614
Hospital reputation	0.215	0.059	0.21	3.621	0	0.098	0.332	0.664	1.505
Constant	0.061	0.263		0.232	0.817	0.579	0.457		
Quality of diagnosis and treatment	0.237	0.064	0.238	3.688	0	0.110	0.364	0.529	1.889
Doctor reputation	0.160	0.069	0.153	2.313	0.022	0.024	0.296	0.499	2.003
Electronic health literacy	0.238	0.062	0.234	3.851	0	0.116	0.360	0.596	1.678
Hospital reputation	0.206	0.059	0.202	3.507	0.001	0.090	0.322	0.662	1.511
Medical Information Quality	0.165	0.071	0.140	2.326	0.021	0.025	0.304	0.606	1.650

Taking doctor reputation, medical information quality, diagnosis and treatment service quality, hospital reputation, electronic health literacy and perceived health threats as independent variables, users' willingness to use as dependent variables for multiple linear regression, using a step-by-step Approach, as shown in Table 2-4 It is found that the perceived health threat does not enter the model, with the quality of diagnosis and treatment services, doctor reputation, electronic health literacy, hospital reputation and medical information quality as independent variables, the user's willingness to use is the dependent variable in this article, and the results of regression analysis explain 55.4 of the total variation %, and its significance level is also less than 0.05, indicating a significant

regression effect. The variables entered in the regression model are diagnosis and treatment service quality, electronic health literacy, hospital reputation, medical information quality, and doctor reputation, indicating that these six variables work together when they are willing to use telemedicine APPs , so we can see the above five Factors have more influence on the willingness to use the telemedicine APP , and the significance is stronger. Through the regression coefficient table, it can be seen that the perceived health threats have not entered the regression equation, so it can be concluded that the perceived health threats have no significant positive correlation with the willingness to use telemedicine APPs , quality of medical services, medical information quality, electronic health Literacy, hospital reputation, and doctor reputation all have a significant positive correlation with the willingness to use telemedicine APPs .

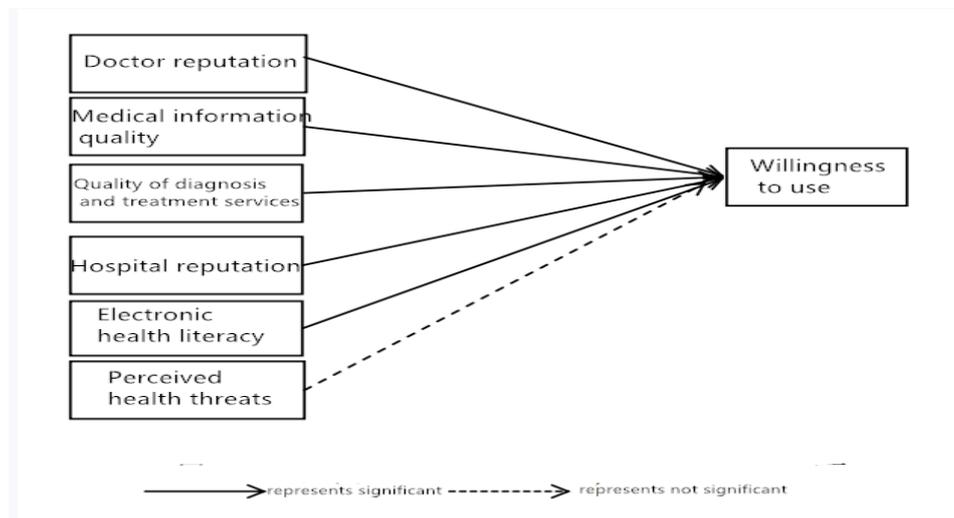
In addition, in the study of regression analysis, we should also pay attention to whether there is a problem of collinearity between independent variables, mainly referring to the fact that there are more than one independent variable if there are more than one independent variable. , That is, if there is strong collinearity between the two independent variables, the two independent variables can be considered to reflect the same independent variable, and if the two independent variables are collinear, then they can be considered to reflect the same Content, if two similar independent variables are introduced in the regression analysis, the operation of the matrix will be problematic, so in the regression analysis, it is necessary to check whether these independent variables are collinear with each other. It can be seen in 2-4 that the VIF value corresponding to each independent variable is mostly around 2, so it shows that there is no collinear relationship between them. Therefore, according to the structure of the above analysis, it can be known that the regression equation in this paper has a relatively good fit and meets the requirements.

Therefore, according to the results of the data analyzed in Table 2-4 , the standard regression coefficients for the quality of diagnosis and treatment services, doctor reputation, electronic health literacy, hospital reputation, medical information quality and willingness to use are: 0.237, 0.160, 0.238, 0.206, 0.165, so the multiple linear regression equation is: willingness to use = 0.237 * quality of medical services + 0.160 * doctor reputation + 0.238 * electronic health literacy + 0.206 * hospital reputation + 0.165 * medical information quality-0.061. After the previous analysis, the paper concludes that among the original six hypotheses, except for one that did not receive support, the other five hypotheses were supported.

This paper analyzes and verifies the various research hypotheses proposed earlier in the article, and finally summarizes the conclusions of the research hypotheses, as shown in Table 2-5 .

Hypothesis	In Conclusion
H1: The reputation of doctors has a positive effect on the willingness to use health apps	Support
H2: The quality of medical information has a positive effect on the willingness to use health apps	Support
H3: The quality of medical services has a positive effect on the willingness to use health apps	Support
H4 : Hospital reputation has a positive impact on the willingness to use health apps	Support
H5: Electronic health literacy has a positive impact on the willingness to use health apps	Support
H6: Perceived health threats have a positive effect on the willingness to use health apps	Not Support

This article is based on the combination of relevant theories and empirical research on the user's willingness to use telemedicine APP analysis, mainly after a series of analysis of the questionnaires recovered, to test the various factors on the use of health the influence of APP's willingness can be drawn from the analysis results. Doctor reputation, medical information quality, diagnosis and treatment services, hospital reputation and e-health literacy have a significant positive relationship with the willingness to use telemedicine APPs , from above the results of the regression analysis can be seen that the perceived health threat does not enter the regression equation, indicating that the perceived health threat there is no significant correlation between the factors and the willingness to use telemedicine APP . Therefore, according to the verification of the above empirical data and analysis results, and revise the proposed influencing factor model to obtain the revised telemedicine APP's willingness to use the research model of noise factor is shown in Figure 2-6 .



Conclusion

With the development of Internet technology, various types of health APPs have emerged in the market, but telemedicine APPs low usage rate, improve the health information and service functions of the telemedicine APP , continue to attract new users and enhance users satisfaction, in order to continuously improve the service level and development direction of telemedicine APP . This study affects users by selecting the influencing factors of using telemedicine APP , after empirical, targeted to improve the utilization rate of telemedicine APP the main conclusions of this paper are as follows:

(1) Through combing the relevant literature at home and abroad, this paper is studying the APP of telemedicine APP and users' willingness based on the analysis and analysis of the situation, based on the TAM model, combined with the information adoption model and the telemedicine APP service characteristics, put forward the influencing factors of the willingness to use the telemedicine APP , and put forward research hypothesis part of the scale, combined with the characteristics of the telemedicine APP itself, sorted out the questionnaire survey of this article, and conducted a questionnaire screening and analysis of the distribution of recycling, and test and analysis of the proposed research hypothesis.

(2) According to the correlation analysis and regression analysis in the empirical analysis, it can be concluded that the user's health the size of the correlation coefficient and regression coefficient between the influencing factors of APP and the user's willingness to use is obtained according to the size of the coefficient the degree of influence of various influencing factors on users' use of health APPs is in turn the user's electronic health literacy, The quality of diagnosis and treatment services, the reputation of the hospital, the quality of medical information and the reputation of doctors, and perceived health threats have not entered the regression equation. It shows that the perceived health threat has no significant effect on users ' willingness to use health APPs . From this we can conclude that as health APP managers need to focus on improving the quality of platform diagnosis and treatment services and the audit system of hospitals stationed on the platform. Incorporate into regular professional hospitals, improve medical information, improve the quality of medical information, and at the same time improve the review of doctors stationed on the platform nuclear system, including highly professional and reputable doctors to enhance the development of the platform itself and increase user satisfaction, enhance users' willingness to use telemedicine APPs .

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RESEARCH ON CREDIT PRODUCT INNOVATION OF SMALL AND MICRO ENTERPRISES IN COMMERCIAL BANKS

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Abstract

With the development of the market-oriented reform, small and micro enterprises have sprung up and become more and more important in the national economy. Small and micro enterprises have a large number, wide distribution, and a wide range of types. They play a vital role in adjusting and improving the industrial structure, promoting employment, promoting urbanization reform and so on, and also make a great contribution to the development of the national economy.

Based on market segmentation theory, enterprise financial life cycle theory, relational credit theory, information asymmetry theory and credit rationing theory, this paper systematically analyzes the existing credit innovation products of small and micro enterprises in China by using literature analysis, experience citation and other research methods. Then, in practice, it analyzes the current situation of credit product innovation of small and micro enterprises in "Branch L" of ICBC, and points out the existing problems. Finally, according to the specific situation and actual needs, the paper puts forward some suggestions on the innovation of credit products for small and micro enterprises of "Branch L" of ICBC.

Key words Commercial Banks; Small and Micro Enterprises; Credit Products; Innovation Suggestions

1. Background information

In recent years, small and micro enterprises have become a new driving force and an important development group of social development in economic development. Their rapid growth has promoted employment and ensured the development of national economy. They can be called the rising stars, and they have also been recognized and supported by the masses. However, the financing difficulty of small and micro enterprises is still one of the important factors restricting their development. The main reason is that the characteristics of small and micro enterprises are unstable, the system is not perfect, the cultural level of entrepreneurs or individual heads of industry and commerce is low, and the credit degree is low, which leads to the difficulty and high cost of loans in banks. With the importance of small and micro enterprises in the national economy, the national government began to introduce various relevant policies to encourage development, such as the "13th Five Year Plan" to develop inclusive financial policies, which is to solve the financing difficulties of small and micro enterprises.

Credit business is an essential and important profitable business for banks, so it is urgent to break the "high threshold" of bank loans. Traditional bank credit products are mostly "pay attention to the public and despise the retail". Retail credit business is generally ignored by banks and the product is single, which greatly limits the development of Bank Retail asset business. The rapid development of small and micro enterprises has brought new opportunities for banks. How to stand out among many commercial banks, we need to further understand the needs of small and micro enterprises, strengthen innovation, develop credit products with characteristics suitable for small and micro enterprises, and enhance their core competitiveness.

2. Project aims and objectives

As a new market subject, small and micro enterprises have great development potential in the credit market. With the continuous inclination of national policies, small and micro enterprises will play an increasingly important role in the market economy, and the traditional credit model of commercial banks relying on large and medium-sized customers will be broken. Therefore, through detailed analysis and discussion, this paper hopes to provide a certain direction for the transformation of credit model of commercial banks, and provide ideas for the development of credit product innovation of small and micro enterprises in the fierce market competition, so as to enhance the overall competitiveness of commercial banks. At the same time, this paper only discusses and studies the innovation of small and micro enterprise credit products of commercial banks tentatively, hoping to attract more discussion and attention. But I believe that in order to cope with the fierce competition in the financial industry in the future, no one will ignore the potential of the credit market for small and micro enterprises, because it will become one of the new sources of profit for commercial banks in China.

3. Research meaning

From the perspective of product innovation of small and micro enterprises in commercial banks, this paper systematically studies the innovation of credit products of small and micro enterprises in commercial banks on the basis of relevant theories, which has both theoretical and practical significance. Mainly reflected in:

3.1 Theoretical significance

It is an important system engineering to explore the credit product innovation of small and micro enterprises of the bank. In the research process, it needs to use a variety of disciplines, such as macroeconomics, microeconomics, finance, industrial economics and so on, with a high degree of professionalism. Based on the full study of the relevant research results at home and abroad, combined with the specific domestic financial development environment, this paper puts forward innovative ideas for the development of small and micro credit products in China, which is of great theoretical significance for the innovation and development of small and micro credit products in China and the improvement of the product innovation level of small and micro enterprises in commercial banks.

3.2 Practical significance

At present, small and micro enterprises are the most potential enterprise groups in China. The innovation of credit products of small and micro enterprises by commercial banks helps to enrich and improve the existing credit system structure, obtain more customers for banks and open up a broader market space. Taking "Branch L" of Industrial and Commercial Bank of China as an example, based on the comprehensive analysis of the current situation of credit innovation products of small and micro enterprises in China, combined with the analysis of the general environment of "Branch L" of industrial and Commercial Bank of China, this paper finally puts forward the opinions and suggestions on the innovation of credit products of small and micro enterprises of this bank, which is of great practical significance for the realization of win-win growth of banks and small and micro enterprises.

4. Research approach and methodology

This paper mainly uses the following research approaches in the research of credit product innovation of small and micro enterprises of domestic commercial banks:

4.1 Literature review

On the basis of full study of relevant literature at home and abroad, gradually straighten out the development and reasons of small and micro credit business around the world, and provide clear ideas and theoretical support for the follow-up study of domestic bank small and micro enterprise credit products.

4.2 The method of combining theory with practice

First of all, it summarizes the theoretical research of domestic and foreign scholars, analyzes and evaluates the current situation of credit product innovation of small and micro enterprises in China on the basis of theoretical research, and finally settles in "Branch L" of

Industrial and Commercial Bank of China, analyzes the actual internal and external environment of the branch, and finally puts forward targeted suggestions.

4.3 The combination of qualitative analysis and quantitative analysis

In this paper, qualitative and quantitative analysis on the combination of a wealth of research and analysis. Through the existing various kinds of statistical data, we can understand the current situation of the development of small and micro enterprise credit products in China. Combined with the existing theoretical basis and practical situation, we discuss the current situation, problems and solutions of the innovation of small and micro enterprise credit products in "Branch L" of ICBC, which makes the overall framework of this paper more reasonable.

4.4 Methods of experience citation

This paper actively draws on the experience of some successful small and micro credit products in China, and summarizes them, and gets a lot of positive and useful practical innovation experience.

5. Conclusion and Discussions

Small and micro enterprises have gradually become an important force to promote the rapid and stable growth of the national economy. It plays an irreplaceable role in promoting the adjustment of industrial structure and providing jobs. Nowadays, with the increasingly fierce competition in the industry, excellent small and micro enterprises have gradually become the main battlefield for commercial banks to seize the market.

As the leader of commercial banks in L region, "Branch L" of ICBC is facing many challenges in seizing the credit market of small and micro enterprises. In order to be invincible in the market competition, "Branch L" of ICBC must be ready to explore better credit products for small and micro enterprises to adapt to the market development.

First of all, this paper describes the development status and market position of small and micro enterprises in China, leading to the significance of this paper.

Secondly, this paper summarizes the theoretical system of relevant scholars, analyzes the current situation of innovation and development of small and micro enterprise credit products of domestic commercial banks and Internet financial institutions, so as to find the huge development potential of small and micro enterprise credit market.

Thirdly, this paper analyzes the credit product innovation of small and micro enterprises in "Branch L" of ICBC, and analyzes the existing problems to form a relatively complete context system.

Finally, combined with the above content, market segmentation theory and corporate finance life cycle theory, this paper puts forward suggestions for the product innovation of small and micro enterprise credit of "Branch L" of ICBC. This mainly includes the following points: first, establish a scientific innovation concept of small and micro enterprise credit products; second, establish a multi-level credit guarantee mechanism for small and micro

enterprises; third, improve the risk pricing power of small and micro enterprise credit products; fourth, clarify the market positioning of small and micro enterprise innovative products; fifth, appropriately simplify business processes; sixth, strengthen cooperation with third-party institutions.

As a new market subject, the credit market of small and micro enterprises has great development potential. With the continuous inclination of national policies, small and micro enterprises will play an increasingly important role in the market economy, and the traditional credit model of commercial banks relying on large and medium-sized customers will be broken. Therefore, through analysis and discussion, this paper hopes to provide a certain direction for ICBC's "Branch L" credit model transformation in the fierce market competition, and provide ideas for the bank's small and micro enterprise credit product innovation development, so as to enhance the bank's overall competitiveness.

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INNOVATIVE FEATURES OF MINIATURE SLR CAMERA:

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Abstract

With the development of science and technology, the demand of the people is increasing day by day, and the requirements for digital products are getting higher and higher, and the results are not disappointing. The development of digital products is getting better and better, especially cameras. Since the development of cameras, there has been a history of 140 years. From the beginning, the single function is huge, and now the functions are more and more convenient to carry. It appears in the market with brand- new features such as miniaturization, automation, and high performance. It is refreshing. It can reflect the remarkable development of science and technology. Future digital cameras will mainly improve in appearance and photography performance

Keywords: Miniature SLR camera, innovation, consumer, function, weight, color

1. Introduction

With the development of science and technology, the demand of the people is increasing day by day, and the requirements for digital products are getting higher and higher, and the results are not disappointing. The development of digital products is getting better and better, especially cameras. From the beginning, the single function is huge, and now the functions are more and more convenient to carry.

Many photography enthusiasts also have more and more choices to buy cameras and buy professional SLR cameras, but because the size of the SLR is too large, it increases the travel burden of photography enthusiasts, so many people begin to buy micro SLRs, which is convenient for travel, Full-featured, so miniature SLRs are becoming more and more popular, but there are still some aspects of miniature SLRs that can't satisfy photographers SLR, as the name suggests is a single-lens reflex Bokeh camera. Single power, it is a single lens electronic viewfinder Camera, and micro-single is a micro single-lens electronic framing phase Machine. Digital photography replaces film photography, is photography A revolution in the history of equipment cannot be developed or advanced Interpretation of words like step. Ensuing, inevitable Is the innovation and question of various related accessories after the revolution In the world, what is more important is the change in camera usage concepts and habits. SLR camera has good picture quality but bulky, card The camera is portable but the picture quality is poor. Expect a good opportunity for both picture quality and portability.

2. Literature Review

2.1 Underpinning theories

because of the continuous efforts of inventors. Today's camera has undergone very big changes. New features such as miniaturized automation and high performance appear on the market. Historically, one of the camera's innovations is the compact, lightweight, and portable high-performance structure. Small ones can even be in your pocket. A camera weighs more than 100 grams and can be put in a jacket pocket, but this is the fact today. The second historical innovation of the camera. Electronic cameras have also been further developed. Allegedly, this camera also comes with a solar battery that can be used permanently. The third innovation on the road to the camera is. Filmless camera developed by Sony Corporation of Japan in 1981. This invention breaks through traditional photographic techniques such as film photo paper and darkroom processing. The fourth innovation is the cooperation between the electronic computer and camera invented in the United States, which is amazing for people to take pictures of so-called future trips. Changes in the history of the camera. People have constantly imagined the future of the camera. Some people speculate that the camera will be more convenient in the near future, and people who can't use the camera can also operate it. And take a perfect picture. Now it has become a reality. (Yang Yuhui [today and tomorrow of the camera])

In the past, people's guesses and expectations of the camera have now become a reality. It can be seen that our future camera road is also full of hope and gives people unlimited dreams and expectations. We also firmly believe that these guesses and hopes will eventually become a reality.

So back to micro-single, micro-single innovation is undoubtedly a great invention on the camera road.

- Describe the relationship of each work to the others under consideration.
- Determine which literature makes a significant contribution to the understanding of your project.
- Point the way to further research on your topic.
- Provide an overview of the subject, issue, or theory under consideration.
- Divide outside works into categories and concepts (in support or against your research question).
- Connect the works to what has come before your work and ideas.

Provide conclusions about those works that make the greatest contribution to the understanding and development of your topic.

3. Research Methodology

Due to the current problems of the micro SLR cameras outlined in the previous two chapters. In the future, consumers need the innovative conditions of micro SLR cameras. At the same time, it also addresses the deficiencies of the camera proposed by the user.

3.1 Research Design

Based on research on SLR cameras. I asked some consumers and users to make an assessment. For SLR cameras. Some comments and suggestions made. Point out the shortcomings of current digital cameras. Do a questionnaire survey. On a shopping site similar to China. For example, Taobao, Jingdong, Fight a lot, and many more. Turn up. The official flagship store of Canon cameras. Or the official flagship store of Sony Camera. Among the purchase reviews. Choose some people who have bought a camera. Comment. Or interview on the street and ask if you have bought a DSLR camera. If passers-by have bought SLR cameras. I asked if there were any suggestions for the camera, what kind of expectations do I have for the future camera? Find classmates to do a questionnaire survey. Make a questionnaire. Ask some corresponding questions. See how well the students know the camera. Or students who have purchased a camera. Adopts the advantages and disadvantages of SLR cameras. For example, have you purchased a camera? Whether the function of the SLR camera is satisfied. Whether there is much inconvenience in shooting, and whether the zoom function of the camera is satisfied. Is the camera battery sufficient? Does the DSLR bring joy to life? And so on.

4. Results and Findings

A micro-single camera has the tiny body of a single electric camera and the image quality of a single-lens reflex camera. Therefore, it is very popular with consumers. For those who want to buy a micro-single camera, they want to know what are the advantages and disadvantages of the micro-single camera? Today, the editor will introduce the advantages and disadvantages of the micro single camera. Advantages of micro single camera: Simple structure: In addition to eliminating the two points of the reflector and pentaprism, all aspects of the camera are also more concise, and the buttons are also transferred from external physical buttons to the built-in menu, which makes it easier for non-professional users to accept.

4.1 Measurement Model Assessment:

There are still many product technical defects, yet to be developed Perfect, users need to adapt to habits to be more comfortable Handy, I believe there will be more people gradually like micro

Single camera (From San lucheng [Reason for falling in love with the micro single camera])

5. Conclusion and Discussions

The innovation of the miniature SLR camera represents the progress of science and technology, and the contribution brought by technology is too much. In addition to the benefits brought by the development of technology, there are also some industrialized things that provide a lot of convenience in our lives. Digital cameras bring photography The new revolution is coming, the key is fast, people can immediately see the effect of shooting, and change the cumbersomeness of film processing. The digital camera bai is roughly the same as the traditional camera in the image capture part, only looking at the front shape of the du camera. The camera is not much different, but in imaging and recording, the difference between the two is great. Traditional cameras use film, while digital cameras mainly rely on photosensitive chips and memory cards. Although considering the price alone, digital cameras are more expensive than traditional cameras, but they have many advantages over traditional cameras.

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[N reasons to fall in love with miniature SLR]

[Camera today and tomorrow]

[How to develop the camera of the future]

[On the innovation of high-tech technique in photography].etc

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SELF SERVICE MANAGEMENT AT CUSTOM COUNTER OF CHINESE AIRPORT

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Abstract

To meet the demands of modern economic development, China Customs needs to carry out continuous reform and innovation. At present, the problems of domestic self-service system of customs are obvious--the management ideas and means can not keep up with the development of the situation. This article carries on the thorough research to the customs technical reform, unifying the theory to direct the practice to help establishes one to be full of vitality, the streamlined high-efficiency modernized customs. Also this paper aims at the solution research to the problem of self-help customs clearance in China and its future development strategy research.

Introduction

To meet the demands of modern economic development, China Customs needs to carry out continuous reform and innovation. Realizing the modern customs administration through pushing the all-round reform of customs clearance operation and reorganizing the operation process of Customs Administration, totally establishing the modern customs administration system by conducting the Scientific Administration of the customs, and implementation of information strategy in customs administration by increasing input in science and technology are needed.

At present, in order to make air passengers efficient check-in procedures and customs, efficient service must be carried out quickly and effectively. The clearance efficiency of the large number of passengers at the check-in counter is one of the main problems in the field of self-service customs clearance. with The gradual development of the so-called self-service, this service will speed up eventually delegate some of the check-in process activities to passengers and speed up the entire clearance process. Taking into account all known requirements and standards of domestic air transport relating to passengers with disabilities to reduce the load at the check-in counter, thereby speeding up the clearance of passengers at the airport. China's customs reform and innovation needs theoretical basis and methodological guidance. As for the self-service customs clearance system at the airport, there are still some deficiencies that need to be addressed. This paper aims at the solution research to the problem of self-help customs clearance in China and its future development strategy research. At present, there are some serious problems such as inadaptability, challenges and opportunities brought by the development of modern science and technology, and the urgency of management reform and innovation for Chinese Customs. This article will carry on the thorough research to the customs technical reform, unifies the theory to direct the practice, establishes one to be full of vitality, the streamlined high-efficiency modernized customs. In this topic, this article conducts management analysis on customs Innovative management model according to the basic theory of Enterprise Management and the basic theory of innovative management.

Literature Review

The Communications Network provides a variety of services to customers while being able to add or modify available service combinations at the same time (Cox, Richard D, Hunter, Andrew T, Rand, Jeffrey K, 1998). Provides a service delivery infrastructure that is located at the service control point of the intelligent network architecture and uses a range of service independent functions to deliver services (Lu, Huiqi, Clarettournier, Frederic, 2007). Mobile Commerce poses challenges to both individuals and society in nowadays. Creating and maintaining secure identities for online payments has become an important priority for businesses and consumers. To meet these challenges, we implement an efficient biometric

mobile payment authorization system, which combines embedded commercial bar code reader to provide a platform-independent global mobile payment authentication and tracking system. The paper, pursuit of excellence in airport management to create maximum market value mentioned that in the same time the airport production scale gradually expanded, the airport management level and service quality needs to be constantly improved. Since the reform of the Civil Aviation System in China, the airport management agencies have assumed the functions of aircraft protection and passenger service. The products exported are not concrete physical products in the ordinary sense, but Whether the quality control is applicable, and how to find the entry point of quality management in Airport Security Service (Chen Wei, 2003) in particular, in the system of the civil aviation of China, after the full implementation of safety management system SMS. At present, with the continuous increase of domestic airport passenger flow, the innovative management of self-help customs has been under the influence of foreign countries continue to build pilot construction. However, there are still many problems in the construction of the pilot need to be resolved and continuous improvement, so this topic is of great research value.

In the current domestic and international research on smart airport the self-service customs clearance system is still a relatively missing part, and the exploration is still insufficient. For example, in the literature of Sun Jingjing(2016), the research on the important role in the national economic and social development of domestic airports of the public infrastructure plays was studied. In the new era of "Internet + " rapidly integrated with various industries, the current information level of airport service management is low, and the efficiency and quality of airport service management need to be improved. He proposed the design scheme of the platform of integrated passenger service management, and designed the subsystem of passenger service management, passenger self-service subsystem and passenger information service subsystem. lack of self-service through customs design. In the design and research of these systems, self-service design of customs clearance are lack.

There are many key points in the innovation management, such as management innovation, information application innovation, and cooperation mode innovation. this paper will conduct research and discussion on the domestic airport self-service customs service based on the above three points.

Research Methodology

Based on the current self-service system of some airports at home and abroad, this article intends to adopt two methods to conduct research: literature research method and comparative research method. Based on the knowledge and theory of service management research, and the combination of the successful achievements airport information system at home and abroad, this article try to propose the design scheme of domestic airport passenger self-service system according to the actual situation of domestic airport.

Literature research method: This paper mainly uses this research method to summarize the research data related to this topic, which lays a theoretical foundation for the research of this paper.

Comparative study method: this article will conduct comparative research through the United States and Canada and other parts of the airport, and analyze through combining with the application of new technologies in domestic airports.

Based on the guiding ideology of promoting the development of self-service system with science and technology, this paper starts from the current situation of some domestic self-service system of airports, and on the one hand, analyzes the gap between the self-service system of some domestic airports and the excellent example airports of foreign countries, find out the factors that affect the improvement of passenger satisfaction, and put forward specific measures to improve service management. In addition, this article will analyze the role of new technologies in improving the self-service system of airports, make suggestions for technical improvement, combine the final practice demand with the actual situation, and put forward suggestions for new technical projects suitable for domestic airports and their improvement.

This section through the collection and analysis of technology, know that the current domestic and foreign airport self-service are constantly innovate its technology and optimize self-service system. The level of science and technology in China has been keeping up with the international level. Domestic technology independent development also make the current domestic major airports self-service custom clearance overall process more smooth, fast and efficient. We do not have a widely accepted formula for determining the exact sample size for qualitative studies. Everyone says everyone else is wrong. But what we have in hand is a set of proposed guidelines based on existing academic researches. I've worked on projects where I've interviewed fewer than 10 people, and I've worked on projects where I've interviewed many people. Jakob Nielsen suggested a usability testing sample size of five. However, he added some qualifiers, that this suggestion only applied to usability testing studies, and did not include exploratory interviews, situational surveys, or other qualitative research methods that were widely used at the beginning of the study.

In this article, I have a large budget and a long timeline, so I will collect data from a predetermined number of documents, at the same time, analyze the data and then decide whether more data needs to be collected. This approach has led to a wealth of data and truer evidence for my findings. I had a deeper and broader vision of the problem I wanted to address, and when I no longer needed to collect data, data collection stopped.

Results and Findings

At present, the domestic self-service customs clearance service in the airport began to gradually form a model. In a real sense, the classification of customs clearance, mutual non-interference, more effective protection of passenger security are realized.

Civil aviation transportation industry is an important strategic industry for the economic and social development of our country. It is an industry with high technology content, high service standard and high safety requirement. In recent years, with the rapid development of civil aviation industry in China, air travel has become the choice of more and more passengers. Along with the growing demand of the domestic civil aviation passenger transport market, the busyness of each big airport intensifies day by day. Facing the increasing passenger flow, the existing manual check-in mode can not meet the passenger demand. As a new trend in the development of the aviation industry, airport self-service is becoming more and more popular among the passengers, which provides a faster and more convenient way for passengers. According to the 2012 SITA / World Airlines far out self-service survey, nearly two thirds of the passengers surveyed had used self-service, and nearly 90 per cent of the passengers choose the mobile flight statuses update and self-check-in service as their most preferred self-service application. And in the past five years, more and more incoming passengers appealed for the perfection of domestic self-help Customs Service.

At present, the domestic self-service customs clearance service in the airport began to gradually form a model. Shenzhen customs will try to run the self-service customs clearance (e channel for Short) in Futian, Luohu and Shenzhen bay port. It will be more convenient and faster for passengers to pass through the customs. According to reports, the self-service channel can identify various documents within 3 seconds for example, pass permit, mainland travel permit for Hong Kong and Macao residents, mainland travel permit for Taiwan residents, passports. And in 6 seconds the channel can verify the opening of the channel or alarm decision.

Three-second identification and six-second rapid customs clearance. When passengers of Futian, Luohu and Shenzhen bay port arrival hall, they can see a row of brand-new self-service channel to go through custom. According to the customs officials, this channel has previously operated at the Man Kam to Port, Sha Tau Kok Border Area and Shekou Wharf port, and is now being promoted into use at three ports. The features of self-service channel was advanced, it can with 3 seconds to identify the pass permit, mainland travel permit for Hong Kong and Macao residents, mainland travel permit for Taiwan residents, passports and other documents, and with 6 seconds to complete the risk of verification, and make a channel open or alarm decision.

In order to facilitate the operation of passengers, the front-end display screen will scroll operation animation. And there also carefully set up a different size of the standard

documents, convenient for passengers to place documents accurately, easy to operate and fast to go through. Customs staff are available for advice and assistance.

The customs self-service Channel automatically identifies and classifies different types of passengers, and applies a higher inspection rate to high-risk passengers and a lower inspection rate to most law-abiding passengers. As a result of the adoption of computer intelligence identification under the condition of "big data", customs in the passenger channel is no longer checking solely based on manual experience, it bring customs into a new era of information classification supervision. Through the linkage customs risk analysis system, the channel can accurately identify high-risk passengers such as "Shuik" through data analysis, and facilitate the customs to handle the classification of law-abiding passengers and "Shuik" .

Conclusion

As mentioned above, according to the four-dimensional model of service innovation, service innovation is mainly embodied in four aspects: new service concept, new service delivery, new service customer interface and service technology. Therefore, from the specific path, the civil airport service innovation, are also inseparable from these four aspects of innovation. Service innovation is of great significance to enhance the market competitiveness of airports. According to the existing problems of service innovation in China's airports, we should start from the following aspects:

To speed up the establishment and improvement of policies on airport service innovation, and to provide policy and institutional guarantees of building an innovative country for the promotion of airport service innovation. And also to put forward the strategy of building an innovative country, a policy document on strengthening China's capacity for independent innovation has been issued. Strengthen organizational learning, through the reciprocating cycle mechanism of learning, absorption, innovation we can promote their own service innovation. The essential core competence of an enterprise is knowledge. And the acquisition, accumulation, dissemination, application and innovation of knowledge must depend on the learning process. Therefore, we can simply come to the conclusion that organizational learning is also the source of core competence and the source for the enterprise to obtain the competitive advantage. Strengthen the research on airport service innovation, and provide intellectual support for the practice of airport service innovation in China. Lack of research leads to the lack of understanding, and strong guidance on service practice, which affects the overall level of China's airport service innovation. Therefore, we need to attach great importance to it from government departments in charge, scientific research institutions to the airport itself, and take measures to strengthen the research effort on service innovation in the airport industry, to grasp the inherent law and fundamental

problems of innovation of service industry, and guide the practice of service innovation of industry to develop steadily.

In the research of this topic, the research of documents and airport self-service system at home and abroad is conducting a summary statement of the research results in the past 20 years, and discuss the current domestic independent through the customs technical innovation results, but in the subject the relevant technical improvement proposals are still lack of. In the future research, more attention should be paid to the innovation of technology and to provide strong technical support for the innovation of Airport Service. The aviation transportation Service industry belongs to the high-tech industry. As an important part of the aviation transportation industry, the airport service needs the strong science and technology strength as the support. At present, the application of the computer communication network technology is increasingly extensive in the airport service, and the role played by technology is increasingly prominent. The whole service process can be said to be the full use of modern science and technology process. Through technological innovation, our country applies the latest achievements in the field of technology to the field of airport service, thus promoting the transformation of airport service mode and promoting the innovation of China's airport service.

In the future airport self-service system, the systematic and comprehensive innovation needs the airport service subject to carry out gradual innovation from the aspects of service concept, service process, service carrier, service mode, etc., and finally, it evolves into systematic and all-round innovation. As mentioned above, according to the four-dimensional model of service innovation, service innovation is mainly embodied in four aspects: new service concept, new service delivery, new service customer interface and service technology. Therefore, from the specific path, the civil airport service innovation, are also inseparable from these four aspects of innovation. Because the conditions of each airport are different, it is impossible for them to go hand in hand in a same pace, nor can they be put in place in one step. Instead, they are only able to actively promote innovation in the provision of qualified services in accordance with their actual conditions, from the service idea, service process, service carrier, service mode and so on, we can realize the gradual innovation from point to point, and finally to the systematic innovation, so as to realize the qualitative leap of airport service level.

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RESEARCH ON THE PRESENT SITUATION AND INNOVATION MANAGEMENT OF TENCENT VIDEO MARKETING IN NEW MEDIA ENVIRONMENT

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Abstract

In recent time, the use of video as a marketing strategy has received much attention because of its ability to create awareness on the quality and design of the products. At present, Tencent Video is mainly faced with three major dilemmas of market environment, policy environment and profit model. The objectives of the study is to determine the reliability of Tencent video, the effectiveness of Tencent video, and the influence of Tencent video on the business environment among small and medium enterprises in China. The researcher adopted positivism approach because of its quantifiable nature of variables under consideration for this study. The researcher used deductive approach which helped to save time. The researcher adopted a survey method, which helps to examine the objectives and research questions. Using convenience sampling technique, a sample of 300 respondents was selected. SPSS and Microsoft Excel Spreadsheet were used for data analysis. The results showed that Tencent video is a reliable and effective source of marketing strategy in China. The results also indicated that Tencent video has significant influence on the business environment. The study concluded that the effectiveness and reliability of video as a marketing strategy relies on the ability to reduce marketing cost, increase sales revenue, and improve the market coverage. The study recommends that small and medium enterprises in China should integrate Tencent video as a marketing strategy because it helps to reduce marketing cost, increase target audience, and sales revenue.

Keyword: Tencent Video, Marketing Strategy, Innovation, Management

INTRODUCTION

1.1 Background of the study

The digital age has continued to have significant changes in marketing strategy. The internet has become an integral component in almost all business operations. Marketing is an essential function in an entity because it helps in the interaction and connection with target audiences. Marketing strategy enables an organization to understand the needs and preferences of the consumers. As a result, an entity adopts processes and strategies that will be essential in producing quality and effective goods and services. The integration of technology in marketing strategy has played a significant role in meeting marketing goals and objectives with ease. The interesting thing about marketing is the ability to drive people and is always moving (Ferrell & Hartline, 2014). A business utilizes a marketing strategy to examine a series of actions in an organization using internal and external perspectives. The use of video as a marketing strategy helps to connect the consumers with the offered products or services.

Since 2004, domestic video websites have undergone continuous elimination, adjustment and transformation. After entering the stable development period, the survivors in the big wave of Taosha still actively explore and develop their own, in order to walk out a differentiated survival and development path. From the early pure technology platform of Tencent Video to the new media platform of today, judging from the actions of individual websites in the industry, Tencent Video can even develop into an all-media platform in the future. Since the birth of Tencent Video, it has not been a pure media attribute. Under the market economy environment, the new media represented by Tencent Video Websites must rely on themselves to fully leverage their respective advantages in industrial operation.

With the expansion of the scale of the video website industry, In addition to traditional bandwidth, copyright and other costs, Tencent video sites are also investing huge content production costs, human resources costs, and marketing and promotion costs. Tencent video sites must look for more in the fiercely competitive market environment and increasingly tight policy environment The effective profit model brings more economic benefits, maintains its benign operation, provides audiences with more colorful and high-quality content products, enriches social and cultural life, and realizes the social value that video websites should have in the new media era. At present, Tencent Video is mainly faced with three major dilemmas of market environment, policy environment and profit model

1.3 Research questions

What is the reliability of Tencent video as a marketing strategy in among small and medium enterprises in China?

What is the effectiveness of Tencent video as a marketing strategy among small and medium enterprises in China?

To what extent does Tencent video influence the business environment among small and medium enterprises in China?

1.4 Research objectives

The main objective of the study is to analyze the use of Tencent video as a marketing strategy in China. The research will use the following specific objectives:

To determine the reliability of Tencent video as a marketing strategy among small and medium enterprises in China.

To establish the effectiveness of Tencent video as a marketing strategy among small and medium enterprises in China.

To examine the influence of Tencent video on the business environment among small and medium enterprises in China.

LITERATURE REVIEW

The integration of internet in marketing

The success of marketing function in an organization relies on the ability to integrate internet into marketing strategy. Internet marketing enables an organization to develop tailored products that meet the needs and demand of customers. According to (Abuhashesh, 2014) the presence of advanced technology and globalization have forced companies to advance capabilities and skills to meet the ever-changing interests, tastes, and preferences of consumers in the market. With the urge to maintain customer loyalty, companies are integrating internet in the marketing function, which plays a significant role in the success of the business by increasing sales revenue and maintaining customer trust as well as customer satisfaction. In the global business environment, customers have gained knowledge, which enables them to determine their purchasing and consumption behavior. As a result, the incorporation of internet in the business environment.

The integration of internet into the marketing function has positive influence on the sustainability of an organization in the market. When customers can interact with the organization and as a result, the business can develop lasting and quality interactions, which leads to satisfaction (Mokhtar, 2015). Through the internet, companies have been improved their business processes and maintain competitive advantage with ease. With the ability to have direct interaction with customers, an organization is forced to integrate different skills and capabilities that will help understand the customer's needs and demands. Consequently, provide goods that are based on the preferences of the consumers. According to (Matsuo & Colomo- Palacios, 2013) internet marketing enables a business to developed customized strategies and measures based on the dynamics needs of customers. Organizations no longer compete to gain relevance in the traditional market; instead, they are developing internet infrastructure and organizational capabilities, which will ensure customer satisfaction and improved customer relationship.

A company might have a well developed marketing strategy that will lead to success in the present and the future. However, the chances of not meeting the demands and needs of the current consumers are high. The customer of today wants to engage with a product and seek relevant information before making the decision to purchase. In such a case, the internet gives a customer the said platform. According to (Nezamabad, 2011) in an organization, customers are the key determinants of success and require to be persuaded to use the products to meet their satisfaction. The integration of internet into the business operations helps to engage in different opportunities that will improve customer satisfaction and increased performance. Technology in marketing means that an entity will reach the consumers timely, solve customer issues, understand the changing market dynamics, and product tailored goods in relation to the needs of the customers.

The reliability and effectiveness of video as a marketing strategy

In business, a video can be reliable and effective source for reaching the target audience with ease and provide customers with insights on the design and quality of a product. Video enables businesses to trigger the purchasing behavior of consumers by creating a wide range of opportunities and practices (Ahmed, et al., 2019). Video gives customers visual experiences, which plays a significant role in creating a diverse and effective marketing strategy. With the drastic changes experienced in the world today, consumers have developed strong attachment to internet and they believe the future is technology. The use of video as a marketing strategy gives an appealing image to the consumers who want to see, believe, and then buy the product or service. Video as a marketing strategy helps to establish consistency of the quality and design of the product with the results.

Reliability of a product relies on the ability to meet the expectations of the customers with effective results. The use of video as a marketing strategy have significant influence on the perception of customers towards purchasing different products and services. In their report, (Liu, Gao, Li, & Zhang, 2019) examined the influence social media short video marketing on the attitude of customers towards brand. The use of video in marketing helps to cultivate a positive attitude among the customers and consequently, ensure that the product meet the expectations, needs, and demand of the consumers. The leveraging of video in marketing promote brand and image of an entity and stimulate online business growth. Video enables an organization to share ideas and thoughts, which facilitate increase in sales (Templeman, 2017). In such a case, a business inspires the internet marketing and achieve its goals in the short-term and the long-term.

The effectiveness of video as a marketing strategy relies on the ability to reduce marketing cost, increases sales revenue, and improve the market coverage. Through creation of brand awareness and boosting engagement, an organization tend to stimulate the interests of consumers and increase its presence in the online market. According to (Ozuem & Bowen, 2016) the internet has converted the relationship between the customers and

business to congenial, which is more effective and timely. In recent time, the internet has changed customer segments, which has resulted to the reshape of organizational structure and infrastructure. The business environment considers internet as a reliable source of marketing because its consistency in outcomes. The reliability of a video as a marketing strategy relies on making the customers make the right buying choices with comfort on the quality and design of the product.

The marketing strategy of Tencent

The commercialization of Tencent Video mainly relies on the user's UV (UniqueVisitor, independent IP traffic) and the content's VV (VideoView, video playback times), because the current charge for online advertising is still based on the "how many people saw the ad" Standard. The number of video plays determines the CPM (cost per thousand people) of the content, and this CPM constitutes the main unit of measurement for online advertising sales. Generally, mainstream video sites have wide content and many categories, and the total amount of UV and VV is large. However, due to the different levels of content preference, the amount of UV and VV is very unevenly distributed, so how to play more videos (large CPM) the scientific sale of the content is the main content of the "project pre-sale stage".

In the commercialization system of video, the basis of the whole process is to first estimate the cost of the content, then formulate a sales policy based on the estimated cost (content level), and finally sell it through online and offline joint promotion.

It can be seen that the "project pre-sale stage" is the first step on the basis of cost estimation and the most important part, which directly affects the potential business opportunities of the project and the final monetization effect. Through the purchase of copyright to control external rights and interests, determine the content level (usually divided into B level, A level, S level and S+ and other levels) and then carry out preliminary integration of resources. Usually the content above level A will be sold in a single key, and the pre-sale content can include all online and offline marketing models.

The main marketing models of online video are roughly divided into: patch model, implant model, title model, etc. Among them, copyright resources are mainly based on online cooperation, and production resources can include content implantation mode and offline promotion.

Hard advertising, also known as "hard advertising", is a type of explicit advertising that refers to the traditional form of advertising that directly introduces the content of goods and services. The pure form of advertisements used to promote products in the four traditional media such as newspapers, magazines, and television broadcasts is Hard Broadcast. In Tencent Video, Hard Broadcast generally refers to the display of advertisements in the video playback frame. TVC (TV commercials) The main content is supplemented by floating ads such as corner marks and suspension. In the Tencent video, the hard and wide part is also called the patch advertisement-that is, in the early stage of the video's main content (pre-

roll or pre-roll), mid-term (intermediate, pause or corner) or late (post-position (Picture) appears in a play box advertisement display method, this is the main means of Tencent video profit. Patch advertisements are charged in units of CPM (Cost per Thousand People), usually 15s as the basic duration, which is basically similar to TV advertisements, and has a variety of display formats, including both traditional video advertisements and flash advertisements. However, more advertisers tend to direct TVC content to reach the widest audience.

At present, the hard and broad cooperation model can be roughly divided into general investment and targeted investment. Universal investment is the delivery of the whole platform, and targeted delivery is the specific content, specific placement location, user region, user on-demand time, and even user group specified by the advertiser. The latter is an optimization of the former form of delivery, and the unit price of the patch is higher, but its form of delivery is more able to ensure the delivery effect of advertisers, so it is also increasingly favored by advertisers. With the further development of the video industry, these two models may be further derived from more innovative changes.

In recent years, more and more advertisements have been presented in front of the audience, especially TV series and variety shows in video content. According to everyone's most common understanding, the placement of advertisements usually appears in the TV series or variety content that is being played, that is, the marketing model of the advertiser and the copyright party in the early stage of the content shooting. However, with the continuous development of technology in the video industry and the urgent need for commercialization in the video industry, the implantation model that exists on video sharing sites is gradually derived [15].

The embedding model that directly reflects the customer's brand in the process of the video broadcaster allows users to directly participate in the entire marketing process. The user can choose the advertising brand according to personal preferences. One can turn off to obtain the purchase link, and the user experience is relatively moderate. The way to insert SMD ads is much higher. The reason why the marketing method can play a very good effect is that on the one hand, the user is in a high concentration when watching the movie and this focus will also be transferred to the product. On the other hand, once the target consumer is found, it can be quickly locked, and directly point to the purchase link. At the same time, it is supplemented with traditional forms such as patch advertisements and suspended advertisements to carry out integrated communication and further strengthen the brand image.

The marketing model of title cooperation is derived from the traditional TV title and offline event title. The video website promotes the target (bright spot) content through targeted investment promotion work to increase business income, and then the advertisers

according to their brand appeals To select the most suitable content, and use the video to promote the content of the brand to enhance the social awareness of their brand.

The content titles of Tencent Video are usually promoted to advertisers by means of "rights + resources". In the sale of resources, the general chief has the highest title price and the best resource position, and the joint sponsorship or special support reduces the amount of resources, followed by the position. In addition, Tencent Video has newly created a "mouth broadcast" resource in the pre-patch resources, which is added to the first or total crown cooperation mode, that is, there is a 5-second voice title before the start of the patch is played. The video content with large content and large number of viewers is favored by advertisers.

The most typical example of the title cooperation model in the near future is the online title cooperation of the super drama "Mi Yue Zhuan" of the video website at the end of 2015. Its chief naming cooperation fee is as high as tens of millions, and various co-sponsorship, special support and other naming methods are full, creating a new high in online naming cooperation revenue. In this cooperation, Xiang Piao Piao won the championship and carried out a 5-second oral support at the request of advertisers. According to Tencent's video playback data, the total playback volume of "Mi Yue Zhuan" has exceeded the 10 billion mark, becoming the highest-traffic work in history. The slogan "Exclusive Title Broadcast" brainwashed every viewer of Mi Yue Chuan. The brand's familiarity quickly changed from "the cups can be connected around the earth twice" to "small hunger and little sleep and a little fragrance" It can be seen that the possibility of the influence of the title model is large [16].

2.2.4 Theoretical framework of internet marketing

The study will adopt information gap theory, which depicts that lack of knowledge on something forces a person to engage in different actions to quest curiosity. According to (Kidd & Hayden, 2015) information gap theory is based on curiosity perspective, which drives the action of a person. In the business environment, consumers try to seek information regarding a product or service by using it. However, this was in the past; today customers are acquiring knowledge regarding a product through the internet. With the advent of technology, consumers are more comfortable engaging an organization on online platforms than physical interactions. In such a case, a customer has the opportunities to assess the quality and design of the product. In normal circumstances, it is perceived that the best decision makers are curious to learn and acquire more knowledge (Ben-Yaim, 2019). The application of the theory in the strategy explains how the use of Tencent video in marketing has gained popularity among small and medium enterprises in China.

METHODOLOGY

Research Strategy

The selection of an effective research design is reflected on the reliability of the results of the study. A research design is used to facilitate adequate application of various strategies and operations that are related to the objectives of the study. A research design can be qualitative or quantitative depending on the nature of the study. The researcher adopted a survey method, which helps to examine the objectives and research questions. The researcher used survey method to be able to collect all relevant information from the study population in an effective way and using less costs and resources. Besides, the researcher was able to tabulate the data acquired effectively and fast and as a result, deduce inferences of the study.

3.3.3 Sample design

A research sample refers to the representation of a research population by a smaller fragment from the study population. Sampling techniques denotes the manner in which an established sample size is selected from a target population. Different methods by which this process can be achieved exist; however, the most important are the probability and convenience sampling techniques. Probability sampling is a random technique whereby a sample is selected from the study population. On the other hand, convenience sampling is a recruitment method, which is non-probabilistic. In such sampling technique, subjects or respondents are selected for the convenience and proximity of the researcher. The basis for selection of convenience sampling lies in its efficiency and cost effectiveness. Convenience sampling has however received criticism from different corners of the research family.

The sampling technique is mostly biased and the samples selected for a study are not often a representation of the population under consideration. Data collected through convenience sampling method cannot be used for generalisation and conclusion on behalf of the population under study due to its low external validity degrees. The study will sample 300 respondents. A sample size with high numbers help to ensure that the findings of the study can actually be considered for generalization to represent findings from the entire study population.

3.3.4 Data analysis techniques

The process of analyzing data involves breaking down the gathered raw facts into variables with the aim of interpreting them and giving result. The analysis uses critical and analytical tools to give a logical and effective understanding of the data. The researchers considered different insights to examine the variables and code them for effective assessment of the data. Using different concepts and themes presented in the literature review section, the researcher established the level of consistency and ensured that the data related to the objectives and purpose of the study, which examines the use of Tencent video as a marketing strategy among small and medium enterprises in China. As a result, SPSS and Microsoft Excel Spreadsheet were used for data analysis. The techniques were ideal because

the researcher managed to identify the relationship between variables using logical inferences and comparisons.

RESULTS AND FINDINGS

Descriptive Statistics

Demographics

Demographic information is essential for any study because it allows the researcher determine the composition of a research population. Besides, demographics show if a survey sample is a representation of the target population (Salkind, 2010). Demographic variables are independent factors of the study because they cannot be changed or manipulated. In this case, gender, age, education levels, and the sector that the respondents operate.

Descriptive Statistics

The reliability of Tencent video as a marketing strategy

The primary objective of this study was to determine if the reliability of the Tencent videos as a marketing strategy in China. The research identified brand security online, marketing costs, ability to reach target audience, consistency with marketing goals, and effects of Tencent videos on a firm's profitability in China. The results of the questions are presented in below.

Table 1: **Brand Security Online**

Tencent video helps to facilitate brand security online

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	95	31.7	31.7	31.7
	Agree	96	32.0	32.0	63.7
	Neutral	51	17.0	17.0	80.7
	Disagree	23	7.7	7.7	88.3
	Strongly Disagree	35	11.7	11.7	100.0
	Total	300	100.0	100.0	

In the wake of current online marketing, brand security online is a crucial element of any advertisement. According to (Subramaniam & Andrew, 2016), an organization's security and privacy online are important in maintaining a firm's brand name. Therefore, firms endeavor to ensure that their brands are protected when they are marketing their products. As a result, this research was seeking to examine if Tencent videos helped organizations improve and protect their brand security online. From the results of the study, it is clear that majority of the respondents either strongly agreed or agreed that Tencent videos helped to facilitate a company's brand security online. The results indicate that 95 (31.7%) respondents strongly agreed that Tencent videos facilitate brand security online and 96 (32.0%)

respondents agreed Tencent videos facilitate brand security. 17% of the respondents remained neutral on the influence of Tencent videos on brand security of an organization. Only 19% (58) of the respondents either disagreed or strongly disagreed that Tencent videos helps to facilitate a firm's brand security online.

Table 2: Marketing Costs

Tencent video reduces the marketing costs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree'	89	29.7	29.7	29.7
	Agree	115	38.3	38.3	68.0
	Neutral	41	13.7	13.7	81.7
	Disagree	33	11.0	11.0	92.7
	Strongly Disagree	22	7.3	7.3	100.0
	Total	300	100.0	100.0	

All profitable organizations seek to minimize their costs without compromising their productivities. As a result, firms employ different strategies to reduce the costs. As a result, the research aimed at determining if using Tencent videos was a reliable strategy to reduce the cost of marketing, which was done by asking the respondents if they believed that the Tencent videos helped their organizations to reduce marketing costs. The results indicated that majority of the respondents agreed that Tencent videos reduced marketing costs in their company. From the table above, 89 (29.7%) respondents strongly agreed that Tencent videos reduced marketing cost. 115 (38.3%) agreed that video marketing led to reduced costs. 41 (13.7%) respondents remained neutral about the cost of marketing while 18.3% of the respondents either disagreed or agreed that Tencent videos led to lower marketing costs.

Tencent video enables business to reach the target audience with ease

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	59	19.7	19.7	19.7
	Agree	66	22.0	22.0	41.7
	Neutral	68	22.7	22.7	64.3
	Disagree	52	17.3	17.3	81.7
	Strongly Disagree	55	18.3	18.3	100.0
	Total	300	100.0	100.0	

The main purpose of any marketing strategy is to reach as many people as possible and with ease. As a result, this research was seeking to determine if Tencent videos increased the

ability for companies to reach a large with ease. The results obtained indicate that the majority of the respondents either strongly agreed or agreed that Tencent videos increased the possibility of reaching a larger audience and with ease. 59 (19.7%) respondents strongly agreed that Tencent videos allowed their businesses' ability to reach a larger audience and with ease and 66 (22%) respondents agreed that Tencent videos increased their audience reach. However, 22.7% of the respondents remained neutral about the issue of audience reach. On the other hand, 108 respondents believed that Tencent videos did not increase the possibility of reaching more audience with ease.

Tencent video is consistent with the marketing goals of the business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	63	21.0	21.0	21.0
	Agree	92	30.7	30.7	51.7
	Neutral	58	19.3	19.3	71.0
	Disagree	46	15.3	15.3	86.3
	Strongly Disagree	41	13.7	13.7	100.0
	Total	300	100.0	100.0	

Firms establish business goals, mission, and vision. All operations of the organizations are aimed at achieving those goals. Therefore, for marketing strategy to be reliable it should align to the objectives of the company. For this reason, the respondents were asked if they believed that Tencent videos were consistent with the marketing goals of their organization. From the results presented on the table above, more than 50% of the respondents either strongly agreed or disagreed that Tencent videos were in line with their firm's objectives. The result indicate that 63 (21.0%) respondents strongly agreed that Tencent videos were consistent with their firm's marketing goals, 92 (30.7%) agreed that the videos aligned with their company's goals. However, 19.3% of the respondents remained neutral about consistency of their organization's goals with the videos. On the other hand, 87 respondents either disagreed or strongly disagreed with the consistency of the Tencent videos to their company's goals.

Impact of Tencent Videos on Firms' Profitability

A firm's profitability is the primary objective any for-profit organization. Therefore, every marketing strategy should be aimed at increasing the profitability of the company. Consequently, this research found it necessary to examine impact of Tencent videos as a marketing strategy on profitability. This question was let open ended to allow respondents to put, as many details are they would like. From the results, majority of the respondents answered that Tencent videos increased their company's profitability. For instance,

respondent 189 stated, “despite the fact that Tencent video has a financial cost attached, it is clear to me that the overall effect is an increase in profitability of my company”.

4.2.2.2 The effectiveness of Tencent video as a marketing strategy

Companies strive to have an effective marketing strategy that boosts audience engagement, increase their competitive advantage, and improves their visibility in the market place. For this reason, the research aimed at establishing if Tencent videos increased firms’ online engagement, improved competitive advantage, and if the videos facilitated search engine optimization.

Table 3: Online Engagement

The video has boosted online engagement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	89	29.7	29.7	29.7
	Agree	96	32.0	32.0	61.7
	Neutral	49	16.3	16.3	78.0
	Disagree	34	11.3	11.3	89.3
	Strongly Disagree	32	10.7	10.7	100.0
	Total	300	100.0	100.0	

Effective marketing strategies are designed to boost the customer engagement. Such engagement helps organizations to convert prospects into customers and existing customers to brand advocates. Therefore, this research will present the respondents feeling about the ability of Tencent Videos to boost online engagement. The results indicated that majority of the respondents either strongly agreed or agreed that the video boosted online engagement of their customers. From the table above, it is evident that 29.7% (89) of the respondents strongly agree and 32.0% (96) agree that Tencent video boosts online engagement. However, 16.3% (46) of the residents remained neutral about online engagement of Tencent videos. On the other hand, 66 (22%) respondents either disagreed or strongly disagreed that Tencent videos increased the online engagement in their institutions.

Table 4: Competitive Advantage

The business has managed to maintain competitive advantage in the market

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	69	23.0	23.0	23.0
	Agree	111	37.0	37.0	60.0
	Neutral	42	14.0	14.0	74.0
	Disagree	45	15.0	15.0	89.0
	Strongly Disagree	33	11.0	11.0	100.0

Total	300	100.0	100.0	
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Businesses engage in marketing to gain competitive advantage. (West, Ford, & Ibrahim, 2015), a marketing strategy is effective if it offers a competitive edge a business. For this reason, this research examined if Tencent videos presented an opportunity to maintain and improve firms' competitive edge. The results indicate that the majority of the respondents either strongly agreed or agreed that their businesses management to increase a competitive advantage. From the table above, it is evident that 23.0% (69) of the respondents strongly agree and 37.0% (111) agree that Tencent video boosts competitive advantage. However, 14.0% (42) of the residents remained neutral about increasing the competitive advantage of the firms through Tencent videos as a marketing strategy. On the other hand, 78 (26%) respondents either disagreed or strongly disagreed that Tencent videos increased the competitive advantage of their institutions

Search Engine Optimization

Tencent video has helped business to increase efficiency in Search Engine Optimization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	81	27.0	27.0	27.0
	Agree	72	24.0	24.0	51.0
	Neutral	58	19.3	19.3	70.3
	Disagree	41	13.7	13.7	84.0
	Strongly Disagree	48	16.0	16.0	100.0
	Total	300	100.0	100.0	

Search engine optimization is the process of increasing traffic on a company's website. According to (McGrath, 2019), the higher the SEO rank the better for an organization. As a result, this study examined the influence of Tencent videos to increased efficiency in search engine optimization. The results indicate that the majority of the respondent believe that Tencent videos helped businesses to increase efficiency in search engine optimization. From the table above, it is evident that 27.0% (81) of the respondents strongly agree and 24.0% (72) agree that Tencent video helped business to increase efficiency in Search Engine Optimization. However, 19.3% (58) of the residents remained neutral about increasing efficiency in Search Engine Optimization through Tencent videos as a marketing strategy. On the other hand, 89 (29.7%) respondents either disagreed or strongly disagreed that Tencent videos increased efficiency in Search Engine Optimization their institutions

The influence of Tencent video on the business environment of China.

Technological advancement has significantly changed the way of doing business globally and in China. This study examined the influence of Tencent video on business environment in China by determining the transition of the Chinese business environment to e-commerce, internet as a new business platform, and the changes in consumer purchasing behavior.

Table 5: Transition to E-commerce

The business environment has transitioned to e-commerce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	94	31.3	31.3	31.3
	Agree	72	24.0	24.0	55.3
	Neutral	48	16.0	16.0	71.3
	Disagree	46	15.3	15.3	86.7
	Strongly Disagree	40	13.3	13.3	100.0
	Total	300	100.0	100.0	

In the current world, businesses have adopted e-commerce platforms to increase their customer reach and increase sales. As a result, the businesses environment is transitioning towards e-commerce. Tencent videos also plays a major role in transitioning the business environment to e-commerce. This study sought to determine if the Tencent videos as a marketing strategy has led changed Chinese business environment to e-commerce. The results indicate that the majority of the respondents thinks that Tencent videos has led to the changes in business environment to ecommerce. From the table above, it is evident that 31.3% (94) of the respondents strongly agree and 24.0% (72) agree that Tencent video has helped the Chinese business environment to transition to e-commerce. However, 16% (48) of the residents remained neutral about increasing changing the Chinese business environment through Tencent videos as a marketing strategy. On the other hand, 89 (29.7%) respondents either disagreed or strongly disagreed that Tencent videos has led to e-commerce transition of the Chinese business environment.

Table 6: Internet infrastructure

Tencent video has forced organizations to establish internet infrastructure

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	87	29.0	29.0	29.0
	Agree	84	28.0	28.0	57.0
	Neutral	55	18.3	18.3	75.3
	Disagree	35	11.7	11.7	87.0
	Strongly Disagree	39	13.0	13.0	100.0
	Total	300	100.0	100.0	

The internet of things has transformed the way business is done. Many organizations embrace the internet to market and promote their products and services. As a major player, Tencent videos have also contributed to organizations establishing an internet infrastructure to do

their business. As a result, this study examined whether Tencent videos has forced organizations to operate on an online infrastructure. The results indicate that the majority of the respondents believe that Tencent Videos have forced other organizations to trade online and establish internet platforms. From the table above, it is evident that 29.0% (87) of the respondents strongly agree and 28.0% (84) agree that Tencent video has helped the other institutions to establish internet infrastructure to do business. However, 16% (48) of the residents remained neutral about forcing other organizations to do business via internet infrastructures using Tencent videos as a marketing strategy. On the other hand, 89 (29.7%) respondents either disagreed or strongly disagreed that Tencent videos has forced organizations to establish internet infrastructure.

Table 7: Customer Purchasing Behavior

Tencent video has brought significant changes on the purchasing behavior of customers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	81	27.0	27.0	27.0
	Agree	83	27.7	27.7	54.7
	Neutral	52	17.3	17.3	72.0
	Disagree	45	15.0	15.0	87.0
	Strongly Disagree	39	13.0	13.0	100.0
	Total	300	100.0	100.0	

The internet has changed consumer behaviors because individuals and order products at the comfort of their home. As a result, this research sought to determine if the Tencent videos has brought significant changes in customers buying pattern. The results of the study indicate that the majority of the respondents believe that Tencent videos has significantly changes customer's purchasing behavior. From the table above, it is evident that 27.0% (81) of the respondents strongly agree and 27.7% (83) agree that Tencent video has significantly changed the behavior of customers in China. However, 17.3% (52) of the residents remained neutral about changing customer's behavior in China through Tencent videos as a marketing strategy. On the other hand, 89 (29.7%) respondents either disagreed or strongly disagreed that Tencent videos has significantly changed the behavior of customers in China.

CONCLUSION

5.2 Conclusion and Discussion

Based on the results, the study concludes that Tencent videos helped organizations improve and protect their brand security online. An organization's security and privacy online are important in maintaining a firm's brand name and as a result, endeavor to ensure that their brands are protected when they are marketing their products. The study concludes that

Tencent videos was a reliable strategy to reduce the cost of marketing. Besides, Tencent videos increased the ability for companies to reach a large with ease. The findings depicted that Tencent videos re consistent with the marketing goals of an organization. Reliability of a product relies on the ability to meet the expectations of the customers with effective results. The use of video as a marketing strategy have significant influence on the perception of customers towards purchasing different products and services. The use of video in marketing helps to cultivate a positive attitude among the customers and consequently, ensure that the product meet the expectations, needs, and demand of the consumers.

The study concluded that Tencent video an effective marketing strategy that boosts audience engagement, increase their competitive advantage, and improves their visibility in the market place. The business environment considers internet as a reliable source of marketing because its consistency in outcomes. The reliability of a video as a marketing strategy relies on making the customers make the right buying choices with comfort on the quality and design of the product. The effectiveness of video as a marketing strategy relies on the ability to reduce marketing cost, increases sales revenue, and improve the market coverage. Through creation of brand awareness and boosting engagement, an organization tend to stimulate the interests of consumers and increase its presence in the online market.

5.3 Recommendation

Based on the findings of the study, small and medium enterprises in China should integrate Tencent video as a marketing strategy because it helps to reduce marketing cost, increase target audience, and sales revenue.

5.4 Limitation

There was a challenge of selecting respondents who are well versed with information concerning the use of Tencent video as a marketing strategy among small and medium enterprises in China. This included the respondents who may not have the ability to easily comprehend the questions and answer correctly as expected. The researcher faced a challenge of uncooperative and unfriendly respondents. The researcher was also faced with the challenge of lack of data, that is, insufficient data.

5.6 Future studies

Based on the results of the study, the researcher suggests future studies should examine the application of Tencent video as a marketing strategy in big companies in the public and private sectors.

5.7 Conclusion

The chapter provide in-depth knowledge on the connection between the objectives and results of the study. The conclusion and discussion relied on the information provided in chapter four. Besides, the chapter stipulated the recommendations to the considered by small and medium entrepreneurs in China as well as limitations of the study.

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ANALYSIS OF INDOOR ENVIRONMENT MONITORING SYSTEM BASED ON ARDUINO

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Abstract

With the rapid development of global economy, the requirement for life quality of people is increasingly improved; moreover, people gradually attach importance to the living environment. Meanwhile, the fields of electronics, computers and so on have developed to an unimaginable high stage, which provide strong technical support for the intellectualization of living environment. People become more and more concern about the indoor environment because of the increasing worse outdoor environment. Hence, it is an essential issue of smart home system about how to make indoor environment getting more comfortable, healthier and safer. The main work of this paper is to design a set of detection system for housing environment, where data interaction between a specific computer and housing environment detection system can be done through wireless transmission mode, which would monitor the indoor temperature, humidity, smoke concentration and other data. This system mainly achieves four functions: collecting varies data from housing environment by using different detectors, and transmits the collected data to master controller through RS-485 circuit; the master controller then transmits the environment data to PC upper computer; upper computer would real-time display the relevant data of housing environment and achieves human-computer interaction; the PC would regulate and control indoor environment by controlling the air conditioner, humidifier, alarm according to feedbacks from detection. After testing and practical application, this system works well and basically achieves requirements of all functions, which consists with design criterion.

Key words: Environment; RS-485; Arduino; Wireless Transmission

Introduction

In recent decades, electronic information science, computer, communication, Internet and other industries are also developing rapidly. The rapid development of IC (Integrated Circuit) design technology has greatly improved the number of IC gates, processing capabilities and cost performance; the rapid development of software technology has made the chip and computer hardware more intelligent; various communication methods have accelerated from analog communication Turning to digital communication, from low speed and low efficiency to high speed and high efficiency, from a single communication method to a combination of multiple methods, ZigBee, Bluetooth 4.0. WIFI and other technologies continue to innovate. After the introduction of 4G mobile communication, they are also launching 5G communication technology; hardware, The mutual integration and penetration of technologies in software, communications, the Internet and other aspects are constantly promoting the development of our application technology. The application of various technologies has penetrated into all corners of people's lives.

The production of any thing occurs under sufficient and necessary conditions. The rapid development of the economy and the continuous improvement of people's requirements for material life provide the necessary conditions for the production of intelligent living environments. At the same time, the rapid development of the electronics and communications industry also provides sufficient conditions for their production. Indoor environmental monitoring was born under such conditions.

At the same time as China's economy is developing rapidly, large amounts of high-polluting energy sources are emitted, causing many environmental problems. Urban air pollution is particularly serious, and the harm to human health cannot be underestimated. For this purpose, the State promulgated the "Indoor Air Quality Standard" GB/T18883-2002, which stipulates that indoor air quality indicators include parameters such as temperature, relative humidity, carbon monoxide, carbon dioxide, formaldehyde, benzene, and respirable particulate matter. Many experiments at home and abroad have confirmed that indoor air pollution will bring various diseases, including facial discomfort, headache, dizziness, drowsiness, and difficulty concentrating. These will have a major impact on people's normal living habits and work. According to the national standard, developing an air quality monitoring system, completing real-time monitoring of indoor air quality, and reporting air pollution information in a timely manner is an effective way to protect human health.

Under such circumstances, there is a great market demand for indoor air detection instruments. Therefore, we need to design a system for effectively monitoring indoor harmful gases and their temperatures, and improve indoor air quality through various means to make people's living environment more excellent, protect people's health, and make People's lives and work are more comfortable. With the development of integrated circuit technology and the popularization of embedded processors, the indoor air quality monitoring system can

process and analyze the gas sensor signals in real time, calculate the measured gas concentration, and realize the real-time monitoring function. The air quality monitoring system mainly uses electrochemical and optical principles, and uses corresponding electrochemical sensors and photoelectric sensors for gas concentration monitoring. In short, the research on indoor air quality monitoring is related to people's daily life health problems, which requires us to treat with care, so it is very necessary and meaningful.

Since environmental issues are a hot issue of global human concern, the quality of the indoor environment is bound to attract the attention of people at home and abroad. At present, governments of various countries have invested a lot of resources in the field of air quality monitoring. Developed countries such as the United States developed air quality monitoring products earlier, and the related products are rich in variety and performance far exceed other countries. Representative companies include American Environmental Sensors Co. (ESC) and TSI Instruments.

ESC Company produces a gas monitor with complete functions, which can monitor indoor air quality in real time and display specific data of gas concentration. The gas monitor meets the OSHA standard requirements to ensure data accuracy and protect human health. The monitor has light weight, good portability, easy operation, and has a network function, which can view the air quality index of studios, homes and other places on the network in real time.

TSI is a multinational company serving the global market. The measuring instruments designed and produced by the company are in the leading position in the industry. TSI's portable indoor air quality monitors, gas flow meters and other products enjoy a high reputation worldwide.

In addition, in the measurement of harmful gases such as methanol and benzene vapor, well-known foreign products include: PPM-400 formaldehyde detection system produced by British PPM company and 41602 formaldehyde analysis system produced by Inter Scan company in the United States.

Literature Review

Wireless communication technology (Wireless Communication) utilizes the characteristics that electromagnetic wave signals can freely propagate in an interference-free environment and then exchanges information.

Wireless communication transmission methods can be divided into microwave communication and satellite communication. The transmission distance of microwave communication is not particularly long, so a base station (relay station) must be established for communication almost every tens of thousands of meters. For example, domestic telephone Internet service belongs to this type. Satellite communication uses satellites as base stations for two ground targets. Establish communication links between targets. In terms of distance, there are Bluetooth, RFID, Wi-Fi, Zig-Bee, NFC, etc.

Let's briefly introduce them:

Bluetooth: Also known as Bluetooth, it was created by Ericsson in 1994 and can implement short-range data exchange between fixed devices and mobile devices, usually using frequency hopping spread spectrum (FHSS), time division multiple access (TDMA), code Technologies such as division multiple access (CDMA) establish information transmission in a small area. Because Bluetooth can connect multiple devices, there is no need to worry about data synchronization. It is characterized by short transmission distance, low power consumption, and working frequency band of 2.4GHz. It has three power levels, namely 100mW, 2.5mW, 1mW, and the corresponding working range is 100m, 10m and 1m.

Wi-Fi: It is a technology that allows electronic devices to access WLAN (Wireless Local Area Network). In the past, the Internet was dialed up through a network cable or a network coordinator. Nowadays, more families use radio waves to connect to the Internet. It can be said that it is the most widely used wireless network transmission technology today. We can contact them in hotels, restaurants, airports, and cafes. When you are traveling or working, you can enjoy the Internet. It is common to use one or more wireless routers to connect to the Internet using Wi-Fi connection within its coverage. Compared with the wired network, the Internet is more free to lose the shackles of the cable.

Design frame of acquisition circuit

The acquisition module is the lowest part of the entire system. Its position in the system is just like the human facial features. It is the main source for the system to learn various information parameters. It mainly realizes the functions of collecting, displaying and transmitting indoor temperature, humidity, smoke concentration, air and other information to the main controller through RS-485 communication. According to the relevant functions implemented by the bottom layer requirements, the acquisition module part should include the following parts:

Minimal system: The most basic part that can make the acquisition module operate, including the power circuit that supplies power to the system, the crystal oscillator circuit that provides oscillation to the system, and the high-level reset circuit that restarts the system.

Acquisition circuit: MCU and DS18B20, DHT11. MQ-2 smoke density and other sensors connected circuit, and some simple signal processing circuit.

Display circuit: LCD 1602 is used as the display part in this paper, which mainly plays a role in assisting debugging.

RS-485 communication circuit: After the information parameters are collected at the bottom acquisition module, the information is transmitted to the main controller module through the RS-485 communication circuit.

Temperature acquisition circuit

Humidity sensor is one of the most common sensors among various sensors. Like most other sensors, it is also divided into analog sensors and digital sensors. Traditional analog temperature sensors include thermocouples and resistance sensors, which are not only expensive, but also require more complicated peripheral circuit processing to obtain the current temperature value, and their accuracy depends on the design of the peripheral circuit and Processing algorithm. This thesis uses the digital temperature sensor DS18B20 of American DALLAS semiconductor company.

DS18B20 is an intelligent improved temperature sensor chip. It can directly convert the ambient temperature into a digital signal and store it in an internal register in the form of binary digits. At the same time, it also has a single bus communication interface, so that using a single bus interface to communicate with a single-chip microcomputer requires only one IO port and almost no extra peripheral devices. Therefore, it is currently widely used in temperature measurement applications.

DS18B20 temperature acquisition circuit Because the DS18B20 is a single bus communication, the data line is open drain, so in the communication need to connect the electronic control. The circuit shown in Figure 4 below uses a 4.7K pull-up resistor, because when the DQ output is "1", the output is in a high-impedance state, and the pull-up resistor can be pulled from the grid to a high level. And add a 104pF high-frequency bypass capacitor to the port connected to the single-chip computer to prevent the high-frequency small signal in the power supply from affecting the chip.

Humidity acquisition circuit

In this paper, DHT11 is used as a sensor to collect indoor humidity parameters. The sensor includes a resistance humidity detecting element and an NTC temperature measuring element, and is connected with a high-performance 8-bit single-chip microcomputer. Because it is far worse than the DS18B20 in the detection range and accuracy, it is not used in this paper to detect temperature. DHT11, like DS18B20, also transmits data through a

single bus communication. The single bus communication method makes its application circuit very simple and greatly reduces the number of components in the circuit. The package diagram during DHT11 is shown in Figure 5 below. DHT11 humidity measurement range is 20%~90%RH (Relative Humidity), the accuracy of humidity measurement can reach 4%RH, the resolution of humidity measurement is 1%RH, the response time is 10S, and the data on W are all obtained at 25°C of.

DTH11 humidity detection circuit: DTH11 and DS18B20 are single-bus communications, so their communication circuits are also very similar, and their design is integrated in the design of this paper. Smoke concentration collection circuit

The smoke collection module mainly realizes the function of collecting the concentration of various pollutant gases in the room. The scheme of this paper uses the MQ-2 type smoke sensor module to achieve the collection function.

The MQ-2 smoke sensor uses tin dioxide (SnO₂) with relatively low conductivity in clean air (air that does not contain the gas that the sensor can detect) as a gas-sensitive material. When a certain concentration of When burning, ammonia, liquefied ammonia, natural gas, carbon monoxide and other gases, the conductivity of the gas-sensitive material will gradually increase as the concentration of various polluting gases finally rises through a series of places, and then through a series of processing circuits This change is converted into a voltage output.

CONCLUSION AND RECOMENDATION

Design and Implementation of Family Management System Software
Acquisition circuit programming

The realization of hardware only gives the whole system a body, while the realization of software can make the system have life and realize various functions. The main content of this section is to introduce and analyze the software of the lower computer corresponding to the hardware system and the upper computer corresponding to the PC. The lower computer is divided into acquisition module and main control module according to function. The collection module mainly realizes the collection, display and transmission of indoor temperature, humidity, smoke concentration and other environmental variables to the main control module. The main control module analyzes the parameters transmitted by the acquisition module, and transmits them to the upper computer through the wireless module. At the same time, it receives the commands transmitted by the upper computer and regulates the indoor environmental parameters. The upper computer is mainly used as a terminal to display indoor environmental parameters, and to set the indoor environmental parameter control range through a human-computer interaction interface.

Programming of temperature acquisition circuit

In addition to thermistor-type temperature resistance, the DS18B20 also includes a nine-byte high-speed scratchpad and 64-bit ROM. The temperature collected by the sensor is converted into 11-bit binary numbers and stored in the first to second words of RAM. In the section, the lower eight bits of the 11-bit binary number are stored in the LSB of the RAM, and the upper 5 bits are stored in the lower 5 bits of the MSB. The upper five bits of the MSB are used to mark the positive and negative values of the temperature. We only need to store this 11-bit binary number is read out and then converted into a decimal value and then multiplied by 0.625 to obtain the absolute value of the temperature in the current environment (greater than zero). The program code is as follows:

```
int potPin = 0; //Define analog interface 0 DS18B20 temperature sensor
void setup()
{Serial.begin(9600); //Set the baud rate}
void loop()
{
int val; //Define variable
int dat; //Define variables
val=analogRead(0); // Read the analog value of the sensor and assign it to val
dat=(125*val)>>8; //The temperature calculation formula
Serial.print("Tep:"); //The original output shows that the Tep string represents the temperature
Serial.print(dat); //The output shows the value of dat
Serial.println("C"); //Display the C string as it is
delay(500); //Delay 0.5 seconds
}
```

Humidity acquisition circuit programming

The humidity collection module mainly realizes the collection and display of the relative humidity of the indoor environment, and transmits the collection results to the main controller through the RS-485 network. The humidity sensor we used in this paper is a DHT11 temperature and humidity digital sensor to collect the humidity parameters in the current environment. DHT11 includes a resistive sensor element and an NTC temperature measuring element, and is connected with a high-performance 8-bit microcontroller. The signal detected by the sensor is converted into a two-level value and stored in a register. At the same time, DHT11 also has a single-bus serial communication interface, which makes related circuits simpler. DHT11 converts the collected information into 4 bytes of binary digits and stores them in the register. At the same time, there is one byte for checksum data, so the DHT11 transmission is 40bit, and the transmitted is 8bit fluidity. Integer data + 8bit humidity decimal data + 8bit temperature integer data + 8bit temperature decimal data + 8bit checksum.

After the user's controller sends a start signal to the sensor, the sensor immediately changes the power consumption mode and starts collecting information. The collection program code is as follows:

```
// Introduce the DHT library file, if not, download it from the Internet and import it in
// Arduino
#include <dht11.h>
dht11 DHT11;
// Set the DHT pin to Pin 8
#define DHT11PIN 8
void setup() {
  Serial.begin(9600);}
void loop() {
  Serial.println("\n");

  int chk = DHT11.read(DHT11PIN);
  // Get measurement data
  Serial.print("Humidity (%): ");
  Serial.println((float)DHT11.humidity, 2);
  delay(2000);
}
```

Program design of smoke concentration collection circuit

The smoke concentration collection module mainly collects indoor smoke concentration, and transmits the collected information to the main controller through the RS-485 network. Therefore, this part of the program needs to realize the king function, the bottom collection function, and the RS-485 transmission function. , Display function. □□

The MQ-2 smoke sensor converts the collected information into a voltage signal, so the single chip microcomputer needs to convert the analog voltage signal into a digital signal, that is, to realize the ADC function. The C5A60S2 single-chip microcomputer with STC port has 8-channel 10-bit precision ADC, and its conversion speed can reach 250K/S. The program code is as follows:

```
int sensorPin = A0;
int ledPin = 7;
int sensorValue = 0;
void setup() {
  pinMode(ledPin, OUTPUT); }
void loop() {
  sensorValue = analogRead(sensorPin);
  digitalWrite(ledPin, HIGH);
```

```
delay(sensorValue);  
digitalWrite(ledPin, LOW);  
delay(sensorValue);  
}
```

Indoor environmental monitoring system test

Hardware circuit debugging

After the cost of the empty board is monitored, the minimum welding system can be started for preliminary debugging. Weld the power circuit, MCU, crystal oscillator circuit, reset circuit, and download circuit in sequence. Then test the system to download the program to see if it can be downloaded successfully. Then solder each device in turn, and use anhydrous alcohol to remove the rosin traces left on the development board during the soldering process.

After welding and cleaning, burn the relevant codes into the MCU, power on the circuit, and judge the problems of the circuit through the phenomenon of each sub-circuit. For the circuit part where the phenomenon does not meet the design, first check whether the relevant program is correct, and then test the status of the relevant pin with an oscilloscope. After all hardware welding inspections are completed, each sub-module of the system is tested. They include the test of the acquisition module and the test of the main control module.

Serial debugging

Serial port debugging is equivalent to the role of our oscilloscope in a large part of cases, and is the second eye of electronic engineers. Through the serial port assistant, we can know the status of data transmission in the program, can easily observe each frame of data, and can judge whether the data has packet loss. Through the serial port assistant, we can observe and debug the running status of almost all MCUs with serial ports. In this paper, the serial assistant is used to debug the operation of the wireless transceiver.

This paper requires the design of a family intelligent environmental monitoring system, which requires real-time detection of indoor temperature, humidity, smoke concentration and other environmental parameters, and the ability to set a safe range through the host computer interactive interface, when the parameters in the environment exceed the set value range , The system can respond and control or alarm.

According to the requirements of the original design of the thesis, the three main functions have been basically completed. It can well detect indoor environmental parameters, provide human-computer interaction interface to set safety range, and control indoor environmental parameters. Due to the initial design of the entire system, the cost has not been well controlled, resulting in a relatively high cost price of the system, and some functions are not perfect, so the entire system has not been applied, only for subsequent design and DIY Learn from.

This paper designs three different types of sensor networks, breaking the traditional way of multiple single sensor networks. Various types of sensor networking are more effective in monitoring various parameters of the system, and are of great significance for the comprehensive analysis of the system. At the same time, the paper also proposes to integrate the electrical system and security system in the smart home.

The system designed in this thesis is based on the RS-485 networking system, which is very meaningful for some multi-node applications. At the same time, the use of wireless communication between the host controller and the PC is also applied in many occasions. This multi-node method of collecting multiple amounts of information is worth popularizing in the post-W design. Due to the lack of knowledge, limited level, and time constraints of the students in the relevant aspects, there are still many problems or deficiencies in the design process. I hope that all teachers will give valuable suggestions. Although this paper finally basically realized the functions required by the system, there are still many aspects that need to be improved and perfected, mainly in the following aspects:

The MCU resources used by the bottom-level acquisition module waste more. When selecting the bottom-level MCU, many types of MCUs have been screened, but no more suitable general-purpose single-chip has been found.

There is no buzzer circuit on the main control board, so the smoke alarm function at the back can only be achieved by turning the LED on and off. The system can only regulate low temperature and low humidity, but cannot control high temperature and high humidity.

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EFFECTIVE MANAGEMENT OF ARTIFICIAL INTELLIGENCE: A REVIEW PAPER

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Abstract

Artificial intelligence as a product of the new century from 1956 to 2020 less than a hundred years to make great progress, based on "statistics "," information theory ", and" control "under artificial intelligence, is an indispensable part of the current world economic community, in the past a large number of data analysis and collection are purely manual to do, now through the support of big data, artificial intelligence can batch analysis of information, data and so on. Any organization needs to have a summary of the data and then provide it for high-level reference, with which executives can make decision-making judgments. When artificial intelligence emerges, it provides strong support for world economic communication, makes management more normative, makes decisions in countries or companies faster and more accurate, can make appropriate simulation and comparison, more than the inertia of human thinking. With the continuous development of national information technology, artificial intelligence is widely used in various fields of management and work, greatly improve the quality of people's work and work efficiency, in the process of daily operation of enterprises and society, people can achieve the established goals with as little expenditure as possible, or with existing resources to achieve the maximum goal. Using artificial intelligence to improve efficiency, can carry out activities and improve work more quickly and effectively, and can further meet the needs of customers. With the help of artificial intelligence, enterprises have made remarkable contributions to the supervision of the market, the regulation of personnel, and the budget of funds, thus saving time and capital cost for the production and development of enterprises. In the face of the impact of the epidemic, the state uses artificial intelligence and big data technology to provide related services, the speed of epidemic prevention and control response and the early warning ability of epidemic prevention and control has been greatly improved and harvested, and the management of personnel and materials has also been effective. Outbreak caused by the population can not gather, through the online curriculum has been resolved. In the face of the follow-up enterprises to resume production and other issues, artificial intelligence and big data under the national policy management to provide accurate data and information support for enterprises to resume production. Finally, in the face of such special scenarios during the epidemic period and under the effective management of

the country, it brings new development opportunities for the industrial development under the application of artificial intelligence.

Through the "SARS" epidemic situation to the present "new coronavirus pneumonia" epidemic situation from the national management also further saw during the epidemic situation under the state management policy "do not meet, do not contact" such conditions, for artificial intelligence technology applications and data sharing services to provide experimental opportunities and development conditions, online services began a new round of competition and development, broke a lot of traditional ways and interests and other practical constraints, digital economy and the development of intelligent management brought new opportunities. From the enterprise's point of view, the epidemic situation will further promote the development trend of intelligent manufacturing, unmanned factories, enterprises seize the opportunity to use digital transformation to achieve industrial upgrading into a "danger for opportunity" feasible plan. It is necessary to use artificial intelligence, big data cloud computing to monitor and analyze the epidemic situation as well as the source of the virus, and to study the use of artificial intelligence to improve the management of information in epidemic prevention and control from the government's point of view.

Keywords: artificial intelligence, management, epidemic situation, information management, big data

Introduction

Information technology is one of the most important parts of modern society where public health emergencies require a sound system and can be detected in a timely manner and accurately judged to respond quickly. It is necessary to strengthen the management of information, classified management, integrated management and rapid and orderly transmission, such as the source of new infectious diseases, the loss of transmission speed and the difficulty of treatment to the country and society, as well as the difficulty of judging whether the epidemic is difficult to judge, and to make higher demands on information management for the development of the epidemic.

—, Whether the strengthening of artificial intelligence management plays a certain role in the accurate location of information and the prevention and control of epidemic situation. The spread of the epidemic usually has a latent period. Some patients will be out of a variety of purposes, and to conceal the disease, if the lack of information will cause the prevention and control of the epidemic situation will bring great difficulties. If the artificial intelligence is used to manage, then the transmission route of the epidemic situation and the accurate positioning of the patients, the prevention and control of the epidemic situation will be further improved.

Second, strengthen the ability to process information. There is no way to judge the quality of the information. When an outbreak occurs, there will be a lot of information, there will be real and false information. In a short period of time, it will be difficult to tell whether it is true or false information. Some information will be vague, and the range of viruses brought about by the flow of people will slowly expand. Information will not be limited to all residents in the community who are suspected of infectious diseases and those who have been diagnosed. In addition to information about the number of cases infected, medical facilities and so on, it will be necessary for each resident's personal characteristics, living environment, family situation and workplace activities. There is no direct auxiliary information about the epidemic. The use of artificial intelligence management will greatly shorten the processing time of information, accuracy can quickly and efficiently analyze and judge the characteristics of people, living conditions, social relations work place and touch the track of activities and other information that need to spend manpower to investigate, artificial intelligence management is more accurate and time-saving than human investigation.

Third, the artificial intelligence management strengthens the analysis to the epidemic situation and the remaining information interferes the epidemic situation ability. The collection and reporting of the epidemic situation and the process of sharing will be disturbed by other events. For such interference will lead to the amplification of public opinion, as well as a country's judgment of the epidemic situation, the application of artificial intelligence management can accurately identify the risk points in the complete information environment and the stressful decision-making environment, and solve them in time.

Fourth, the accurate judgment and supervision ability of the new epidemic situation. Today's epidemic situation reporting depends on the traditional disease control system, from county to city to provincial level to report information to gather information will cause the lag of epidemic situation information, resulting in the higher level of public health events response efficiency reduced, this way through the accumulation of information to monitor the development of the epidemic signal.

Fifth, community management with the help of artificial intelligence, to the residents of the region, outsiders, to achieve accurate management, and timely in accordance with the requirements of the country to publicize.

Literature review

The development of artificial intelligence technology brings us great convenience. In the development of the company, artificial intelligence technology can help enterprises to analyze data quickly and efficiently to optimize the processing of data, and provide data simulation in production mode to make predictions for the development of enterprises. For example, before there is no artificial intelligence technology, the detection of new products by enterprises mostly depends on manual detection, which not only consumes a lot of human resources, but also has no guarantee of accuracy. The efficiency of detection is also very slow, with artificial intelligence technology enterprises can use technology to achieve intelligent detection, and product problems. Data collection further increases the quality of the product and greatly improves efficiency. On the other hand, you can use artificial intelligence technology to meet the needs of customers to a large extent, and to provide reference for customers' late service and product quality issues. But also because of the collection of information to the customer's privacy issues are not very good protection. If the information is stolen or leaked, it will bring loss to the customer's economy and finance, and affect the credibility of the company. At the same time, because artificial intelligence is not perfect will make some problems can not be solved, and then manual detection, it will also take a long time to be dealt with.

The SARS epidemic will come even more suddenly at that time with the level of science and technology and the level of artificial intelligence is often not in line with modern public opinion and academia is not so developed today, medical aspects are also facing severe challenges crisis management means are relatively backward. In the definition of epidemic prevention and control archives, which are still behind today, such as epidemic prevention and control archives, epidemic prevention and control archives are the true records of the government leading people to fight against the epidemic situation. The study of the work of the experience of reference is not enough, so in the face of epidemic prevention and control file regulation is atypical pneumonia, for today will be more investigative and check the use of value. The characteristics of epidemic prevention and

control, for the archives of epidemic prevention and control, atypical pneumonia will form the original record in the work of dealing with infectious disease epidemic, for today's sudden public epidemic will strengthen the search progress and expand the scope of search, in the face of atypical pneumonia, the video and the network show the relevant records of infectious disease information, such as time and place, age and sex, occupation and so on are not much specific analysis, but now in the face of artificial intelligence management system will be more accurate to find the content of information and the scope of epidemic development. In addition, health management, transport management, market regulation and education, industry and information and agricultural and rural management departments will produce many files in the process of epidemic prevention and control. The control of these departments during the SARS period will be inaccurate, but now the use of AI management system can be faster, more accurate to grasp the operation of these departments, and they will have a better regulatory and control role. During the SARS period, the analysis, summary and corresponding measures taken by the health management department will be slow, so the word that will delay the epidemic will only accelerate the spread and spread of the epidemic. In the artificial intelligence management system, it can effectively control the development of epidemic situation and restrain the spread and spread of epidemic situation. Compared with SARS, there are many problems in the management of public health crisis. Firstly, in the sense of crisis, the government's temporary response to the crisis of public health events that have already occurred, as well as the management system of pre-prepared command system and emergency plan are lack of experience and deficiency, because he does not take advantage of society and government. The crisis of public health emergencies, the emergency warning and the control of the crisis and the management and handling of the crisis, as well as the relief of the people who are at risk, is also unfavorable. Well, the crisis consciousness of the citizens is also very lacking, the citizens will lack the ability to save themselves from emergencies such as fire and tsunami, or the public health emergencies of the epidemic situation, and the basic common sense is lack of the basic concept of crisis prevention. Compared with the traditional concept that crisis management in the face of public health emergencies focuses on the treatment of prevention, it ignores the pre-occurrence links such as prevention and evaluation and monitoring, while the mechanism of emergency planning for the health management artificial intelligence management system of public health management has been established to assess the potential crises and the lack of basic judgment and analysis of various risks, resulting in these risks not being detected in a timely manner, which can effectively and timely prevent them.

A more diversified and globalized exchange of information in the communication of information enables the government to control the sources of information with timidity, and enables the masses to obtain information on outbreaks and emergencies more quickly, thus

enabling them to take self-fast precautions. If the SARS-era out-of-the-scene propaganda strategy is adopted, the masses will only rely on and unreliable sources of gossip, thus causing panic among citizens, as well as the task and spread of the disease, which can effectively prevent favorable timing by failing to report scientific policies to deal with environmental or false reports of outbreaks, or even underreporting them. In terms of the nature of citizen participation, in the face of public health emergencies, not only government organizations, but also many social organizations, this will more reflect the decentralized nature of the modern crisis management system of sudden outbreaks or sudden events. No longer, as before, the government plays a leading role in the face of major outbreaks of disease, resulting in citizens often in a passive state, and now there will be a new concept of treatment or treatment system in which society, communities, citizens and others join together to participate.

The capacity of local financial system becomes a part of sudden crisis management which restricts government system. However, in the face of emergency health management practice, the financial resources of local governments that are already limited will be more vulnerable, especially when the government began to pay attention to the crisis or emergency center of gravity forward, the need for artificial intelligence management system to establish a mechanism to balance interests and cost-sharing mechanism can be faster, is the guarantee of the current system, help me circle the social citizens, I am the local government's joint investment in emergency management. In terms of manpower constraints, in response to emergency preparedness measures, SARS exposed many government in the face of public health emergencies in the system of service links, such as the establishment of a public health emergency system assessment training damage control, as well as plans and even later you have new research and development vaccine research and development, and the training of professionals are far behind other countries, even in the general public residents of public health emergency education is not enough, It is far from perfect to implement the effectiveness of the direct guarantee of public emergency, that is, the mechanism of early warning and prevention, the mechanism of handling process, or the nature of dealing with the follow-up work. For the established mechanisms are separate, there is no integration of a unified system to form a perfect system, for the degree of publicity of one of the objects, in the SARS period to face different degrees of different forms of regional professional and cultural age publicity, in the SARS period is difficult to achieve.

Methodology

This article uses the following three methods complete research:

1. case analysis. Through the previous SARS outbreak in China for reference. Without the help of artificial intelligence to deploy management, SARS epidemic has not been quickly and effectively fought, and various medical supplies can not be quickly deployed and other problems, resulting in huge losses. Thus, more rapid and effective management of emergency public health events is needed. The article illustrates the role of artificial intelligence management by comparing cases with the current epidemic situation.

3.3.1 type of method used

This paper uses inductive method to analyze, collate the collected data and data, the management method adopted by the government in the face of epidemic situation, and when facing the same type of problems in the future, using artificial intelligence technology can make management more effective and convenient, and make human development more rapid.

1. Artificial intelligence

The use of artificial intelligence in management can make management more efficient,

2. Big data

Big data can be more accurate, efficient and fast for collecting data. In the face of data collection and search problems, big data can solve such problems very well. For example, traffic violations can use big data to find information about violations.

Conclusions and Findings

Management is all-encompassing and permeates all fields. Where there is crowd activity, there is management. From the whole society, a country, down to every family and everyone, are inseparable from management. The task of management is to design and maintain an environment in which people working in that environment can achieve the set goals with as little expenditure as possible or with the maximum of available resources. The significance of management is to carry out activities more effectively, improve the work, more effectively meet the needs of customers, improve the effect, efficiency, efficiency.

The definition of artificial intelligence can be divided into two parts, that is, "artificial" and "intelligent". "Artificial" is better understood and less controversial. Sometimes we have to think about what people can and make, or whether people's own intelligence is high enough to create artificial intelligence, and so on. But in general, "artificial systems" are artificial systems in the usual sense.

There are a lot of questions about what "intelligence" is. This involves other issues such as consciousness (CONSCIOUSNESS), self (SELF), thinking (MIND)(including unconscious thinking (UNCONSCIOUS_MIND)). The only intelligence one understands is the intelligence of one's own, which is generally accepted. But our understanding of our own intelligence is very

limited, and we have limited knowledge of the necessary elements that make up human intelligence, so it is difficult to define what is "artificial" manufactured "intelligence ". Therefore, the study of artificial intelligence often involves the study of human intelligence itself. Other intelligence about animals or other artificial systems is also generally considered to be a research topic related to artificial intelligence.

Artificial intelligence has been paid more and more attention in the field of computer. And in the robot, economic and political decision-making, control system, simulation system has been applied.

Professor Nelson defines artificial intelligence as "artificial intelligence is the subject of knowledge -- the science of how knowledge is expressed and how knowledge is acquired and used ." "Artificial intelligence is the study of how computers can do intelligent work that only people can do in the past ," says Professor Winston of another Massachusetts Institute of Technology. These statements reflect the basic ideas and contents of the subject of artificial intelligence. That is, artificial intelligence is to study the law of human intelligence activities, to construct artificial systems with certain intelligence, to study how to make computers complete the work that used to require human intelligence to be competent, that is, to study the basic theory, methods and techniques of how to use computer hardware and software to simulate some human intelligent behavior.

Artificial intelligence is a subject that makes computer to simulate some human thinking process and intelligent behavior such as learning, reasoning, thinking, planning, etc. It mainly includes the principle of computer realization intelligence, the manufacture of computer similar to human brain intelligence, so that computer can realize higher level application. Artificial intelligence will involve subjects such as computer science, psychology, philosophy and linguistics. It can be said that almost all disciplines of natural science and social science, its scope has far exceeded the scope of computer science, the relationship between artificial intelligence and thinking science is the relationship between practice and theory, artificial intelligence is in the technical application level of thinking science, is a branch of its application. From the point of view of thinking, artificial intelligence is not limited to logical thinking, it is necessary to consider image thinking and inspiration thinking to promote the breakthrough development of artificial intelligence. Mathematics is often regarded as the basic science of many disciplines, mathematics also enters the field of language and thinking. Artificial intelligence disciplines must also borrow mathematical tools. Mathematics not only plays a role in standard logic, fuzzy mathematics, etc. Mathematics enters the subject of artificial intelligence, they will promote each other and develop faster.

As a general technology, artificial intelligence brings significant improvement of work efficiency in the process of combining with various industries, provides a new scene for the application of artificial intelligence, and cultivates new business forms and industry growth points. At the same time, epidemic prevention and control put forward higher requirements for the digital transformation of enterprises, and will have a profound impact on the current and even the post-epidemic era.

In terms of specific application scenarios, online diagnosis, online education, webcast and other industries have expanded dramatically, and related technologies have accelerated iteration. On the medical side, local governments and many Internet head enterprises have launched free Internet free consultation services, and doctors throughout the country provide online consultation services to residents including Hubei Province through the "online free consultation" service.

In terms of education, the epidemic has led to the delay in the opening of primary and secondary schools, and the education information company has helped students to study at home by providing free online courses and setting up online classroom scenes. Consumer entertainment, games, online video, live, e-commerce and other sections have bright performance.

In the daily life service, the traditional business super, catering service system to online fresh distribution, take-out, no contact express delivery and other accelerated transformation. Under the epidemic situation, the mode of take-out and fresh e-commerce rose against the trend, through the application of big data, Internet of things, artificial intelligence and other technologies to accurately grasp the market demand, coordinate transportation and warehousing, supplemented by mature supply chain management to enhance the competitiveness of enterprises and the overall efficiency of the industry, or hope to take advantage of the epidemic situation to usher in a new round of development opportunities.

In the aspect of enterprise digitization transformation, the severity of the epidemic situation urges many traditional enterprises to pay more attention to and actively carry out procurement and sales through e-commerce platform, and to use information tools more widely to improve their own operational efficiency. The epidemic situation has promoted the development of industrial e-commerce platform business and cloud service market. The domestic cloud office business has quickly entered the practical stage from the promotion stage, and the scale has expanded rapidly, but also put forward higher requirements for its carrying capacity. At the same time, all business links of the enterprise are completed online, which means that the cloud office manufacturer needs to provide the online work cooperation scheme and the business integration scheme of all application scenarios. Overall, the growth rate of the industry is bound to show a large increase, and enterprises

enjoy the benefits of scale expansion, while their service capacity, business integration ability and data security will become the key points of future industry competition.

In the enterprise to resume production, artificial intelligence and big data to help enterprises accurately resume production. Under the guidance of the E-government Office of the General Office of the State Council, the practice of Hangzhou health code has been extended to the whole country, with which the health card function for employees of enterprises is developed with nails. Such as "Hangzhou enterprise return to work declaration platform "," Shanghai enterprise return to work health cloud platform" and so on, enterprises can obtain employee "health code" information in an authorized way, and then submit a return to work application through the government online platform. At the same time, the government can grasp the health status and return demand of the rework and rework personnel in the area, and take the overall health status of the employees as the important basis to decide the approval results.

At the same time, production enterprises can obtain epidemic information in real time and optimize the management of employee health, return to the post, shift scheduling and so on through docking with the government end to resume production platform; enterprises can effectively connect with epidemic materials and raw materials resources through the government platform, and can also effectively reduce the risk of supply chain. Through data aggregation and analysis, the platform can help local governments to grasp the situation of enterprises in various regions and fields, the health status of employees, and the implementation of enterprise epidemic prevention and control work, so as to systematically promote epidemic prevention and control and production organization from the overall perspective. In the implementation of the policy, Hangzhou online "pro-Qing online ", policy online payment, enterprises do not have to submit any materials, March 2 first online tax revenue of more than 500000 yuan per year business enterprise tax and enterprise employees rental subsidies two functions, related supporting services and function development also quickly followed.

Since the development of the epidemic, the state has used advanced technology to fight the epidemic, such as multiple body temperature measurements, intelligent health questions and answers, lung image analysis, are based on artificial intelligence to carry out epidemic prevention. The most experienced is the health code registration, all personnel in and out of the community, shopping malls, hospitals and other public places, must have a health registration QR code, health status is everyone's track of action and contact with the people and automatically updated. In South Korea, large-scale detection and isolation of patients is used to combat the epidemic, which is based on the use of artificial intelligence management system to view monitoring, using smart phone location data and credit card consumption records and other data processing can find the patient's activity location, and can find a chain of epidemic transmission system. Israel uses the artificial intelligence

management system to monitor people's mobile phone location data cache to find patients. Italy uses the artificial intelligence management system's health management software to determine whether citizens violate the quasi-government blockade order according to the distance they walk.

Risk prediction: the advantages of artificial intelligence management system also have certain risks, but also because of the imperfect technology will lead to some negative consequences, and thus have a profound impact on the lives of citizens, common concerns of citizens have privacy leakage compared to other technologies, the unique feature of artificial intelligence management system technology is that it has a certain self-confidence, such descendants of his own technology and the role given to him by society artificial intelligence will exceed the traditional sense of tool attributes may later participate in human decision-making, including his application of the concept of human control behavior changes, and changes to social relations.

Community, enterprise, market material supply chain should have their own module management, so that in the shortest time the most effective suppression of the epidemic, the important thing is that even if there are individual module outbreak, the overall operation of the market will not be greatly affected. Then we discuss the model. It is assumed that a certain outbreak has the infectious power of the coronavirus and above, the latent time is long, and spread widely through the festival. So, the outbreak of the epidemic to a certain extent, the government should first set up a module epidemic prevention platform, at the same time, the platform data should be published to the public, the public can timely understand which several module areas have problems. The government can also learn which cross-module industry chain problems will lead to which module areas have hidden dangers. At the same time, the health signs issued to the public are used to match the clothes for easy observation, and the health signs can be confiscated in the epidemic area. City for a certain period of closed management, a huge number of employees in production enterprises, because the staff went to the field, and then come back with a virus, should resume work in batches. A small number of staff in the necessary posts were selected to resume work, and they had to arrange separate accommodation, allowing multiple people to live in a room together, because if the outbreak of the epidemic, the basic isolation. If the epidemic is fatal, separate rooms must be arranged. Considering the current number of patients around 10 W, in fact, the chances of winning the bid is not very big. Others will not join the production line until they have been isolated from the plant. If the outbreak occurred among those who had previously worked, even if they needed to be hospitalized, those who did not work in isolation could still work on the line. No disease employees can arrange to live in the factory needs as far as possible, factory employees in the confirmed living area is not in the epidemic prevention platform in the area can be used. The Bureau of Industry and Commerce can link some departments to send people to an

enterprise to inspect the basic health situation, deliberately violate the mechanism of epidemic management should be severely punished, employees can directly report to the police to complain about safety problems. The medical expenses that the enterprise starts to appear epidemic situation problem, undertake by enterprise oneself. Non-occupying position enterprises flexible to work, can not gather do not gather, need to run a number of business should do a good job of high-standard epidemic prevention measures, this measure will be said, notes out weekly track. Catering is a high-risk business, because the virus may spread along body mucus such as saliva, and customers eat is in a unprotected state. This must consider that the production of food must be absolutely healthy employees, or the domestic production of this food safety grade, once the production problems, the spread of infection is extremely high. The number of restaurant meals must be controlled, instead of waiting in line to order to sit and other points to deliver meals, eat across the table, eat without protective measures to prevent conversation to prevent spit spatter. At the same time, the restaurant is restricted to staff to prevent congestion. We advocate eating outside the hall and eating in areas where people work or live. Dining in the restaurant should be subject to a special period service charge to encourage people to take the outside method. At the same time in the restaurant must register documents and time, restaurant food processors health problems caused by the infection of guests, medical expenses by the restaurant. At the same time, we should consider the economic burden caused by the closure of business, because the wages of employees can not be reduced basically, otherwise there may be citizens who fall into serious economic problems, which also plays an important role in maintaining social stability. The government could consider requiring such businesses to make a mandatory adjustment to the cost of leasing the time of the outbreak, after deducting the wages of the operating staff, and to make some adjustments to the rent charged by some citizens who own large rental housing, which could greatly help the survival of some of the industries with high rents. If temporarily unable to manage, may also issue the decree first, after autumn recovery. Because of its mobility, the market material supply chain should change its operation mode, and the city entrance and exit should set up buffer area, the original raw materials were transported directly from city A logistics to city B, instead of city A company to the urban export buffer zone, which was docked by special staff in the buffer zone to the transport staff between the urban areas, and then delivered to the city B buffer zone through these special periods of special cross-city couriers, and the goods were transferred to the company's pick-up truck by city B buffer zone staff. These cross-provincial and buffer zone staff should be equipped with high-standard epidemic prevention measures, so as to ensure the flow of goods while limiting the spread of the epidemic across the region. Personnel may be temporarily recruited. Such measures should also be taken with regard to foreign trade, with a view to establishing a buffer zone for imports and exports and changing the previous mode of operation. Rural

areas should be organized by the village government isolation epidemic prevention, its villagers mobility is small, the spread of destructive power is small, if the villagers receive notice to return to the city to work, the provincial and municipal transport departments should arrange a proper number of bus transport, bus restrictions, to prevent congestion. The floating population in different places should not be crowded into the urban area because of the bus transportation. After entering the market, the special bus should be sent to the target company directly. The special bus must arrive on time to prevent different batches of outsiders from gathering and waiting for cross infection. Conditional company salesman should do high standard epidemic prevention measures. The community should strengthen management, property should be temporarily taken over by the public security, the entrance and exit management authority granted to the doorman community, during the day by the community arrangement staff supervision, night self-management. Residents who do not comply with travel requirements may be detained directly by the police. The community is allowed to gather for entertainment, but to register participants. The necessities of life are best ordered by telephone, not necessary. Limit the number of visitors per hour to prevent congestion on urban roads. Supermarkets can consider promoting online shopping, subcontracted by special pickers, and then delivered by take-out staff to reduce the number of customers entering the supermarket. The take-out can be delivered to the residential gate management office by the residents themselves. If necessary, community workers can be arranged to help residents who do not know how to order online. Small grocery stores can stay on the phone in the community to facilitate residents to buy. Many food delivery staff suggested high standards of epidemic prevention measures. The best way to prevent infection is to have qualified masks and replace them at the right time. Companies have to prepare enough masks because many people don't change them on time. But companies have to be strict, and those who do n' t comply should be severely punished. If the epidemic prevention force is not enough, in addition to the disposable epidemic prevention gloves mask, you can consider the production of non-disposable masks and gloves. Gloves can be designed with zippers behind the easy alcohol disinfection, mask can be designed filter removable replacement, mask can be alcohol disinfection. At the same time, some temporary alcohol disinfection pools are set up in the urban area, and the public can hand over the used glove masks to the collection point workers for some disinfection costs in exchange for clean glove masks, and the collected glove masks are transported to the disinfection pool for disinfection by the staff. This can greatly reduce the production consumption of glove masks. Some local farmers lack food because logistics is blocked by the epidemic, so we should give priority to solve the logistics problems caused by the epidemic. Agricultural products should be centralized managed and sold in rural areas, and convoys should be arranged to transport agricultural products to the temporary material market set up in the buffer zone at the entrance and exit of the urban area, and

then sufficient quantities of exchange items should be pulled back from the market. Markets can be run by governments to manage trade security. Feel that this can maintain a certain level of production and trade in the country when the outbreak is not completely paralyzed.

Conclusions

In this epidemic prevention and control process, we also saw a lot of problems. In the application of big data, the cross-application of data sets in various industries is insufficient, including traffic, public security, communication and other data sets have not formed effective penetration, and the ability to support each demand scene is uneven.(1) There is still a big gap between the data application system and the national governance system

At present, in the process of implementing the national big data strategy, the regional data collection is basically completed according to the horizontal provincial and municipal level, and the vertical data collection is connected according to the industry management data of the ministries and departments, and the management and application system of the data has not yet formed a horizontal vertical matrix application structure. With the national governance system top-level design and hierarchical docking, has not yet formed an effective link.

(2) Lack of standard specifications and mechanisms for cross-application of data sets, resulting in the current lack of effective maximum value among data sets The flow mechanism under the top-level design has not been formed in each domain data set, and the data application standards and specifications between the data sets are relatively lagging behind. At present, some data still have the problem of data governance, the system of assetization and asset management of data elements has not been formed, and the above factors are also the main reasons that lead to the failure of the maximum value of the data.(3) The security system of data privilege level is not perfect At present, data authority and data security level system have not been established effectively in the process of data management. Under the guidance of the core idea of "party management data ", we should establish and perfect the data management and supervision system as soon as possible. Clear data authority and data encryption level, in the top-level design architecture, combined with data applications, at the same time to achieve data security does not leak, do not violate privacy, do not violate the law and other issues of principle, the focus is also high station national data sovereignty security.(4) Inadequate coverage and linkage mechanisms for data applications On February 10,2020, General Secretary Xi Jinping stressed in Beijing to investigate and guide the prevention and control of the epidemic situation of new coronavirus pneumonia, that the community is the first line of joint prevention and control of the epidemic situation, and is also the most effective line of defense against external input and internal prevention of proliferation. At present, big data application and

intelligent city system are mainly concentrated at the provincial and municipal level, most of them can cover the urban level, advanced areas have already reached the county level, to the township street level is basically very few, to the community basically fight on their own, information means are basically missing, mainly rely on sea of people tactics, traditional means. The main problems are the lack of top-level design and the lack of linkage mechanism. Big data and informatization have not yet formed the linkage mechanism of departments and streets as well as community residents.

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CHINA'S E-GOVERNMENT APP AND CLOUD TECHNOLOGY APPLICATIONS: EMPRICAL STUDY

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Abstract

In recent years, with the advancement of science and technology and the information age has developed faster and faster. Words related to the information age appear in people's vision, such as smart government, smart city, etc. E-government is an important symbol of office modernization. This has always been one of the means and ways for governments and enterprises to improve work efficiency. With the development of science and technology and people's efforts in the information age, the trend of combining e-government and cloud computing technology has become more and more obvious, and this more modern office has shifted from theory to practice. The combination of cloud technology and e-government is the foundation for the government to improve efficiency and enhance the relationship between the government and the people. This article is a government service based on cloud technology, which aims to combine cloud technology and e-government applications. This article discusses the convenience and feasibility that e-government applications will bring to people. Through investigation and research, it has been discovered that there are "information islands" and more and more "zombie" applications in the current government affairs apps, So cloud technology is used to improve efficiency and strengthen management. This article first discusses the background, source, purpose and significance of the topic. Based on the analysis of research status at home and abroad, the concept of combining cloud technology with e-government services is proposed. Secondly, discussed the necessity and feasibility of e-government service platform. Explains the thought and process of e-government construction. Based on the guiding ideology, an e-government service cloud computing platform and its construction process model are designed. When studying the external guarantee strategy of e-government based on cloud computing, improvement measures were proposed. This article provides reference for research through the survey results, and analyzes the feasibility and convenience of government affairs applications (E.g. education department and government department) through current COVID-19 cases. Through descriptive statistics it analyzes the advantages of government affairs applications and the shortcomings of current government affairs applications from the perspective of the survival and application of the government

and the public. According to swot analysis and collected questionnaires, understand the public's willingness to use and current market conditions.

Introduction

With the development of the Internet around the world, the disclosure and release of government information and service providers around the world have bribed a new transformation and development. At this time, e-government has emerged, and it has become a government office and a public information disclosure and service in a short period of time. E-government can effectively improve the quality of government services and improve the supply of convenient services. Popularizing e-government has become an important measure for all countries in the world to promote national informatization and promote national economic and social development. Internationally, it is generally believed that research related to e-government appeared in the mid to late 1990s. From the development process of e-government, countries around the world have basically experienced the following stages, namely the initial stage, online publication of government information; one-way interaction stage, mainly government initiative; two-way interaction stage, inter-government-civilian communication; online business management stage. Xu Shiliang, Hu Hui, & Li Yang. (2018). Development and design of land resources e-government system based on j2ee. *Electronic Design Engineering*, 026(013), 41-46.

As early as the 1980s, the Chinese government had realized that the information technology revolution would have a huge impact on society and a huge challenge to the world. Therefore, the Chinese government has begun to try to use the latest computer technology to complete some Basic office activities, this is what Zhoumen usually calls office automation projects. In 1993, China began to implement the "Three Gold" project, the fundamental purpose of which is to improve the application of information technology in the Chinese government, seize the tide of the global information technology revolution, and focus on building information infrastructure to facilitate the data communication and transmission of important department houses Information, building information "highway". In 1998, the world's Internet technology grew at a decisive pace, and China's communications infrastructure was continuously improved. Based on the above conditions, the government made a plan for the government to go online. The rapid development of China's e-government began from this, and it gradually entered the public Has become the subject of social concern. In 2002, the Fifth Plenary Session of the Ninth Central Committee focused on clarifying the construction of China 's e-government. Premier Zhu Mingji pointed out: China's e-government is an e-government with Chinese characteristics. The process of emancipating the mind and studying hard. On New Year's Day in 2006, the Chinese government opened the first official website-the Chinese government. After the opening of the website, the website is a comprehensive platform where the government can publish government information and services. In 2011, after carrying out the "Twelfth Five-Year" e-government planning work in many places, Weibo began to gradually become a new channel for government information release and communication with the people. He Yanling, & Wang

Guanglong. (2016). "Government" in China: A Comparison and Reflection. *The Open Era*, 000(006), 83-97.

In the environment of big information, mobile communication technology develops rapidly, and its characteristics such as immediacy, ease of use, interactivity, and time-space continuity have had a huge impact on all aspects of the public. The so-called service-oriented government is a people-oriented guiding ideology to provide better services to the society. Respect the needs and thoughts of citizens, the purpose is to provide modern services to the society, the main task is to perform social public service functions. The government application came into being. The government application APP is very meaningful, which can meet the needs of public services and the needs of the government to establish a service-oriented government. Improving the management and service of government applications through cloud technology is the only way to innovate government services. The purpose of this research is to use e-government applications to make people more adapt to fast-paced life, improve efficiency, and use cloud management in cloud technology to realize online remote management, and to uniformly manage e-government applications in all regions to improve current E-government management issues to improve efficiency.

In China, government affairs apps can effectively improve the efficiency of the government and the public. In today's era of accelerated pace of life, people's demand for efficiency is increasing. In terms of government affairs and business operations, the government affairs app will make government affairs and business easier and faster. This has become a key factor for the public to adapt to a fast-paced society. In view of the low efficiency of offline government affairs, slow service speed, and the problems of information silos in existing government affairs apps, how to develop and implement government affairs apps is the key to realizing future efficient smart cities. This article describes how to show how the government affairs app can bring convenience to citizens, and how to use cloud technology to solve current government affairs service problems and solutions.

From the perspective of international development, since the 1990s, government apps have been established between the government and the general public in major countries such as Europe and the United States. It is dedicated to building networks, systems, information channels and online services for the public. Provide higher quality, more convenient and more diversified content services; between the government and enterprises, commit to e-commerce practice, create a reasonable, safe and orderly e-commerce environment, and promote the government to the government. In the government automation office, it promotes information exchange, information sharing and resource integration, and fully improves administrative efficiency.

From the perspective of the development of government apps in Europe and other countries/regions, e-government in these countries/regions generally follows the following

guiding principles: develop and provide services around people's choices and needs, establish a people-oriented government; improve the government and its services Accessibility; elimination of digital isolation; emphasis on effective use of information and improved use of information. Bernhard, I. & Wihlborg, E. (2015). Municipal contact centres: a slower approach towards sustainable local development by e-government. *European Planning Studies*, 23(11), 2292-2309.

In China, the government affairs app is mainly used to provide convenient services for enterprises and people, as well as the support role of public channels for public channels and national government services, as well as the use of online applications to provide services for the government, government service platform provides multiple service channels for mobile clients, PCs, WeChat, allowing users to easily access services. The platform brings together 46 departments of the State Council, 31 provinces (autonomous regions, municipalities directly under the Central Government) and Xinjiang Construction Corps, for a total of 2,368,135 implementation lists and 908 convenient .

Literature Review

Current case analysis of COVID-19 government affairs app

2020 is an unstable year, when people are still immersed in the moment of welcoming the New Year, January 20 is only 5 days away from the Chinese New Year, a virus called COVID-19 broke out in Wuhan, China, and eventually the Wuhan government the closure measures were taken, and the city's subways and buses were suspended on the 23rd. Yao Huang, Yang Shengli, & Wei Shourong. (2020). In response to the new coronavirus in the new situation, prevention and control is the first. *Medical Herald*. 003(010), 10-12 But this time the virus has a long incubation period. At this time, it is the time for China to return home for the Spring Festival. The epidemic broke out with the arrival of China's New Year. Immediately following the closure of various colleges, units, and various individual industries, the emergence of "smart cities" is needed to help the public, transportation, education, catering and other mobile smart apps in various industries play a role.

The outbreak of COVID-19 is extremely contagious and has a long incubation period. Therefore, since the Chinese government announced the closure of the city, it will go to the provincial level, the municipal level, and the county level. The local government officials will be the leaders of the local government. Under the leadership of the government, "close the city and cut off the road", the import and export of each place are strictly controlled, and at the same time, measures are taken against all walks of life. Government departments at all levels, transportation, and various types of individual businesses are closed. Blocking communities and delaying the start date of various colleges and universities have seriously affected China's economic development.

For foreign countries, the European region is also faced with the above problems, and the extension of major sports events is suspended. For example, in the football world, all the five major European leagues currently in progress are suspended, and the ongoing European Champions Cup knockout stage is also suspended. The club currently has no ticket income, broadcast fees, and sponsor investment, etc., which seriously affects the economic chain of the clubs. In order to prevent economic collapse, the weekly salary of the club players has been reduced by 40-50%. The stock market of big clubs has fallen sharply, causing the economy of various cities to fall sharply. As of the close on March 11, 2020, the current Premier League giant Manchester United has fallen by more than 22% from last year's closing price of US \$ 19.93 per share to US \$ 15.42 Burlui, P. V. . (2020). The impact of the coronavirus epidemic on human society. *International Journal of Communication Research*, 10., as the most severely affected Italy in Europe The share price of the giant Juventus has dropped by nearly half from 1.247 euros per share to 0.664 euros, Italian economist Marco Bellinazzo. (2020) The biggest football bubble is pierced by the new crown virus Il Sole 24 Ore, 12 reflecting investors' The pessimistic outlook for the global economy. As a city with football as an important economic source, the impact on the government's economy is a painful blow.

Affected by the epidemic, all kinds of unreliable trail news are constantly emerging. All kinds of daily necessities and food are being driven up prices. The people are panicking and frantically buying all kinds of daily necessities and food. The price before the new coronary pneumonia epidemic was only 0.16 yuan to 0.28 yuan each. After the outbreak, Cao Mou sold the masks to all parts of the country through offline sales and WeChat platforms. In terms of sales price, Cao Mou made a huge profit and raised the price day by day, raising the selling price to 10 yuan per piece within a few days. Qiu Guoliang, Fang Xiaoying, Li Yingying, & Fang Hanlin. (2020). Reflections on the "shortage" of masks during the new crown pneumonia epidemic. *China Food and Drug Administration*, No.194(03), 68-73. This is a serious violation of the law, and the police are currently arrested. Not only the problem of masks, in a supermarket, the cabbage with the original price of 0.8 yuan per catty was actually sold for 50 yuan, which seriously affected the market economy. These criminals have been severely punished. The distance to the people is closer. At the very least, the people will not listen to unrealistic trail news, and they will snap up an ordinary cabbage with a price of 50 yuan per piece. Qu Yong, Wang Zhong, & Xu Wenyue. (2020). On the identification of price-raising behavior during the epidemic. *Research on China Administration for Industry and Commerce*, 000(004), 36-38

2.2.2 Advantages of the government affairs app in emergency situations

At the government level, the epidemic was very contagious due to human-to-human transmission. As a result, the civil aviation department was completely shut down for safety. Government leaders in various regions can use the e-government app to solve various problems. It is possible to directly carry out video conference assignment tasks and communication from the central leadership and the provincial and municipal leaders.

During the epidemic period, all government departments in all regions have fully invested in the front-line battle against the epidemic. The temperature of each intersection is measured, etc. At this time, the government affairs app can use cloud storage to achieve health punching, and collect health and condition of personnel easily and quickly. Digitization and online management, using cloud storage to collect the health information of various government personnel, and then using cloud computing to obtain efficient statistical data, and upload it to the upper government database to ensure the life and health of each government personnel.

In terms of education, the impact of the epidemic on the students who are about to take the college entrance examination is huge. The college entrance examination is a turning point in life. At present, the effective measures taken in China are online courses. As of March 2020, it has only downloaded 1,895,398 in the App Store, which has basically become the key online course software of various colleges. This also shows that the government affairs app is not only for government departments, but also includes remote conference functions. It is an indispensable part of the "smart city" that we will realize in education and even in the future. In summary, the current government affairs app will have a huge impact on the future, so for the current "zombie" and other problems, using cloud technology to solve the current "zombie" and a smart government app is the realization of the future smart city. The important link, whether it is government departments, medical treatment, transportation, education, etc., and even in emergencies, the government affairs app plays a vital role.

Methodology

1. Questionnaire design

In order to obtain first-hand information on the current status of China's "Internet + government services" construction, this questionnaire network APP to conduct surveys by issuing electronic questionnaires. The questionnaire is divided into three parts: The first part is about the basic situation of the surveyed subjects, and sets up three questions, including the survey the gender of the subject, the age of the subject, and the education level of the subject.

The use of "Internet Government Service" is aimed at obtaining the public's use of the government's current "Internet government" services and public satisfaction, including the

frequency of use, Internet government services and the use of Internet Government Service Platform; The third part is the public satisfaction of the Chinese public with the government's "Internet Government Service", including the efficiency of online processing of "Internet Government Service", the degree of reducing personal costs, areas for improvement, Difficulties in development and the reasons for public dissatisfaction with "Internet government services", combined with the problems collected from the reasons, analyze the feasibility and advantages of cloud technology combined with government services apps.

2. Data collection

This article randomly selected 300 people through social software such as WeChat and Weibo to send out a questionnaire survey. The purpose of the questionnaire survey is to inform the Chinese public about the current Chinese government's views on "Internet government services" and their willingness to use them. Therefore, the interviewees were mainly adults of different genders and education levels. After removing some invalid questionnaires and duplicate questionnaires, 228 valid questionnaires were finally received..

Survey design

At present, there are many studies on "Internet government services", and the domestic scholars are studying

In terms of research, some scholars conduct research from the overall level of the country, and some scholars select specific case cities for research

In terms of research methods, questionnaire surveys and field interviews are often used. This article learns from domestic and foreign studies

Based on the existing research of the author, the questionnaire survey method is used to combine quantitative research and qualitative research to obtain first-hand information on China's "Internet government services"; then through statistical analysis of the questionnaire survey, Comprehensive system analysis of "Internet government services"; foreign scholars' research on "Internet government services" mainly uses questionnaires.

3.3.1 Type of method used

This article will use quantitative analysis methods for reasoning analysis, the strategy of using government service applications to serve the public, and the current applications of future smart city development. The development and services of smart city government services and management can be efficiently developed through government apps, while cloud technology can improve the serviceability of government apps.

1. Adopt multi-layer architecture

The system construction will adopt a multi-layer architecture, which is not only more fault-tolerant and scalable, but also very easy to expand. It is beneficial to better integrate other

business systems of the unit and support the performance requirements when a large number of users are used concurrently.

2. Use WEB-based use and management interface

The system adopts a complete B / S structure. Whether it is front-end operation or background management, all operations are carried out using a universal browser to ensure that the system is easy to operate, easy to use, and friendly interface.

3. Adopt mature open technology

The system will adopt an architecture based on the J2EE specification, because the architecture based on the J2EE specification is stable, efficient, and very open, and supports all mainstream platforms (such as UNIX, Linux, Windows NT / 2008Sewer, etc.).

4. Adopt a mature relational database

The system uses a relational database. The system will also support other mainstream relational database management systems, including Oracle, Sybase, Infomix, etc. So as to ensure that the system has better openness.

5. Adopt universal development tools

System development uses a common development tool (Eclipse, to avoid compatibility problems caused by this.

6. Adopt advanced interactive online application technology

System development will use advanced WEB application development technology, including HTML, DHTML, JavaScript, XML, etc.

7. Use case studies to analyze the role of government affairs apps in emergencies

In response to the current impact of COVID-19 on the world, the government affairs app has exerted its advantages over the traditional offline mode of government affairs office and government affairs services in similar emergencies.

8. Use the Internet to automatically release information flow system

Make full use of Internet and Intranet technology to realize centralized management of information classification rules, information content collection, review and release process, and information expression, and organically combine internal information release and city unit Internet site information release to make information While it is released internally on the collaborative government platform, it can also be selectively released automatically on the Internet site of the municipal unit.

Results

Data analysis and hypothesis testing

Title: Study of factors influences the effectiveness of E-Government applications: Empirical Evidence from China.

Problem statement: The study identified the factors which influence the E-government applications effectiveness. In this digital era, the e-government provides convenience to the

public, due to rapidly changing in technology now access to the government services is very convenient. The public can access government services through different applications. This study aims to know the effect of friendly usage Apps, Usefulness of Apps, Market Development and Readiness to use the app on the effectiveness of e-government apps.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	228	1	2	1.40	.492
Age	228	1	5	2.34	.795
Education	228	0	3	2.18	.955
Usage of App	228	1		1.03	.160
Valid N (listwise)	228				

Table4-2

The basic demographic information and validity of the questionnaire are shown in the table below :

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	136	59.6	59.6	59.6
	Female	92	40.4	40.4	100.0
	Total	228	100.0	100.0	

Table4-3

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	≤20	13	5.7	5.7	5.7
	21-30	151	66.2	66.2	71.9
	31-40	43	18.9	18.9	90.8
	41-50	15	6.6	6.6	97.4
	51-60	6	2.6	2.6	100.0
	Total	228	100.0	100.0	

Table4-4

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High Schools	17	7.5	7.5	7.5
	College	36	15.8	15.8	23.2
	Undergraduate	65	28.5	28.5	51.8
	Master	110	48.2	48.2	100.0
	Total	228	100.0	100.0	

Table4-5

Usage of App

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	222	97.4	97.4	97.4
	No	6	2.6	2.6	100.0
	Total	228	100.0	100.0	

Table4-6

Intention of APP usage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Real Time Traffic	88	38.6	38.6	38.6
	ETC Recharge	22	9.6	9.6	48.2
	Penalty Payment	76	33.3	33.3	81.6
	Traffic Violation Query	18	7.9	7.9	89.5
	Medical Insurance Query	15	6.6	6.6	96.1
	Bus	2	.9	.9	96.9
	Other	7	3.1	3.1	100.0
	Total	228	100.0	100.0	

Table4-7

Time duration for the usage of Gov APP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-20 Min	173	75.9	75.9	75.9
	21-40 Min	52	22.8	22.8	98.7
	41 Min- 1 Hour	3	1.3	1.3	100.0
	Total	228	100.0	100.0	

Table4-8

Inferential statistic

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.521^a	.272	.259	.21065

a. Predictors: (Constant), Ready_to_use_app, Friendly_usage_apps, Market_Development, Useful_Apps

The model summary table shows overall 25 % variance is observed on dependent variables effectiveness of apps.

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.694	4	.923	20.809	.000^b
	Residual	9.896	223	.044		
	Total	13.589	227			

a. Dependent Variable: Effectiveness_of_Apps

b. Predictors: (Constant), Ready_to_use_app, Friendly_usage_apps, Market_Development, Useful_Apps

Table 8:Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.180	.176		1.027	.306
	Friendly_usage_apps	.196	.072	.159	2.706	.007
	Useful_Apps	.270	.083	.231	3.258	.001
	Market_Development	.196	.049	.281	4.021	.000
	Ready_to_use_app	.161	.084	.115	1.907	.058

a. Dependent Variable: Effectiveness_of_Apps

Refer to the above table 8, it has been found that friendly usage apps have a significant and positive impact on the effectiveness of apps ($p=0.007$, $B= .196$). Similarly, it has been also found that the usefulness of application apps have a significant and positive impact on the effectiveness of apps ($p=0.001$, $B= .270$). Market development of apps has a significant and positive impact on effectiveness of apps ($p=0.000$; $B=.196$). Results show the readiness of app usage has no association with the effectiveness of the app.

Conclusion

This thesis conducts research from the perspective of new service theory and from the perspective of future smart city development. Based on the introduction of the current status of the development of the government app, it deeply analyzes the problems and causes in the development process of the deep government app, and proposes to promote the government app Countermeasures and suggestions, through the study of this article, the following four conclusions are drawn:

First, the current development situation of the government affairs app is relatively good, and the "two micro-ends" are developing rapidly. With the evidence, the country is paying more and more attention to the development of science and technology, and the current fast-paced life status. The government affairs app will be the future of smart cities and kimono. Good helper.

Second, the government app also has the following problems: the quality of the relevant staff is not high, the government app currently lacks financial input, the positioning of the government app platform is not clear, and the relevant laws and regulations are not perfect. The above problems are caused by the relatively lagging government governance capabilities, inconsistent standards for government app construction, subjective deviations in government app construction, and the lack of talents for government app construction.

Third, learn from the experience of "government app construction" at home and abroad. In the foreign world, the UK has established a problem-solving e-government platform; in the US, the "First Government" website has been established for information development and sharing; in the domestic sector, Beijing has established online and offline With the integrated government service model, Guangzhou established a unified and integrated one-stop platform. By drawing on the advanced experience at home and abroad, it came to the improvement of relevant laws and regulations, the increase of special capital investment, the establishment of supplier competition mechanisms and the strengthening of government information security.

Fourth, in order to promote the development of the current government affairs app, we should start from the following aspects: strengthen the top-level planning and design, including strengthening the "mobile Internet + government service" organizational leadership, establish a reasonable institutional framework and standard system, and build a one-stop government Data website platform; establishing special funds for government affairs app to increase capital investment, including increasing total investment of government affairs app and carrying out performance appraisal of government affairs app construction; Improve relevant legal systems, including the improvement of government app laws and regulations and strengthen the institutionalization of government app; attach importance to information security management, including the government's improvement of information security management, the improvement of information security assurance system, and the

improvement of citizens' information security awareness; the training of e-government talents, including Improve the professional quality of civil servants, enhance the training of civil servants, and build an electronic talent team; integrate information technology support, apply cloud technology to government affairs apps, build a cloud access platform for government affairs app information resource sharing, and strengthen the development of government affairs "two micro ends", Realize many convenient functions such as online work of government affairs apps and online business management. Cloud management will effectively avoid the lack of personnel in relevant departments of current government affairs apps, and it is easy to manage big data in the government cloud, effectively avoiding the existence of most "zombie apps" in current government affairs apps. As well as issues such as information silos, the rapid development of smart cities in the future will be realized, and the public will be helped to effectively respond to fast-paced life.

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AN INOVATIVE METHOD FOR CAMPUS CARD: CONCEPT OF ONE CARD

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Abstract

With the continuous acceleration of the country's informatization process, the impact of information technology on people's daily life is also increasing. As an important place for the country to cultivate talents, universities must naturally keep up with the pace of informatization. As an important part of the construction of a digital campus, the campus smart card is a basic project to realize campus informatization and an important tool for the school to improve management. However, in most colleges and universities, due to limitations in school scale, construction funds, and the lack of unified management, each department has issued cards independently, settled independently, and has more than one card for one person. Inefficiency and serious waste of resources. The so-called "campus smart card" generally refers to a "campus card" issued by a commercial bank on a specific campus in the name of joint development, or precisely a bank debit card. Its purpose is to achieve "one card" for campus consumption, student management and other affairs. In other words, all kinds of consumption and management functions related to students, regardless of whether they belong to teaching functions, logistics functions, or even social functions, are solved by the same card. The campus smart card and its network system enable school teachers and students to hold the IC card as a means of identification for computer room management, time and attendance, access control, query results, loan books, school medical office registration, online information query and other functions. This article analyzes the "Campus Smart Card", briefly describes the function setting of the "Campus Smart Card" and the important development of the campus smart card for the construction of digital campus.

Keywords— Campus smart card; management system; digital campus; function setting

1. Introduction

"One card travels all over the campus" is the most vivid description of the campus smart card, and it also highlights its convenience. The campus smart card is the product of education digitization and informatization. With the increasingly developed Internet of Things technology, "one card travels all over the campus" can be realized. The campus smart card is built on the management platform, which integrates many functional modules, such as personnel access, attendance, consumption, and transportation, etc. These subsystems are managed and controlled by the platform, and the subsystems obtain The information will be transmitted to the management platform to form a database to assist query and analysis. We can think of the campus smart card as an integrated circuit board, and each branch is equivalent to a different subsystem, but in the end it must be converged on a board. Leaving aside customized development, the "universal version" of campus smart cards must be reasonably combined with a large number of functional modules to achieve maximum efficiency in order to be truly convenient. For colleges and universities, campus smart cards are not as complete as possible, but as practical.

2. Literature Review

In China, all small, middle, and universities have implemented campus cards and complete systems, which not only speeds up the construction of digital campuses but also facilitates teachers and students. The campus card can be substituted on campus: (1) Identity card: student ID (work permit), library card, membership card, admission ticket, access card, etc.; (2) cash card: electronic wallet, electronic passbook, dining card, card Machine certificate, medical certificate, etc. The application scope of "Campus Card": (1) Management function (identity authentication): student management, educational administration management, library management, computer room management, attendance management and examination management, etc. (2) Consumption function (electronic wallet): (water, electricity, internet, telephone, tuition, and on-board fees, etc.) payment, dining in cafeterias; shopping in retail stores; medical treatment in medical offices; consumption in gyms, etc. And Alipay can also enjoy discounts for individual restaurant students (3) Financial functions (settlement center): centralized financial processing of the school financial center and reconciliation with the bank; transfer functions with the bank, including "campus smart card" and bank Handling of transactions between individual accounts, etc. (4) Self-help function (self-service): faculty and students hold cards to self-check the balance of e-wallet (campus account), bank account balance, student scores, credits and other information; students can choose courses with card, electronic wallet deposit, deposit, Withdrawal, remittance, etc.

2.1 Research gap

In recent years, in China, digital campuses and campus cards have been implemented a lot and developed rapidly, but under this extremely rapid development, there are also many

drawbacks and difficulties. For example: due to the excessive pursuit of functional realization and the lack of overall planning for digital campuses, the subsystems to be launched are often from different suppliers. The differences in technology and different structures cause difficulties in communication and data sharing between systems and data redundancy. Large, chaotic, and uneven, forming independent "information islands".

Similarly, due to the differences in information and the heterogeneity of the technical architecture, it is difficult to achieve a collaborative working environment for teachers, students, and administrators without transforming the original information system. The implementation of information security, authority management, unified processes, standards and standards also has different degrees of difficulty, and different universities use different standards, often using different technical interfaces and business specifications.

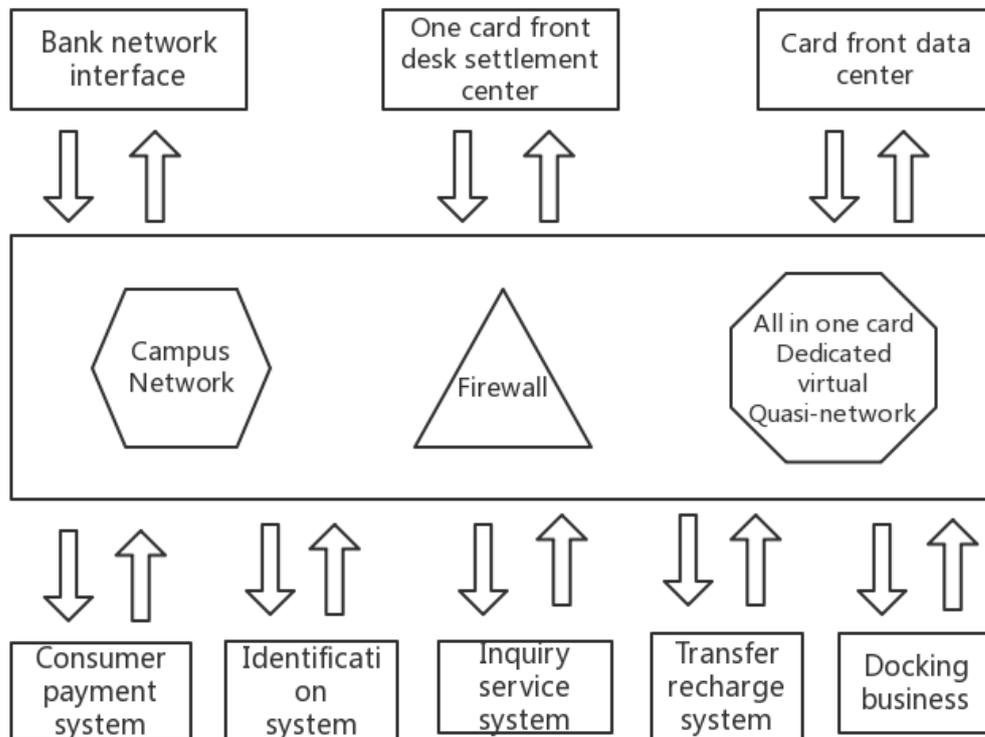
3. Research Methodology

The campus smart card system is based on the campus network, which manages the basic information of teachers, students, teaching, and scientific research in a unified manner to achieve information sharing and centralized control of resources. The holders of campus cards have independent personal IDs. After passing the strict authentication of the unified identity authentication system, they can access the data and system interfaces of the network platform, and ensure the real-time, accuracy and completeness of the data. The system design uses the hardware and software modular design method, fully considers the subsequent expansion of the system, and reserves the corresponding standard upgrade interface and exception handling mechanism to ensure the flexibility of the system and achieve compatibility between system modules. Through modular and component development, avoid repeated investment of resources and reduce development costs

3.1 Research Design

System network structure diagram

The "Campus Smart Card" system must be based on the campus network and operate within the local area network. It can also be interconnected across campuses and uses sophisticated network security technologies to ensure the safe operation of the system. As an important part of digital campus construction, smart card system needs to start with the overall planning of campus information construction, use its own identity recognition function, and integrate with other MIS systems in the school to achieve the sharing and exchange of data resources. From the perspective of business level analysis, the campus smart card system follows the overall plan of the digital campus, adopts unified data standards, specifications and information coding to collect, use and manage user information.



4. Results and Findings

Before the advent of the campus smart card system, traditional colleges and universities had no other convenient means of payment, and most of the consumption relied on cash. This resulted in students often having to carry part of the cash for campus consumption. It could not guarantee the safety of personal property, and it was quite troublesome to change the money. Some colleges also have different types of cards such as a library card and a water card. Students often have to carry the corresponding cards to borrow books and pay utility bills, which is very inconvenient. The campus smart card introduces a new electronic card. All consumer activities in the school can be completed only through the electronic wallet of the card, which is fast and convenient. The electronic card of the campus smart card is the campus ID of teachers and students on campus. Many activities on campus To be completed by identifying the electronic card, to a certain extent, the security of the campus is protected.

In the process of modern campus construction, the emergence of "campus smart cards" promoted the realization of the goal of smart campus construction, and at the same time became one of the most frequently used applications in smart campuses, which is an important component of building smart campuses. More and more colleges and universities have joined the ranks of campus smart cards. Campus smart cards have become an indispensable part of the daily lives of most college students in China.

4.1 Preliminary Data

The following is the feedback of the survey results of the campus all-in-one card cognitive survey, with a total number of 100 people.

1、 Where are you from? A、 China B、 Thailand C、 Other _____

China : Subtotal 42 Proportion 42%

Thailand : Subtotal 57 Proportion 57%

Other : Africa Subtotal 1 Proportion 1%

Effective visits: 100

2、 What is your occupation? A、 School students B、 Teacher C、 Graduate

School students : Subtotal 64 Proportion 64%

Teacher : Subtotal 19 Proportion 19%

Graduate : Subtotal 17 Proportion 17%

Effective visits: 100

3、 Do you understand the campus card? A、 Yes B、 No

Yes : Subtotal 69 Proportion 69%

No : Subtotal 31 Proportion 31%

Effective visits: 100

4、 Have you ever used the campus card ?convenient?

A、 Yes very convenient B、 General C、 Inconvenient

Yes very convenient : Subtotal 62 Proportion 62%

General : Subtotal 23 Proportion 23%

Inconvenient : Subtotal 15 Proportion 15%

Effective visits: 100

5、 What do you think is inconvenient? _____

Reasons for inconvenience are: easy to lose, unused

Effective visits: 100

6、 What do you hope the campus card can do? _____

1. Convenient life 2. Travel discount

3. Take public transportation, subway and other transportation

4. All places available on campus

5. Bank counter

6. Identification

7. Punch in and out of class

Effective visits: 100

7、 If the campus all-in-one card is convenient for your life needs and you don't need cash recharge and other services, would you like to? A、 Yes B、 No

Yes : Subtotal 93 Proportion 93%

No : Subtotal 7 Proportion 7%

Effective visits: 100

8、 Why not? _____

Not unwilling

9、 What convenience does the campus card bring to you? (Chinese students answer)

1. Just take a card when going out

2. Travel convenience

3. Don't worry about not doing anything without cash

4. Simplified the payment process

5. No need to carry cash

Effective visits: 100

10、 How old are you? A、 12-17 B、 18-21 C、 22-26 D、 27-35 E、 35 and up

A、 12-17 Subtotal 10 Proportion 12.05%

B、 18-21 Subtotal 14 Proportion 16.87%

C、 22-26 Subtotal 32 Proportion 38.55%

D、 27-35 Subtotal 13 Proportion 15.66%

E、 35 and up Subtotal 14 Proportion 16.87%

Effective visits: 83

11、 Do you think the campus smart card is reliable? A、 Yes B、 No

Yes : Subtotal 78 Proportion 93.98%

No : Subtotal 5 Proportion 6.02%

Effective visits: 83

4.2 Data Analysis

According to the above data, in China, the campus smart card has been implemented for a long time, and most students and teachers who have used it have a good opinion of this card. There are 42 valid answers to the ninth question, of which 80% of the teachers and students who have used this card think it is convenient to use, and only need to bring a card to go out, which is convenient for life. The remaining 20% of teachers and classmates believe that this card is convenient for us without having to carry cash with us. But in the eighth question, some people think that this card is easy to lose. Moreover, some students report that the school card cannot be used for transportation. Although smart cards have been implemented in Chinese campuses for a long time, they still need to be improved. In terms of the third question in Thailand, 69% have heard of smart cards on campus and 31% have not heard of them, so the vast majority of people have heard of smart cards on campus, so everyone's expectations are very high. In the seventh question, 93% of the people are willing to use campus smart cards and are willing to charge money online and other activities. In the last question, 83.98% of the respondents answered that up to 93.98% thought the campus smart card was very reliable. From this data, it can be seen that students and teachers in Thailand hope that this card can do a lot of things, and the ideas are also very reliable, so From this data, we know that whether in China, Thailand or other countries, everyone hopes to become a digital campus, and let technology enter the campus.

5. Conclusion and Discussions

With the development of high and new technology, with the deepening of the popularization of campus informatization, the functional applications of all aspects of campus smart cards have been popularized in all aspects of campus, and the functional applications of all aspects have successfully solved the needs of the campus, and thus are subject to the management of universities. Vigorously promote and recognize. With the further development of information technology, campus smart cards will also penetrate into all aspects of school life, teaching and management. The campus smart card is based on the

teachers and students in the school as the main service object, based on the internal payment function of the campus, and has the campus digital query function, as well as some life functions and the identification function of the campus teachers and students. The campus smart card is not an independent existence, it must rely on the college campus network. Without the campus network, the smart card cannot realize the functions on the campus. While meeting the daily needs of teachers and students in the school at the same time, it has reserved a lot of expandable space, which is of great significance for the sustainable development of campus digitalization.

5.1 Discussion

According to the results of the research questions, there are many teachers and students who have used it in China. They all say that the campus smart card is very convenient to use, you don't need to carry change, and you can use the campus smart card made by individual schools in your life. Function, this research shows that campus smart cards can be implemented in Thailand, and when inquiring about Thai students, they all expressed great interest, hoping that their campus can also become a digital campus. I think that no matter in which country, nowadays is the age of technology, then the campus is the best place for the country to enter technology, and it is also the most acceptable place for technology. The campus smart card is the best thing to start with the digital campus and it can best reflect the technological era. Although it has been implemented in China, there are still some shortcomings, such as: not all campus cards can be used for transportation, and not all are You can bind Alipay and so on. Thailand's current economic level can fully produce and implement campus smart cards. This project will definitely enable Thailand to enter a new technological era.

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A STUDY ON THE PROMOTION OF INNOVATIVE EDUCATION ADMINISTRATION WITH THE APPLICATION OF BLOCKCHAIN TECHNOLOGY: AN EMPIRICAL STUDY OF CHINESE EDUCATIONAL INSTITUTES

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Abstract

In recent years, along with the rapid development of Internet information technology and the application of big data management, blockchain technology has been benefited by distributed ledger technology with its technical advantages of de-neutralization, high trust, and collective maintenance of reliable data. Governments of all countries have paid great attention and have been widely promoted in the fields of finance, technology, energy, food, and medical care. Adopting blockchain technology to promote the innovative development of education management methods is a topic with great market potential and research value. This article takes the use of blockchain technology to promote the research of educational management methods innovation as the subject, and through analysis of the current status and development problems of the application of blockchain technology in educational management methods, it proposes relevant countermeasures to use blockchain technology to promote the innovative development of educational management methods. It is hoped that through thesis research, it can provide reference development strategies for the application of blockchain technology to promote the development of education management methods. The thesis consists of seven parts. Through the analysis of the research background and significance of the thesis, combined with domestic and foreign research reviews, the research goals and research methods of the thesis are proposed to provide the conditions for the beginning of the dissertation research. the trend of education reform and rigidity in education management in China The disadvantages are analyzed and explained from the three aspects of the new requirements of education development in the new era and the trend of China's education reform, the connotation of education management and its relationship with education development, and the rigidities and disadvantages of education management in China.

Chapter III Blockchain technology and its Development Overview. Analyze and discuss from the development history of blockchain technology, the characteristics and deficiencies of blockchain technology, and the current status of blockchain technology application.

Keywords :Blockchain technology; Education management method; Application

1. Introduction

Based on the trend on Chinese education development and the problems in education administration, this thesis is going to analyze the advantages in promoting the blockchain technology in innovative education administration, and probe into the possibility of the promotion of blockchain technology in innovative education administration in respect of the systems, legislation, investment and some other realities existed in today's Chinese education reform and education administration. In addition, this thesis also goes to analyze the various applications of the blockchain technology in innovative education administration. At present, blockchain technology is one kind of advanced information technology, although people are trying to apply it in various applications, it is still at the beginning, and the imperfections in infrastructure, methods also call us to further explore it so as to find a specific and feasible solution to apply blockchain technology in various fields. It is because of this situation that this thesis just chooses to discuss some perspectives in the application of blockchain technology in the general education administration, and analyzes the feasibilities of them. In the end, this thesis also wants to establish one innovative education administration using blockchain technology, and put forward some specific approaches in promoting the innovative education administration, so as to provide some advices and suggestions to the innovative education administration using blockchain technology.

2. Literature Review

Prior to Chinese researchers, the researchers abroad have given prior research about the application of blockchain technology in education administration. Many education institutions and educators have given certain focus on adopting advanced blockchain technology to promote the development of education informatization, for they believe that this new method can solve many teaching problems, especially the problem about the management of educational background and school roll could develop in a informatized and decentralized direction.

Houberton school, first puts forward the idea that the school records education management information by the application of blockchain technology in the world. The blockchain technology has enforced the identity authentication of the curriculum-oriented data, ensuring the authenticity of the recording of education administration data, which can promote the education information can be stored in blockchain database and guarantee the authenticity of education administration data. The data recording via the open network promotes the valid, safe, essay data administration. Education administration via blockchain technology can save the cost of labor management and search operation, so as to save time at the same time. In 2007, Houberton school publicize some education information on the platform applying blockchain technology.

One digital media lab at Massachusetts Institute of Technology (MIT) once said, if education administration is on the premise of blockchain technology and on the basis of bitcoin at the same time, it can generate some education administration interface through some mobile device APPs, and achieve the point-to-point transmission between the sender and receiver. In 2008, MIT first awards the digital diploma for the graduates via the blockchain platform.

Sony Global Education, one branch of Sony, once claimed that it would cultivate education service system with IBM, trying to provide tracking services to students and to guarantee the safety of education information by the application of blockchain technology, which could make students, school administrators and the future employers could share the data on the blockchain-based platform.

The research about the application of blockchain technology at home begins later than it in the developed countries in European and American, but with the development of blockchain technology, the application of this technology has already been applied and publicized in some fields. Some Chinese educators and education institutes is paying attention to the application of this technology in education administration.

Zhang Zhao, Jin Cheqing, Zhou Aoying (2019, pp. 1-9) put forward, the application of blockchain technology in education administration has a promising prospect and has a great significance in advancing the credibility and open of education administration.

Liu Hu, Yu Yue, Jiang Wansheng (2020, pp. 1-14) said, the application of blockchain technology in education administration in China is still at initial stage, and it has limited cases and ideas in its application. From this point, it is necessary to promote this technology application from the collaborative effort of industry-academy-research and some other aspects. In promoting this technology in education administration, the researchers should give much attention to the characteristics of blockchain technology, so as to dock the technology and education administration.

Huang Lei (2019, p. 142) said, the researcher should pay more attention to the analysis of the characteristics and existing practice of blockchain technology, and the theoretical research about blockchain technology applied in education administration. Only focuses on the technological characteristic of blockchain technology can we promote this technology will be applied in the education administration.

Chen Xiaoling, Luo Kaiyun (2019, pp.170-171) put forward, the characteristics of decentralization, open, distributed data storage possessed by blockchain technology facilitates the reform of traditional student information administration system and makes it easier to be efficient and regulated in administrate student profile from the technological perspective. The application of blockchain technology in administrating student profile is very worthwhile promoting and has a great prospect.

3. Research Methodology

The sample of this survey is the on-the-job teachers teaching tourism service from 6 secondary vocational schools in Guangzhou, Guangdong province. 300 questionnaires were distributed and 298 questionnaires were recovered, and the recovery rate was 99.33%. Among them, 131 are male teachers and 169 are female teachers. According to the design and sampling of the questionnaire, they all meet the requirements of randomness and comprehensiveness.

This research mainly applies the following three methods: information retrieval approach, investigation approach, and comparative analysis approach.

3.1 Research Design

3.1.1 Research period

From October 2018 to October 2019, a questionnaire survey and an interview survey were conducted among six secondary vocational schools in Guangzhou on the application of blockchain technology to promote the innovation of educational management.

3.1.2 Research strategies

In this study, six teachers (1 principal, 4 “backbone” teachers and 1 ordinary teacher) with different titles, teaching ages and ages were selected from six secondary vocational schools in Guangzhou. Interviews were conducted according to the interview outline, and the six interviewees were interviewed and recorded respectively.

3.1.3 Sample design

3.1.4 Data collection

The author is going to analyze the data collected by questionnaire and the interview by SPSS 19.0.

3.1.5 Analysis of the questionnaire samples

3.1.6 Data analysis

The author applies SPSS 22.0 to select and compare some relevant data.

3.1.7 Survey analysis

The analysis on the cognition situation of the use of blockchain technology in promoting education administration is based on the comprehensive analysis of the questionnaire with four choices (very familiar, basic understanding, not very familiar, and not familiar). The detailed analysis is as follows: the research on the application of blockchain in education administration is deficient in our country, which is also attributes to the teachers' low cognition level to the blockchain technology applications in our country. It is of great help to enhance the understanding and familiarity of blockchain technology applications in China, through the analysis of the cognition situation of using blockchain technology.

3.1.8 The reliability analysis of the sample

Importance is attached to the qualitative analysis of the teachers so as to ensure the reliability of the research.

4. Results and Findings

(1) Questionnaires

① Questionnaire development

When compiling the questionnaire, *the questionnaire on the current situation of applying blockchain technology in secondary vocational schools in Guangdong province* is taken (see appendix 1). In the process of compiling the questionnaire, the author develops the questionnaire after carefully checking the relevant references and papers of some master’s and doctor’s and adjust it based on the consultation with my supervisor. The content of the questionnaire is designed with two parts: one is the basic information of the samples, which involves the gender, age, teaching age, major, final education, title, the highest position in school, school property and school category. The other is the investigation on the situation of the promotion of education administration applying blockchain technology from a full-range perspective, which includes seven dimensions: the cognitive situation, the current level and its influencing factors and so on.

② Test of reliability and validity of questionnaire

In aspect of the dependence of the questionnaire, both the reliability and the validity of the questionnaire are tested respectively, on the basis of Cronbach's Alpha the reliability of each item of the questionnaire is tested. The reliability analysis is shown in Table 3-1 below:

Table 3-1 Reliability Statistics

Cronbach's Alpha	N
0.929	33

By investigating the internal consistency of the questionnaire, the results are shown in Table 3-2 below, and the Cronbach's Alpha coefficient of the questionnaire is 0.929(>0.70), which fully proves a good reliability of the questionnaire.

Table 3-2 KMO and Bartlett Tests

Kaiser-Olkin measure of sampling adequacy		0.937
Bartlett Sphericity Test	approximate chi-square	4615.320
	df	528
	Sig	0.000

③ The outline of the interview

Considering the limitations of the questionnaire itself, the survey, which includes 6 people (1 principal, 4 “backbone” teachers, 1 ordinary teacher) is conducted based on the interview with three outlines according to three categories of interviewees (see Appendix 2), for the purpose of more comprehensively and objectively understanding of the present situation of the appliance of blockchain technology in promoting education administration in Guangzhou. The detailed analysis of personal information of the samples are shown in table 3-3 below:

Table 3-3 Analysis of the Basic Personal Information of Interviewees

Teacher	Gender	Age	Teaching Age	Title	Position	Honorary title	Urban/rural
Z	F	27	2	Preliminary	Teacher	General teacher	Urban
C	M	52	30	Intermediate	Teacher	School backbone	Rural
H	M	42	18	Senior	Team Leader	Municipal backbone	Urban
X	F	39	13	Senior	Team Leader	Municipal backbone	Combination of town and rural
L	M	50	30	Senior	Principal	Provincial backbone	Urban

The basic information of the questionnaire samples are shown in Table 3-4:

Table 3-4 The Basic Information of the Questionnaire Samples

Dimensions	Gender/Age/Title	N	Percentage (%)
Gender	M	131	47.67
	F	169	53.66
Age	20-30	146	55
	31-40	79	29.8
	41-50	45	16.0
	Above 51	11	3.9
Educational Background	Secondary Vocational School	2	0.7
	Junior College	14	5.0
	College	192	68.3
	Master	72	25.6
Teaching Age	Doctor	1	0.4
	1-5	139	49.5
	6-10	46	16.4

	11-15	32	11.4
	16-20	18	6.4
	Above 21	46	16.4
Title	Preliminary	118	42.0
	Intermediate	117	41.6
Title	Senior	46	16.4
	Teacher	229	81.5
	Leader of the Grade	23	8.2
Positions	Director of the School	15	5.3
	Principle	11	3.9
	Others	3	1.1
	Junior Middle School	199	70.8
Nature of School	Senior Middle School	61	21.7
	Comprehensive Middle School	21	7.5
	Urban	144	51.2
“Backbone” Teachers	Rural	68	24.2
	Combination of Urban and Rural	69	24.6

As can be concluded from table 3-4, 131 male teachers account for 43.67 percent of the total while the rest 56.33 percent is occupied by 169 female teachers, indicating that female teachers are the main force in the process of applying blockchain technology in innovative education administration in Guangzhou, as well as the phenomenon that the proportion of men and women applying this technology is out of balance. From the perspective of samples' educational background, teachers possessing graduate or undergraduate degrees take up more than half of the total, reflecting the fact that the education level of the teachers in applying blockchain technology in innovative education administration is relatively high. Then the author diverts her attention to the age distribution, teachers aged 20-30 and 31-40 alternatively account for 55 percent and 29.8 percent, which reveals that not only the young and middle-aged teachers are the supporting force, but also secondary vocational schools demands the guidance from more experienced “backbone” teachers to promote blockchain technology in innovative education administration

The analysis on the cognition situation of the use of blockchain technology in promoting education administration is based on the comprehensive analysis of the questionnaire with four choices (very familiar, basic understanding, not very familiar, and not familiar). The detailed analysis is as follows: the research on the application of blockchain in education administration is deficient in our country, which is also attributes to the teachers'

low cognition level to the blockchain technology applications in our country. It is of great help to enhance the understanding and familiarity of blockchain technology applications in China, through the analysis of the cognition situation of using blockchain technology.

Table 3-5 Analysis of the Acquaintance with Blockchain Technology

	very familiar	basic understanding	not very familiar	not familiar
N	17	96	142	26
Percentage (%)	6.05	34.16	50.53	9.25

From the analysis of Table 3-5, the fact is that the vast majority of teachers are unfamiliar with the application of blockchain technology. There are 34.1% and 50.53% of teachers are in the level of "basic understanding" and "not very familiar". Even for the new teachers, they also have a little knowledge about the application of blockchain technology. All these show that both the practice and the research about the application of blockchain technology in innovative education administration in Guangzhou receive little attention by schools.

Table 3-6 The Descriptive Analysis about the Application of Blockchain Technology in Secondary Vocational School

Teachers are innovative in management	N	Percentage (%)	Percentage of the Cases (%)
Every teacher	72	13.6	26.3
“Backbone” teacher	233	44.0	85.0
School leaders	225	42.5	82.1
Total	530	100	193.4

According to the analysis in Table 3-6, the proposition that the “backbone teachers” should equip with blockchain technology taking up 44%, and that teachers with leadership positions should equip with blockchain technology taking up 42.5%. Only 13.6% of teachers believe that each teacher should have the ability to apply blockchain technology. It can be seen from the survey that although the majority of teachers' knowledge of applying blockchain technology is not that much, most teachers still recognize that “backbone” teachers should apply blockchain technology since it can mobilize ordinary teachers to carry out teaching and research activities. The real effect of blockchain technology can be seen only if the vast promotion of it. From the perspective of the comprehensive implementation of the application of blockchain technology, only with more and more teachers' deep understanding of blockchain technology can benefit the full implementation of blockchain technology.

Item's Reliability	Teaching years	N	Mean	Std. Deviation	F	Sig.
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	1-5	139	3.495	0.457		
1. The cooperation ability in applying blockchain technology	6-10	46	3.494	0.592		
	11-15	32	3.422	0.506	0.089	0.523
	16-20	18	3.278	0.635		
	above 20	46	3.467	0.495		
	1-5	139	3.073	0.601	9.698	
2. The research ability in blockchain technology	6-10	46	2.913	0.704	9.653	0.000
	11-15	32	2.994	0.690	9.683	
	16-20	18	2.144	0.706	9.265	
	above 20	45	2.678	0.750	9.358	
	1-5	139	3.049	0.468		
3. The lifelong learning ability by blockchain technology	6-10	46	3.063	0.486		
	11-15	32	2.925	0.512	6.060	
	16-20	18	2.357	0.653		
	above 20	46	2.941	0.635		
	Teaching years	N	Mean	Std. Deviation	F	0.000
4. Teaching reform by blockchain technology	1-5	139	22.364	0.625	8.565	
	6-10	46	3.118	0.544	8.621	
	11-15	32	3.007	0.771	8.623	0.000
	16-20	36	35.688	6.787	8.642	
	above 20	38	2.296	6.879	8.562	
5. Data evaluation ability by blockchain technology	1-5	18	3.128	0.742		
	6-10	46	3.106	0.639		
	11-15	139	3.156	0.633	8.156	0.000
	16-20	46	3.421	0.626		
6. Social contribution by blockchain technology	above 20	46	3.468	0.631		
	1-5	139	3.011	0.459		
	6-10	46	2.960	0.464		
	11-15	32	2.896	0.501	4.282	0.060
	16-20	18	2.537	0.533		
7. Educational advocacy ability by blockchain technology	above 20	46	2.909	0.433		
	1-5	139	3.011	0.459		
	6-10	46	2.960	0.464		
	11-15	32	2.896	0.501	4.285	0.01
	16-20	18	2.537	0.533		
	above 20	45	2.909	0.433		

As Table 3-7 shows, by the variance of the seven dimensions of the blockchain technology, except for the ability to cooperate is not statistically significant, the other six dimensions are statistically significant ($p < 0.05$); in these six dimensions, in the teaching age of 1-5 years and the teaching age of 6-10 years win higher scores. The teaching group of Group 16-20 years wins the lowest score. It can be seen that it is easier for young teachers to accept and support the application of blockchain technology than the old teachers.

5. Conclusion and Discussions

This chapter is the case study which combines information retrieval approach, questionnaire and interview. The author selects six secondary vocational schools in Guangzhou and analyzes the current situation and existing problems of promoting the innovative education administration by the application of blockchain technology. The data collected by questionnaire and interview is analyzed in an objective way, which lays a solid foundation to verify the theory. Currently, blockchain technology, as one of the latest trends in the development of network information technology, adopts the distributed storage structure, which has many technical advantages compared with the information storage structure by the traditional Internet technology. Therefore, it is being explored and applied in many industries. To promote innovative education administration by the application of blockchain technology is one of the ways to explore and apply blockchain technology in the field of education. The application of blockchain technology in education administration is conducive to promoting the informatization of China's education administration, improving the efficiency of education management, which help education administration plays a better role in promoting the running of education system and the quality of education service. At the same time, by adopting the advantage of “decentralization”, the application of blockchain technology in education administration can motivate every education administrator to take part in education administration, even attract ordinary teachers to involve in education administration, so as to eliminate the gap or difference between education administrator and ordinary teachers and improve “pan-politization” existed in education. The application of blockchain technology in education administration is conducive to promoting the innovation and improving the quality of education administration. While improving the efficiency in realizing the value and the goal of education, the application of blockchain technology in education administration also can promote education administration to be developed towards a more innovative direction.

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INNOVATIVE MANAGEMENT OF NIGHT MARKET: STUDY OF THAILAND AND CHINA NIGHT MARKET

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Abstract

The purpose of the study is to better understand the vitality and performance of night markets, the characteristics of night markets, traders, customers and visitors; to determine the density and diversity of night markets. The Thai night market is based on the concept of open-air shopping, where hawkers or hawkers set up stalls in designated places on the street. According to local festivals and customs, a variety of foods and non-foods are available on the market, usually every day. As one of the major tourist powers, Thailand has a large number of people entering and leaving Thailand at all times. In recent years, the number of Chinese tourists to Thailand has increased year by year, and exchanges between China and Thailand have become increasingly frequent. The number of Chinese tour groups is even more alarming. Every time you go to a tourist attraction in Thailand, it must be the only way to check in. For example, the Ratchada Night Market and the Ferris Wheel Night Market are filled with tourists and locals every day. Young people taking pictures, eating souvenirs and snacks are one of the few ways to punch in. The six variables studied were: market characteristics, market food trader profiles and characteristics, customer profiles and characteristics, visitor profiles and characteristics of local and surrounding environments, support and service levels, communities and personality. In addition, the economic impact of the other three aspects on the surrounding communities, various aspects of competition among traders, and product types, scope, and prices are also studied.

With the transformation of consumer concepts and the diversification of business models, distinctive blocks have developed rapidly around the world and have become an image project to create "city card". Such as Wangfujing Street in Beijing, Tunxi Old Street in Huangshan, etc. Governments around the country have also accelerated the construction of cultural characteristic streets and tourist and leisure streets. Snack street as an important part of the characteristic block. Not only adds color to the city's business district. It also integrates the functions of tourist attractions and commercial streets. Therefore, the construction of the snack street can not only promote the upgrade and development of commercial streets, promote the prosperous development of commerce in cities or neighborhoods, bring more economic benefits, but also enrich urban tourism products. It has

a positive effect on enhancing the attractiveness of cities and creating personalized symbols of cities.

With the gradual deepening of my country's urban management system reform, street construction has also entered a critical period. If a night market is to be kept fresh and orderly, the premise must be a management system and managers. "The 'night economy' embodies the city's inclusiveness and urban temperature. The traffic police brigade attaches great importance to the safety of the people visiting the night market, and escorts the development of the 'night economy'. It will do a good job and do practical things." Staff input, police deployment, joint law enforcement, etc. It is required to plan ahead the road to open the "night economy", restrict the passage of vehicles with serious hidden dangers such as large trucks and dirt trucks within the prescribed time and area, and reduce the risk of road traffic. It is required to plan ahead the roads that open the "night economy", restrict the passage of vehicles with serious hidden dangers such as large trucks and dirt trucks within the prescribed time and area, and reduce road traffic risks. The traffic police should fully support the "night economy" and rely on the previous step to work together with the relevant units such as offices, urban management, enterprises and institutions, and night market operating units to coordinate the use of various strengths, do a good job of service guarantee, standardize business behavior, and improve Urban fine management level. Then traffic management is in place and food safety issues should not be underestimated. The existence of a night market is not simply a matter of choice, but a comprehensive proposition of how to standardize and improve it under the existing social and economic conditions and legal framework. Street vendors must survive, urban management must enforce laws, and food must be safe. One is the "lizi" of the city, one is the "face" of the city, and the other is the "hat" of the city. How to choose? This is a comprehensive consideration of the government's urban management level, citizens' happiness index, and food safety guarantee capabilities. Require the food and drug (market) regulatory department to enter the production and operation site to conduct on-site inspections. Sampling inspection of foods for production and operation; checking and copying relevant contracts, bills, account books and other relevant materials; sealing up and detaining foods that have evidence to prove that they do not meet food safety standards or have hidden safety hazards, food ingredients used illegally, Food additives, food-related products, and tools and equipment used in illegal production and operation or contaminated; sealing off places that engage in illegal food production and operation. The existence of the night market shows from the market point of view that the current citizens have needs; from the point of view of people's livelihood, each stall carries the livelihood and career, dream, entrepreneurship of a family on the shoulders; from a cultural point of view, it can show The city's characteristic scenery, landmark culture and customs. The Zhongtai Night Market has its own characteristics, from food characteristics to tourists to landscape characteristics. At the same time, it will bring

warmth and kindness to foreigners and locals with the unique courage and tolerance of the metropolis, and it will also attract more tourists. tourism.

Keywords: Night markets. Manage. Innovative. Food. Inclusion.

Introduction and Background

Due to the rapid economic development and the general inflation of prices, farmers cannot sustain their daily lives by relying solely on the income of their crops. They have to find another way to make a living, and they have produced peddlers, pushing their carts to sell snacks. In fact, urban residents also have this phenomenon. After the employees of some enterprises are laid off, they are faced with the pressure of raising children and supporting the elderly. Good choice. After all, people take food as the sky. But it is certainly not only China, but Thailand is the same. According to historical records, as early as the Han and Tang Dynasties, China and Thailand had friendly exchanges. During the Western Han Dynasty in 1-5 AD, Chinese ships had visited Thailand. During the Ming Dynasty, it was the time when the Ayutthaya Dynasty, that is, the Luo Dynasty, unified Thailand. This is the most frequent period in the history of Sino-Thai relations. The eunuch Zheng He of the Ming Dynasty sent the Luo Luo country twice and received friendly hospitality, which deepened the friendship between China and Thailand. After the Revolution of 1911, China hoped to establish diplomatic relations with Thailand. It has sent people to Thailand to discuss the establishment of diplomatic ties several times, but it has never been successful. After the outbreak of World War II, it cooperated with China's anti-Japanese forces. Until the establishment of New China, China and Thailand formally established diplomatic relations. The joint communique on the establishment of diplomatic relations between China and Thailand resolved the long-standing outstanding issues between the two countries and expressed China and Thailand. Strong desire to develop friendly relations. Since then, the history of China-Thailand relations has opened a new chapter. As far as the populations of China and Thailand are concerned, shopping at the night market can't be better. Now there are tens of thousands of people traveling between China and Thailand every day. The things in the night market are cheap and attractive. Special snacks are definitely one of the must-buy products. Needless to say, it would be great to buy it back as a memorial.

With the development of the epidemic in 2020, from the panic of the crowd at the beginning, to the orderly order afterwards, following the command and arrangement of the leaders and fighting the epidemic together, we have achieved today's remarkable results. While the epidemic in China is under control, Thailand has been growing for almost a month since mid-May, with zero diagnoses. This makes me very happy as an international student. I feel safe all the time and the country is reliable. By the middle of the year, the epidemic situation was basically under control, and the country also widely adopted the practice of stalls. The previous stalls had to be rented or bought at fixed locations, and the prices were not equal. Slightly better places with high traffic It's expensive, so some people can't afford it and choose a remote place. And now, the poor people can come out to set up stalls anytime, anywhere, no one will restrain you, like People's Square, who can't afford the stalls before, can go directly, and sell what you want to sell or even idle items at home. Sell. As

far as I know, this kind of stalling behavior in China is very popular, so that college students who have not yet started school have something to do, they can also exercise their abilities and earn pocket money by their own abilities. In Thailand, I can also eat hot soup noodles and snacks downstairs in the apartment. Due to the epidemic, the outbound rate has been greatly reduced, and it is even more difficult to travel to Thailand. There is no flight to let you travel anywhere, so there is no way to eat the foreign food you miss, such as the famous Thai specialty snack "Mango Sticky Rice" "Rice", this will make you feel the obvious geographical boundaries. Or there is a special feature called "Tong Yin Gong" in Thailand, which is absolutely unique. The sour and spicy tastes are unique to Thailand. It is also imitated in China, but I think it is not the same as the local taste in Thailand. Thai people prefer sweet and sour, these two styles are completely different. I think it can be imitated, but don't ruin its original meaning, retain its own taste, give people an endless aftertaste, a place and a characteristic, if you can eat snacks that don't belong to you, wherever you go Lose the original meaning of tourism. As we all know, the Chinese claim to eat everything, and they can eat it very well. This is the so-called foodie, so the foodie must do anything and eat delicious food everywhere. For example, if the northerners want to travel to the south, the four characters "Chongqing Sichuan Hotpot" will automatically appear in their minds. If they can eat it at home at any time, then they may not travel to Chongqing. Therefore, it is very important to retain the characteristics without being popularized, and it must be passed on in a fixed place to leave precious things for generations.

Literature Review

Every catering industry will launch new products every season, special drinks in summer, limited in winter, so that they will not be abandoned by the masses, because a person's taste will not only change, but also because of the same taste or food, bored and tired Sense, so freshness is very important, which is also one of the management methods of the catering industry. Although the snack street has a huge daily traffic and may even be different tourists, he will also innovate some new products or activities on the basis of retaining the original characteristics. During the holidays, he will also come according to the different festivals. Customize the atmosphere of the exclusive festival. For example, the Dragon Boat Festival, like the friendly relationship between Thailand and China, will hang banners in the streets and shopping malls early to wish the Chinese Chinese a happy Dragon Boat Festival, and will also sell rice dumplings that are not normally available to the Chinese people on the snack street, of course. , Locals will also follow the fun to buy, which also greatly increased sales and increased turnover, which is also innovative management.

Methodology

The current New Coronary Pneumonia incident has a great impact on the national catering industry. In the face of the severe epidemic, most of the physical stores are unable to operate normally. Even if the business is resumed, it will take a long time to resume normal turnover, faced with rent and employee wages 1. All parties to inventory depletion are under heavy pressure. Catering companies have successively launched various emergency plans and operational measures. Some companies that focus on takeaway ports provide consumers with meal services online. The marketing pressure is not large and profitable. Most stores Operating out of passive tactics, he was busy reducing rents and employees. So, how should companies transform from passive responses to active strategies? It is not the goal for catering companies to make money now, it is true to survive. Faced with this dilemma, catering brands must not only get out of the dilemma themselves, but also seize the opportunity to gain social recognition and consumers' behavioral identity, value identity, and concept identity with brand companies.

Charity action. Foreign charity actions are not utilitarian at first, and charities are big or small. In the face of the difficult situation, catering companies can combine their own expertise to volunteer for the society, or they can work together to reduce burdens, share resources, focus on public welfare affairs, and let go of the past The attitude of competition is to overcome difficulties together, because in this epidemic of all the soldiers, there are no opponents, no competition, only comrades.

Caring action. For those who set up their own stalls, caring for their families at home and abroad is the most important part of the measures to break the "epidemic" risk. Because catering companies are most afraid of employee infection, they must be responsible for the safety of employees. Protect their normal lives, appease their emotions, and psychologically counsel.

Product action. The most impact of the epidemic is the dine-in catering that is sold in stores on weekdays. Due to the lack of popularity and consumer groups on platforms such as Dianping, Meituan, Wechat, etc., it is difficult to quickly get favorable reviews and turnaround rates after imitating. Seize the market, make efforts to improve food safety, product simplification, takeaway packaging sales, etc., and try to maintain the leisure characteristics of dine-in food, apply as soon as possible to obtain delivery qualifications, and believe that product quality is the best action.

3.2 Method overview

1. Social responsibility first, establish correct marketing values

This battle is the epidemic of the national war. Enterprises should not wait for rescue and enjoy policy relief. They should actively promote epidemic prevention through their own efforts, give full play to the characteristics of catering, and quickly obtain opportunities to

serve consumers. Marketing, take the initiative to care about the lives of others, with the goal of sharing social responsibilities, increase consumer recognition opportunities for the enterprise.

2. Change sales concept and mix online and offline services

Due to the bleak operation of the store, during this period Dingdong grocery shopping, Hema fresh, daily excellent fresh and other online orders surged. Takeaway delivery has become another new way to solve the crisis and operation. How to break the store operation? Epidemic" self-help? It is recommended that enterprises resolutely change their business methods based on their own product characteristics, self-rescue marketing on the premise of ensuring food safety, and transfer the "store" business model to the "online supply + safe delivery + self-service cooking" sales and service.

In a word, as long as innovation is right, otherwise you will be stepped on by your feet, and you will never take your ideal position. The epidemic situation is not terrible, what is terrible is the hearts of the people, as long as the hearts of the people are stable and not scattered, people will win the sky.

3.3 Research design

3.2.1 Type of method used

Induction

3.2.2 Research strategy

Quantitative research

3.2.3 Time range

First half of 2020

3.2.4 Sample design

Data collection techniques: questionnaire surveys and existing data

3.2.5 Analysis unit individuals, groups, families, departments, etc.

The questionnaire surveyed the students and teachers in my school. Do you like to go to the night market to hang out and eat? I also visited the uncle who sells snacks in front of the school, the original intention of setting up a stall and how to operate it and how to save myself during the epidemic.

3.2.6 Data analysis technology

The technology is good, there is not much discrepancy with the personal investigation

3.2.7 How do researchers ensure the credibility and reliability of quantitative research

Based on the information from the survey stars, I sent another questionnaire for the school students to help fill in the survey of people around and some Thai locals, as well as the survey of friends and family in China, plus the online According to the data analysis, the investigations are basically the same. There will not be very big discrepancies. Moreover, no matter whether China or Thailand, the snack street is very famous and very unique, it should not be disliked by anyone.

3.2.8 Moral considerations

I will definitely report back the big data on the Internet and the results of my own investigation. Careful research will not cause any unethical things.

3.4 Summary

Regarding my survey of students and teachers at school, as well as surveys of uncles, aunts, grandpas and grandpas at the roadside stalls, most of the people will like products with strong characteristics and like to go to the snack street night market because it can make people relax and A great place to go for greedy, but during the epidemic, the night market was closed for a long time. If you want to continue the previous glory, you must also be self-aware, innovate new products or engage in a marketing strategy to attract the attention of the crowd .

Results and Discovery

4.1 Introduction

After the investigation, it was found that most Chinese tourists came to Thailand first to feel the Thai atmosphere, want to spend a holiday and relax themselves, and the second is to enjoy Thai cuisine, look around in the night market, most eat seafood specialties The food is basically Chinese, enjoying Thai specialty food Tom Yum Kung anything and mango glutinous rice, or else go to the famous shops and bird's nest in Chinatown, where the bird's nest is notoriously precious. However, the outbreak of 2020, Thailand also involved, and the administrator immediately blocked the international flights of the airport without thinking, so that no outsiders were allowed to enter. In this way, except for tourists in Thailand, no one came to travel in the past six months. That is the declining period of the tourism industry, which means that the night market is not so lively and prosperous. The night market itself depends on tourists to survive, and the revenue is dismal. Later, the manager informed that entertainment venues such as the night market and karaoke were simply not allowed to open, and did not give you the opportunity to come out to stall, so the night market would not have income, so, wait until the epidemic situation is controlled, then open the night market At the time, you must have your own management style and innovative spirit, otherwise you will lose at the starting line.

4.3 Quantitative research

(1) Do you like the night market regardless of China or Thailand?

More than 95% answered yes.

(2) Would you like a fake or authentic taste?

100% of people like authentic taste.

(3) Do you like distinctive food or casual things?

90% of people think that distinctive food will make more sense.

(4) Do you like to innovate new tastes based on the original ones?

80% of people gave a positive answer...

4.4 Reference analysis

The catering company health code can play the role of consumer supervision, forcing merchants to improve service quality and provide consumers with better quality services; it is also conducive to the supervision and dynamic supervision of the whole process of catering companies, allowing catering companies to be open and transparent Standardize operations under circumstances. The reporter learned from the Hangzhou New Coronary Pneumonia Epidemic Prevention and Control Command that in order to help citizens choose rest assured restaurants, help restaurant companies restore dine-in food, and enable efficient re-inspection, Hangzhou has officially launched a catering company "health code", which is also the continuous expansion of Hangzhou health code Another innovation in application scenarios.

Hangzhou is the first place to launch personal health codes. Now provinces and cities across the country have basically launched their own health codes. More and more places have begun to promote mutual recognition of health codes. Personal health codes have become epidemic prevention and control and resumption of production. "Grabbing with both hands," the weapon. Now Hangzhou has launched a health code for catering enterprises, which is another innovation in epidemic prevention and control, which reflects the wisdom of social governance. For epidemic prevention and control and social governance, more such governance innovations are needed. As the epidemic continued to improve, catering companies around the world gradually opened up dine-in meals, and more consumers were eating out. However, it is still necessary to prevent the epidemic from rebounding, and the epidemic can not be paralyzed. It is still necessary to strictly guard against death. The launch of the health code for catering enterprises will help strengthen the prevention and control of the epidemic in the catering industry.

The health codes of catering enterprises are divided into green codes, yellow codes and red codes like personal health codes. Green codes indicate that there are no hidden dangers in food safety, yellow codes indicate that there are slight hidden dangers in food safety, and red codes mean there are serious hidden dangers in food safety. By scanning the health code of the catering company, you can view the food safety situation of the business, including the dynamic business health code of the business, the video monitoring of the sun kitchen, the risk classification of the business, the license information, the health code status and health certificate information of the returning workers, and the main food source Information, etc., and can directly evaluate the business or report illegal. This is conducive to giving full play to consumer supervision, forcing merchants to improve service quality and provide consumers with better services. At the same time, the system will also mark the customer's dining time and dining place when the consumer scans the code, so that the

personnel who may be needed during the outbreak can be traced to assist in the outbreak investigation. The catering company health code implements two-way supervision of consumers and businesses, which is conducive to epidemic prevention and control during the epidemic and food safety supervision.

The catering enterprise health code makes the catering enterprise's health information open and transparent, which is conducive to realizing the whole process and dynamic supervision of the catering enterprise. Food safety issues in catering enterprises are not uncommon. It is necessary to strictly control food safety, promote the management of catering enterprises, and introduce health codes for catering enterprises, which is conducive to understanding the food safety situation of catering enterprises and allows catering enterprises to regulate their operations in an open and transparent manner.

Food safety is related to the life, health and safety of the common people, so strict management and scientific management are required for catering enterprises. This requires more governance innovations such as health codes for catering companies, putting a tight spell on catering companies, implementing all-round supervision on catering companies, and avoiding regulatory dead ends, so as to promote the operation of catering companies on the track of food safety, so as to better protect food safety.

Conclusion

There is no doubt that the night market, as the soul of a city's night activities, enriches people's lives, promotes the development of tourism and thus drives the city's economic development.

1. The development of the tourism industry has promoted the improvement of the investment soft environment, accelerated the pace of local opening to the outside world, and promoted the value-added and efficiency of the primary, secondary and tertiary industries. Through the development of tourism, it can more effectively promote the cultivation, aquaculture and agriculture. , The development of characteristic industries.
2. Farmers quickly increased their market economy awareness by participating in tourism, which laid the ideological foundation for the adjustment of the rural industrial structure and realized the reuse of primary and secondary industrial resources.
3. The types of talents required for the tourism industry are diverse. Most practitioners have lower technical requirements and it is easier to train and master. Therefore, it is possible to provide more jobs for some unemployed people with lower education level.
4. Promoting commercial consumption and accelerating economic growth; rationalizing and optimizing the industrial structure sector, as a non-productive industry, driving other related industries; the rapid development of cross-border tourism has also played a positive role in the country's foreign exchange income.

The impact of tourism and tourism activities on social culture: the preservation and promotion of the local unique culture has played a positive role in the development of local culture, and at the same time, we must pay attention to the protection of the local culture's internal quality and purity to prevent damage and regression; promote Through cultural exchanges between different regions, mutual learning and common progress have been achieved; the quality of life and spiritual and cultural living standards of local residents have been improved and improved. Because tourists come from various cultural regions and the quality of tourists is different, it is necessary to prevent the destruction of the local social atmosphere and stability. The development of tourism can bring considerable economic first entry, social impact, reasonable and full use of resources, and coordinate the relationship between man and nature, so that natural resources and living conditions can be jointly and beneficially developed. Only when the two are unified can the development of harmonious co-construction be achieved.

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EXPLORING THE CHALLENGES IN BILINGUAL PROGRAM: AN EMPIRICAL STUDY OF THAI AND CHINESE LANGUAGE PROGRAM

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Abstract

China is a big country for students to study abroad. In order to absorb advanced science and technology and experience different cultural atmosphere, the number of Chinese students studying abroad increases every year. By 2018, the total number of Chinese students studying abroad has reached 662,100. Compared with the statistics in 2018 and 2017, the number of students studying abroad increased by 53,700, or 8.83%. With the development of "One Belt And One Road" between China and Thailand, Thailand has gradually become the destination for Chinese students studying abroad. According to the data in recent years, the number of Chinese students studying in Thailand ranks the first. Universities across Thailand enrolled 8,455 new Chinese students in 2017, double the number in 2012. There are now 30,000 Chinese students there, and the number will continue to grow rapidly as more policies are implemented. China and Thailand signed the Agreement on Mutual Recognition of Higher Education Qualifications and Degrees in 2007 and the Agreement on Education Cooperation between China and Thailand in 2009 to build a platform for students to study in Thailand. Although the application process is relatively simple, but the admission threshold is low, demand for language result is not very clear, so the students' own conditions is uneven, most of the students have language communication obstacles, some students in the learning style and the cultural aspects such as living environment there are many don't adapt. This paper takes the graduate students majoring in innovation management who were enrolled in 2018 in The Royal University of Suan Sunandha as the research objects. The main form of questionnaire survey and supplemented by individual interview is to make a statistical analysis of the challenges faced by graduate students in the bilingual course. The statistical method is to analyze the specific challenges faced by students in the bilingual course in the form of the proportion of the population. According to the research results, graduate students majoring in innovation management do not have enough language foundation to study courses when they enter the university. In the absence of language foundation, there are also great problems in the communication between students and teachers. These research results will be of reference

and guidance value to the school in the future in terms of curriculum setting and teacher allocation.

Keywords: innovation management, study abroad in Thailand, bilingual environment

Introduction

With the continuous improvement of the gold content of Thai university education, Thailand has many excellent conditions for receiving international school, as follows: international examination institutions have recognized Thailand's quality of education. Higher education in Thailand adopts the European and American national model in curriculum setting, education methods, and education system. It is understood that the top 5 countries with the most significant number of students studying in Thailand are China, Myanmar, Vietnam, the United States, and Laos. As of July 2016, about 40,000 international students were studying in Thailand. Among them, Chinese students studying at their own expense accounted for 3/4. Compared with 2012, the number of overseas students in Thailand doubled year-on-year^[2]. The number of international students between the two countries has also increased with the deepening of the "Belt and Road" exchanges between China and Thailand. This advantage of not requiring language scores and low costs is also a significant reason for the increase in the number of Thai students studying in Thailand. The increasing number of Chinese personnel, economic and trade exchanges and the need for talents who speak two languages have also expanded, which has also become another important factor for Chinese students to choose to study in Thailand. In the case of a large number of Chinese students studying abroad in Thailand, how to study and live in a bilingual environment has become a problem that needs to be focused on. How teachers teach and how students adapt to this unfamiliar learning environment has become issues that we need to consider and study. Bilingual education and bilingual environment also have a long history in the world. This educational method has undergone earth-shaking changes with the changes of the times and the advancement of science and technology. Some immigration countries started bilingual education at the earliest. Through comparison, we can also find out how bilingual education has changed compared with early bilingual education.

This article takes the graduate students of graduate school as the research object to study this new mode of studying abroad. It explores the challenges that graduate students have in bilingual courses. While this new model of studying abroad brings convenience for overseas students, whether students can adapt to the bilingual environment and how to face the challenges in the bilingual environment will be the primary goal of our research.

Since China sent the first batch of young children studying in the United States since the Qing Dynasty, studying abroad has become a common form of education. Data show that in 2016, the number of students studying abroad and the number of students studying in China increased simultaneously (Chen Dongsheng, 2017). China has become the world's largest exporter of overseas students and the largest destination of international students in Asia. In terms of geographical distribution, the countries where Chinese students study abroad are relatively concentrated. In 2016, more than 90% of overseas students went to ten countries, including the United States, Britain, and Australia. Looking at the academic level, in 2016,

70% of Chinese students studying abroad studied undergraduate degree or above. In 2016, the Ministry of Education formulated the policy of "Promoting the Joint Construction of the "Belt and Road" Education Action," which proposes to build a "Belt and Road" educational community, promote regional education development, and fully support the joint construction of the "Belt and Road" initiative. As an essential partner along the "Belt and Road," the economic, trade and cultural exchanges between Thailand and China have a long history. In recent years, China-Thailand educational exchanges and cooperation has become a model of "Belt and Road" education cooperation ^[3] (Tang Wanhuan, Lan Xialing, 2017). The relevant data from the American International Education Association's "Project Atlas 2017" shows that China is still the world's most important source country for international students. The proportion of Chinese students in the world ranks first in the world, with a percentage of 17.38%. Among them, in the United States, Britain, Australia, New Zealand, Germany, France, Japan, South Korea and other major countries studying abroad, the number of Chinese students is still ranked first. The United States, Japan, South Korea, and other countries have always been the leading choices for Chinese students studying abroad, but with the implementation of some national policies such as the "Belt and Road," studying in Thailand has gradually come into everyone's sight. Studying in Thailand with its low price is within the working-class range, and the advantages of a safe environment, low language requirements, short study time, and simple application process have become the choice of many Chinese students.

Thailand has a high degree of internationalization. Several well-known universities in China such as Chulalongkorn University, Hosei University, Asian Institute of Technology, and Asian University of Science and Technology all offer international courses. All schools are taught in English, and the teaching materials used are imported from the original European and American. At the same time, both foreign and Thai students in the school can use the credit system to align with international standards in the teaching system. All the international students from China are distribution in 44 universities across Thailand. Among these universities, the top 5 majors with the most significant international students are business management, Thai language, market management, global business management, and Thai language education. More than 30 universities, including the National Mahidol University of Thailand, are listed in the overseas university education certification recently launched by the Ministry of Education. However, when applying for Thai universities, one of the most different requirements from European and American countries is that Thai schools do not require English or Thai scores. This requirement provides more choices for students who want to study abroad but have language problems. Although the school does not need students to master English or Thai, the school adopts the teaching format of English teaching, which makes many students who choose to study in Thailand because they do not require language performance have difficulties in learning. These students are unable to

clearly understand what the teacher wants to express in the first place. This situation makes the quality of class decline. At the same time, in the choice of textbooks, the school blindly chooses the original English textbooks and international standards. This way of selecting teaching materials can not be aimed at graduate students of various levels and stages. Whether teachers can clearly explain the content of teaching materials in the teaching process, different cultural backgrounds will also produce different understanding gaps. Secondly, due to language barriers, many international students coming to Thailand also have difficulties in life. Some students are unable to adapt to the environment and cultural customs for a while, and they cannot communicate Efficacious when they encounter some problems or have some questions. In the study life, whether students can express their ideas has also become a key question in learning. Therefore, the focus of this article will be on how the graduate students in the bilingual environment will deal with and face the challenges in the course.

Thailand is currently the only country that can apply for schools without requiring English scores. All states except Thailand need to have English or the country's official language to apply for a school. This new type of education concept has brought a large number of Chinese students to Thailand. In this bilingual environment, Chinese students also face difficulties in life and learning caused by language incompatibility.

To allow students to master English as much as possible, Chinese schools have integrated the learning of English courses into the teaching of students. They have learned the basic vocabulary and grammar of English from an early age, but most of the students trained can only deal with exams. In actual life, there is still no way to speak English. At the same time, there is an accent problem, and real communication cannot be achieved, this is a failed bilingual education. Moreover, this kind of bilingual education for learning languages is not an excellent educational method; at the same time, there are specific problems in the purpose of bilingual education. After recognizing the shortcomings of this education model, many schools have hired foreign teachers whose native language is English to teach, and foreign teachers' profession has begun to be needed in large quantities in China. The employment of foreign teachers makes students indeed in a bilingual environment. The students will subconsciously imitate the accent and language habits of foreign teachers. This subtle influence has caused the former "dumb English" to change. Some foreign teachers even opened their own directly. In international schools, teachers of all courses adopt foreign teachers whose mother tongue is English and create a bilingual environment thoroughly. In the bilingual teaching in the bilingual context of all foreign teachers, the teaching methods have also undergone significant changes, and there will be more communication between teachers and students. Whether in the cultural background or customs, both parties can learn from each other. From this, we can see that daring to speak up is the first step in changing yourself. The research report will point out the significant challenges Chinese

students face in the bilingual education environment in China, Thailand, and English, and propose solutions to these challenges to improve the quality of the bilingual education system.

LITERATURE REVIEW

History of studying abroad

The study abroad in China originated in the Qing Dynasty. The first batch of young children sent to study in the United States shouldered the goal of learning advanced foreign science, technology, knowledge, and culture. From 1872 to the present, countless overseas students have made scientific and technological and cultural development in China. Have a significant impact. The education of studying abroad is not only a component of higher education but also an intercultural experience. It is also an essential way for cultural exchanges between China and foreign countries. It is a meaningful way and forces to promote the progress of human civilization. Its value is mainly reflected in the field of higher education. Aspects: cultural value, economic value, ideological value, knowledge transmission value, development value, and talent training value ^[4]. Returned overseas students who have absorbed advanced knowledge and different cultures can provide strong support for the development of the entire country, change some old educational concepts, promote the development of higher education, and make the school more international and diversified.

With China's growing strength and the in-depth exchanges between China and foreign countries in economics, politics, and culture, the number of Chinese and international students studying abroad is increasing. Chen Guichang believes that since 2007, Chinese students studying abroad have shown a trend of large numbers of students studying abroad, various levels of studying abroad, low age of studying abroad, and self-financed studying abroad^[5]. With the formation of China's self-funded study abroad policy, more and more Ordinary people have begun to join the ranks of self-funded research abroad. The growth rate of students studying abroad in the past decade has been much higher than that of various types of domestic education enrollment. From 2004 to 2014, the average annual growth rate of China's college admissions and the number of students studying abroad the average growth rates are 4.95% and 13.62%, of which more than 91% of students studying abroad since 2009 are self-financed students ^[6]. Among them, the number of middle school students has shown a rapid growth trend. Self-funded study abroad accounts for more than 90% of the total number of students studying abroad. The destination of study abroad is mainly the United States and Northern Europe. The purpose of studying abroad has gradually changed from the original absorption of advanced science and technology culture. At this time, the reasons for studying abroad began to become more diverse. Improving the foreign language level, escaping the competitive pressure of the national college entrance examination, enriching the life experience, and obtaining immigration qualifications have

become the reasons why some people choose to study abroad. Still, these reasons have also caused the unevenness of students' educational levels. Chen Ni believes that with the popularity of self-funded study abroad, not only domestic universities are facing the crisis of losing excellent students, but parents of students also need to withstand higher tuition fees than local universities^[7]. Under such circumstances, some Asian countries with low costs and education levels that are on par with European countries have gradually emerged. Under the promotion of China's "Belt and Road" policy, studying in Thailand has become the choice of many Chinese students.

2010 is the 35th anniversary of the establishment of diplomatic relations between China and Thailand. It's understood that the number of Chinese students studying in Thailand in 2010 has reached more than 9,000. By March 2015, with the "Vision and Action for Promoting the Joint Development of the Silk Road Economic Belt and the 21st Century Maritime Silk Road" jointly issued by the National Development and Reform Commission, the Ministry of Foreign Affairs, and the Ministry of Commerce, Yunnan has been called "building into Radiation centers facing South and Southeast Asia"^[8]. Many universities in Yunnan have established joint teaching cooperation with universities in Thailand. The international teaching quality level recognized by the international community and a variety of teaching courses has attracted more Chinese students to study in Thailand. This is a simple condition of studying abroad. The number of international students has increased significantly. The degree of international students themselves is uneven, which means that not all international students can adapt to strange bilingual environments and live and study in them. Under such circumstances, the study and communication of international students in a bilingual environment have become a significant.

Bilingual Education

Since the 1990s, with the emergence of some significant events in the international economic field: multinational companies have begun to generate, China has successfully joined the WTO, and the rapid spread of global economic talks. All this is happening because China's connection with the world is getting closer and closer, and at the same time, international competition is becoming more and more intense. In this regard, in August 2001, the Ministry of Education issued the document "Several Opinions on Strengthening the Undergraduate Teaching of Higher Education and Improving the Quality of Teaching" ([2001] No. JG 4) to use foreign languages There are specific requirements for teaching. Simultaneously, bilingual education is regarded as one of the critical indicators of teaching evaluation^[9].

The so-called bilingual teaching is to use two languages to communicate and communicate proficiently in the classroom. Bilingual English is "Bilingual," which directly means "two languages," which refers to the coexistence of two or more cultural histories when two (or more) ethnic groups exist in a country or region In context, it may or may be

necessary to communicate in two languages. Of these two languages, one is usually the language of the mother tongue or native language, and the other language is often the second language or foreign language acquired the day after tomorrow. According to the "Longman Dictionary of Applied Linguistics" published by the well-known Longman Press in Britain, the definition of bilingualism in the book is A person who knows and uses two languages. In everyday use, the word bilingual usually means a person who speaks, reads, or understands two languages equally (a balanced bilingual). Still, a bilingual person usually has a better knowledge of one style than of the other. And what is "bilingual teaching," the English of "bilingual teaching" is "Bilingual education." According to the definition given by Longman Dictionary of Applied Linguistics: "The use of second or foreign language in school for the teaching of the content subject." The American linguist Fisherman's definition of bilingual teaching believes that in the most general sense, bilingual education refers to an educational model that uses two languages for teaching in all courses except language classes^[10]. From the above definition of "bilingual teaching," we can see two critical features of bilingual teaching. First: "bilingual teaching" emphasizes the use of foreign languages in non-linguistic majors. Second: Bilingual education emphasizes the use of foreign languages to communicate and interact in the classroom^[11].

Although the overall bilingual education has been improved in the 21st century, focusing on book knowledge and ignoring that listening and speaking culture still makes students' bilingual level insufficient to cope with the right bilingual environment. Bilingual teaching emphasizes the interaction between students and students and emphasizes the interaction of teaching resources, teaching environment, and other comprehensive second languages. It is more than just listening to teachers using the second language to teach in the classroom. Most of the so-called bilingual teaching has such problems due to my experience of receiving English education since childhood. Throughout bilingual instruction, teachers use bilingualism more frequently than students. The students are listening to passively and passively. Still, they rarely have the opportunity to practice and apply, and they cannot reach the second language for communication with the purpose of interaction. Therefore, I think the environment of bilingual education is still critical. It is an excellent way to be in another language-based climate if you want to use a bilingual interface fluently. Students will imitate the language habits of teachers and will interact with residents. If you have communication, you will have more opportunities to use the language directly. However, not all students in a bilingual environment can improve their language skills. They still need to have a particular language foundation. Otherwise, they may have adverse effects, such as loss of interest in learning, inability to complete homework reports, and aversion to communication. Wait for negative emotions. Therefore, from a theoretical point of view, the ultimate goal of bilingual education should be to be able to use two languages to think

proficiently and freely switch between the two languages according to the actual objects and the needs of the working environment.

Development of bilingual education

Bilingual teaching has undergone a long process from birth, development to maturity abroad, and the corresponding bilingual teaching theory has also gone through a very long process. The beginning of bilingual education is the need for communication between people of different languages, a simple language requirement. With the development of the times and the deepening of international exchanges, this kind of exchange is no longer a demand between people. There is also a huge demand for bilingual talents between countries with different languages. Under the continuous development of bilingual education, bilingual education is not just a demand for abilities, but also communication between cultures and a collision between two or even multiple cultures. With the development of pedagogy and psychology abroad, people's theoretical understanding of bilingual teaching has also gradually developed and improved. Practice and the latest research results show that students who master bilingualism not only have no influence on cognition but also benefit greatly. Bilingual education can enable students to achieve a high level of proficiency in both languages, and at the same time, will not harm first language and academic achievement for longevity. With the rapid development of science and technology and related disciplines, Fan Ti and Chen Xiaofan (2003) believe that the purpose of contemporary bilingual teaching is not limited to language learning, but more of cultural output and transmission^[11]. Through the collision of cultures between different languages, students can understand different customs and lifestyles, and be more able to integrate into the international community. Through the study of different styles, students can communicate and communicate with people from different countries. Students can intuitively understand different cultures, religions, customs, and habits in the course of these exchanges. The study of bilingualism is not limited to the knowledge in books, and the way of language learning has also become more abundant and diverse. Students switch from only using books to learning through communication. A more flexible learning method makes language learning more accessible. Integrating bilingual learning into daily life also increases the use and practicality of language. A large number of students begin to study language directly in a bilingual environment. In this bilingual environment, although the students will be a little uncomfortable at first, as time goes by, the advantages of this language environment will begin to slowly manifest. This more profound and intuitive way of learning, while learning the language, also deepens the students' understanding of culture and customs.

China and Thailand have had exchanges since the Western Han Dynasty, and some Chinese have continuously entered Thailand to become Chinese and overseas Chinese^[12]. Approximately 14% (8.4 million) of the Thai population in 2015 was of Chinese origin^[13],

which has an essential impact on Thailand's economy, politics, and culture. With the reform and opening up and China's growing international influence, the importance and necessity of bilingual teaching have become increasingly prominent. One of the conditions for talents in the 21st century is that there are no language barriers. It is an indisputable fact that English has become the universal language in the world. Bilingual teaching is the extension and expansion of English primary language teaching. Today, as the number of students studying in Thailand begins to grow, the earliest batch of students studying in Thailand came from the Sino-Thai cooperation in running schools. At the same time, Zhou Jie (2002) believes that the fastest-growing education market is the Sino-foreign cooperative education model of universities^[14].

In addition to the characteristics of multi-level schools and wide-ranging professional settings, the Chinese-foreign cooperative education system is unique in its teaching links, reflecting a unique cooperation model. Generally speaking, Chinese-foreign cooperatively-run schools all adopt the teaching plans of foreign universities, and the courses are set up following the market needs of both parties. Simultaneously, the bilingual teaching model is divided into three types: mixed type, separated type, and full shape. Different teaching modes have their advantages. For example, teachers of blended teaching use the combination of local teachers and foreign teachers, and the combination of original textbooks and self-edited textbooks, different teaching modes have different characteristics. For example, in mixed teaching, both teachers and teaching materials use a combination of local resources and external resources; separate instruction is taught separately by domestic and foreign teachers. The advantage of this form is that there are many choices for teachers Selectivity; the last type of full-form teaching is in the teaching process, all of which are taught in a second language, but this form of education has higher requirements for students' language foundation. Otherwise, this form of teaching is a burden for most students. This kind of appearance not only does not enable students to learn new knowledge but also aggravates the adverse effects of students' tendency to wear out. The teaching mode currently accepted by graduate students in Graduate School is mixed teaching; that is, teachers use English textbooks to cooperate with Thai and Chinese for education. Because students do not have any Thai language foundation, and there is no Thai language teaching in daily courses, there are many obstacles for students to communicate with Thai native teachers. The school is equipped with native teachers who can teach in English. Although teachers and students use English as a medium between Chinese and Thai teaching, which allows students to have some buffer in the Chinese and Thai bilingual environment, it is easier to understand its content. Still, the students' actual English ability has not reached a better Degree, so the daily course content's difficulty has become a problem that teachers need to consider when teaching.

According to the research of Liu Yongjie (2004), she believes that the current bilingual teaching in the bilingual environment should use the “immersion” teaching mode ^[15]. A language is a communication tool. If you want to improve your language ability, you need to practice and use it after a lot of time. Therefore, for students who wish to improve their language level, the lack of learning environment will indirectly affect their motivation to learn foreign languages and the effectiveness of bilingual teaching ^[16]. Dai Yuncai (2012) proposed that many variables of bilingual learning and the interleaved influence of variables build a very complicated dynamic system that directly determines the effectiveness and final level of bilingual education. Environmental factors are the most respectable components of the energetic system as a whole ^[17]. Create a diversified environment for students and establish effective communication channels, which can be displayed at the sight of students to enhance students’ memory ability. “Let every corner speak” this way of making full use of space is also an advantageous method in bilingual teaching. Through these very detailed ways, you can solve some of the daily life problems that students face in a bilingual environment.

Learning problems require students and teachers to communicate more to find solutions and solutions. We can learn from the Bi Wanwei (2009) wrote an article in this new cultural environment, student behavior, habits, ways of thinking and values should make some changes to adapt to the new cultural environment and learn to communicate effectively in the new cultural environment ^[18]. Gulipi Murati (2015) believes that for bilingual teaching, the situation is also essential. Creating a robust bilingual learning environment and bilingual application environment can effectively improve bilingual learning ^[19]. According to Han Lu (2015), Canada, as an immigration country in the world, was very prominent in the teacher model used in bilingual education at that time ^[20]. The purpose of bilingual education in Canada is to improve the English level of immigrants and increase their employment opportunities. When conducting English education, they are not focusing on education in textbooks, but directly compiling students into English-speaking classes, using this “submerged” English learning environment for adaptive instruction. And they will not provide students with extra-curricular tutoring. It is up to the students to conduct independent learning in this environment. They were using this method to accelerate the students’ adaptation to the bilingual context. However, although this kind of education improves students’ learning speed, most students have obstacles in emotional communication, and physical and mental health has been dramatically affected ^[21]. In a completely unfamiliar environment, when there are difficulties in daily conversation; in fact, many students will have some expression problems. Thus, when to live and learn in a bilingual environment, continuous learning will be mandatory psychological students will have a considerable impact. In the teaching process, students are not considered their level. By placing students in a higher learning level environment, they hope to improve their

degree through the influence of the situation. This teaching method is very inappropriate for low-level students. Therefore, what kind of teaching mode is suitable for students, and whether students of different levels can study together, the school needs to consider. The school also needs to arrange different levels depending on the student's learning level and learning ability. It is not an excellent way to learn and imitate some learning models in European and American countries.

By reading some literature about the difficulties students face in the bilingual environment of English and Chinese, Bilingual learning and teaching are continually changing and changing. At present, it is also an excellent learning method to integrate Thai and Chinese, and to integrate Thai into Chinese, so that students can establish a more transparent thinking mode. Ma Dandan (2016) believes that international students are the leading group of cross-cultural adaptation. They are the most direct contact with the bilingual environment and living in a bilingual environment, and they have the most direct and in-depth understanding of the bilingual context. Studying the adaptability of international students in Thailand can provide reference opinions for the cultivation of international talents in universities^[22]. In addition to the environment of bilingual education, textbooks for bilingual education are also a concern. Yang Yi (2016) believes that teaching materials will have a significant impact on bilingual teaching^[23]. Through a study published by Zhou Xing (2017) on the current use of bilingual teaching materials, we can see that in the ongoing bilingual learning process, students mainly use four types of textbooks. The four books are the original foreign textbooks, word-annotation, translation, and self-edited textbooks^[24]. At present, the textbooks used in the teaching process of graduate schools are all self-editing textbooks. The other three books, such as original foreign textbooks, are a challenge for students in terms of length and difficulty. In the first bilingual education courses, most schools and teachers chose to use the original English textbooks. The choice of such books focused more on the education of knowledge subjects. Still, with the development and changes of bilingual education and bilingual environment, more and more the school is based on the selection of English original textbooks with self-edited textbooks.

The content of the original textbook is generally challenging, and the overall content is relatively obscure. Simultaneously, there are some differences between the actual teaching content and the content of the original textbook. Teachers generally give targeted explanations during the teaching process, so the original book is challenging to target the content of the schedule. At this time, self-compiled textbooks can reflect its advantages. Self-compiled textbooks can be adjusted according to the level of students' difficulty. You can choose specific teaching content, which is more targeted. Also more specific. Although the content of self-edited books may be insufficiently detailed due to the writers' knowledge background, the self-edited textbooks are better than the difficulty of adjusting the manuals and learning according to the students' actual level. This kind of book has more

adjustments. It can be modified at any time. In my opinion, using original textbooks and self-edited textbooks to interpret teaching content is an excellent way to combine these two textbooks. It can not only understand in-depth professional knowledge but also have some details. The supplement above is well worth considering.

In terms of the curriculum, according to the research of Liu Yebing (2013), we can see that knowledge has no borders, so the internationalization of higher education itself is a critical historical mission of higher education ^[25]. While various courses teach professional experience, they should also integrate international, cross-cultural, and global concepts into the classes. The internationalization of higher education courses includes the use of original textbooks, bilingual teaching, foreign language and culture courses, and international problem courses. Cultivating high-quality talents suitable for economic globalization cannot be achieved by one or several bilingual classes in isolation and a group of courses must be constructed. First of all, in terms of curriculum positioning, we should emphasize the general teaching function of professional classes, with the learning of vocational courses as the central core; second, we should focus on training students' expert knowledge and the ability to use professional expertise for international communication; third, in the teaching process Teachers should use some effective methods to stimulate students' learning initiative. Finally, teachers should expand students' global horizons and train students to understand the concepts of internationalization, such as economic globalization. In the curriculum setting, the entire curriculum should emphasize continuity, interlocking as a whole, from simple to complex, and gradual. Bilingual courses should also add some cutting-edge courses related to majors, and encourage evaluation in the classes. How these courses are designed can have a positive effect on students' bilingual courses. The graduate school is the first to let students understand what globalization is in the course arrangement, and teachers will always discuss some hot issues with students in daily teaching. Teachers and students exchange their views with each other. This approach increases the interaction between teachers and students and makes the daily teaching content more diverse. And Sandy Huan (2011) researched teachers conducting bilingual teaching in her research. She believes that as the main body of bilingual teaching practice, teachers should also have strong bilingual ethical knowledge ^[26]. By using the necessary learning materials, through the communication and cooperation between teachers and students, both parties can be well improved in the process of bilingual teaching, which is an excellent learning opportunity for both parties. In the teaching process, language is not only a carrier of culture, and bilingual education is not only a spread of communication but also a reappearance of multicultural background knowledge.

METHODOLOGY

A qualitative research method is used in this study; data were collected by structured interview. The population of this study were 35 students of Bilingual program of Suan Sunandha Rajbhat university. Purposive sampling method is used in this study, data were analysed with the help thematic analysis.

RESULT AND FINDINGS

	Thematic Analysis of Interview
Interviewee	Communication Problem
1	sometimes students were unable to communicate directly with teachers because of language difference
2	Communication problems exist between teachers and students
3	Often feel unable to communicate with the teacher because of the language problem
4	Even the translator was not able to translate the exact knowledge
5	There are still communication problems between teachers and students
6	There lack communication with the teacher.
7	the different language between them hinders the communication
8	there is no good communication on the contents of the course
9	Communication Problem was existing
10	Because of having a translator, there is no big problem in the communication
11	the students cannot understand what the teacher wants to express after translator expression
12	Translation with the help of translation teachers will have an impact on the original knowledge of the teacher
13	difficulties in communication
14	the communication between teachers and students is still difficult
15	A translator was unable to translate professional knowledge
16	lack of language students and may cause great difficulty in understanding the course

17	hard to communicate on the same issues.
	Cultural Difference
1	The cultural gap is relatively small
2	Thailand pays more attention to the expression of etiquette, more formal
3	There is no difference
4	there are some subtle differences in food
5	There is no obvious difference.
6	There is a big difference between
7	There is no obvious difference.
8	There is no difference.
9	in Thai culture, no time management
10	Formal dress is required in Thai schools during exams.
11	Thai people will very formal greeting,
12	Thai people are very low on punctuality
13	There is no obvious difference
14	There is no obvious difference.
15	There is no obvious difference.
16	Thailand has many holidays and attaches great importance to national
17	no special big difference.
	Teaching Quality
1	The quality of education is average
2	quality of education is average
3	The quality of education is average.
4	The quality of education is average

5	The quality of education is average
6	The quality of education is satisfactory.
7	The quality of education is so-so.
8	satisfactory
9	satisfactory.
10	The quality of attending education is average.
11	satisfactory
12	The content of the course involves less professional content and the r...
13	The content of the course involves less professional content and the...
14	There are difficulties in understanding the course content due to lang...
15	The quality of education is satisfactory
16	education quality is not satisfactory
17	satisfactory
	Overall student satisfaction with Bilingual Program
1	It's quite satisfactory
2	Very satisfied.
3	satisfactory.
4	Not satisfied.
5	Satisfaction
6	In terms of teaching content, the school is not professional enough
7	course content is too simple and not professional enough.
8	not satisfied
9	This teaching mode makes the capacity of the same course too large, wh...
10	Satisfaction
11	The curriculum is not sufficiently relevant to the professional knowle...

12	the arrangement between courses is not very good,
13	satisfaction.
14	Satisfied
15	satisfaction. The teacher was very patient in the teaching process and...
16	unsatisfied
17	Satisfied

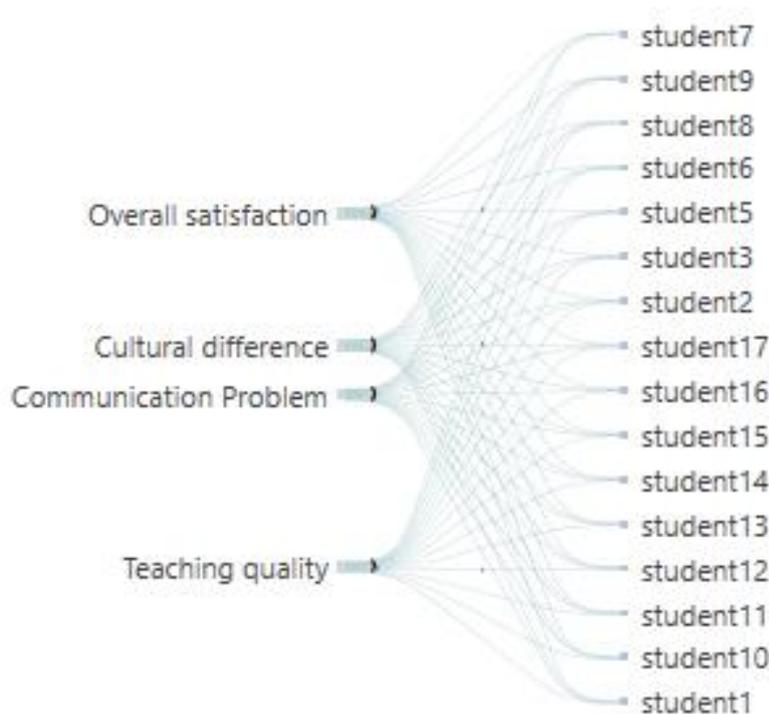
Conclusion

After thematic analysis mentioned in above table, it has observed that students found communication barrier as a most prominent problem during their Thai-Chinese bilingual program. Translation from Thai/English into Chinese sometimes created problem to understand the original concept of teacher.

It was difficult for student to communicate with teachers due to language barriers.

This study found that Thai-Chinese culture is almost similar in term of food, religion and other factors, therefore student could not find any big difference between home country and host country.

Students also declared the teaching quality was satisfactory during their bilingual program, they were satisfied with this program despite some communication barriers.



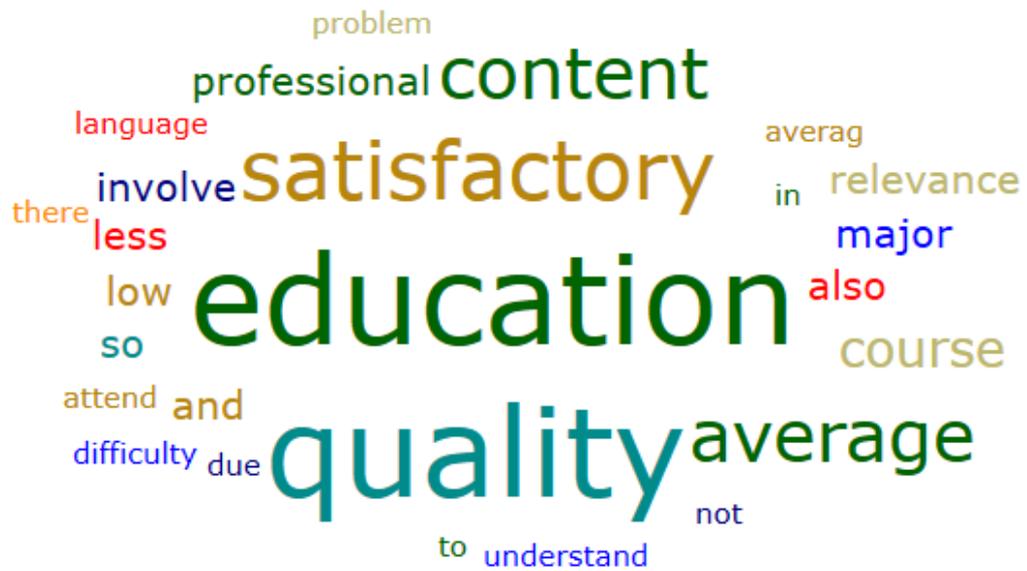


Figure of education Quality

This figure shows, students were satisfied with teaching quality during this bilingual program. However, it was an average program as the course contents were in English language.



Figure of overall satisfaction

This figure shows that students were overall satisfied with course, despite having some difficulties such as communication and translation issue.

Conclusion

Through such a long period of research and investigation, using questionnaire surveys and informal interviews, we investigated whether graduate students of the University of Suan Sunandha Rajabhat University's innovation management major have problems with language and teachers' communication difficulties in a bilingual environment. Through the results of the survey, we can feel that although the school has adopted the coping style of hiring an interpreter to help students overcome the difficulties, it still has not changed the problem of communication between students and teachers. Because there is no effective communication, there is a very lack of communication between teachers and students, and the learning effect of students is not as good as expected. So, in my opinion, schools should still be scheduled before the official curriculum for students of insufficient language skills language courses to improve students' language skills, which can solve the difficult problem of exchange between teachers and students radically.

The entire study also has some shortcomings and limitations in the sample because of too little sample data, so I hope that subsequent studies can expand the diversity of data samples. It may be possible to extend the research object to other Thai universities that conduct bilingual education and compare the bilingual problems faced by teachers and students between different schools. Through this comparison, you can study whether students are facing the same problem in a bilingual environment. You can also compare the learning situation of students under different language foundations. Schools can choose a more efficient way to solve the communication between teachers and students and improve the condition of over-reliance caused by students who hire a translation teacher. Finally, I hope that this article can provide some reference opinions and suggestions for the school to improve and improve the future teaching method of graduate students majoring in innovation management.

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DIGITAL TRANSFORMATION UNIVERSITY FINANCIAL DATA INNOVATION MANAGEMENT

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Abstract

The internal financial data management model of colleges and universities is facing huge challenges. Building a digital campus is an inevitable trend of financial development in modern universities. Many colleges and universities have realized the importance of financial management at the same time. College financial data management is facing an unprecedented test. Financial management is one of the important contents of normal operation and professional development of colleges and universities. Among the various resources of the digital campus, financial data information is the most important. The modernization of education and management modernization in colleges and universities requires that the management system of colleges and universities be combined with information technology to achieve the goal of digitization or informatization on campus. In order to achieve this, colleges and universities need to update their financial management thinking, concepts and models, establish a college financial information platform, and integrate it with other college information management systems to form a digital campus. Under this background, actively constructing the financial information platform of colleges and universities is the need of the actual situation and the trend of future development, which has very important significance. The expected contributions of this paper mainly include the following three points: (1) Aiming at the construction of financial informationization in colleges and universities, a specific model suitable for the construction of financial informationization platforms in colleges and universities in China is proposed; (2) On the basis of summarizing previous studies, it systematically summarizes Problems and causes in the construction of financial informationization in colleges and universities, and put forward targeted solutions; (3) A concrete construction plan is proposed for the construction of financial informationization platform in A colleges and university.

Introduction

At present, our country is vigorously promoting the construction of information technology, and the financial informatization of colleges and universities is also booming. The original financial data management model of colleges and universities is facing great challenges. The construction of digital campus is the inevitable trend of the financial development of modern colleges and universities. Since 1995, the informationization of higher education has been fully launched. its logo is the implementation of "211 project ". So far, the education sector has proposed the goal of continuing to move towards the development and construction of digital campuses. This target already covers about 30% of Chinese universities, and this number will continue to increase. The construction of "Digital Campus" is a hard and long-term work, and it is also an important part of the information construction of colleges and universities. The information construction of colleges and universities is an important symbol to measure the overall construction level of colleges and universities, and it is also an important standard to measure the status of colleges and universities in today's society. Therefore, colleges and universities urgently need to use modern information technology to realize the construction of "Digital Campus Park ".

With the arrival of the new era and new stage, the development speed of colleges and universities is accelerated. On the one hand, many colleges and universities seize the opportunity to achieve leapfrog development, the conditions for running a school are greatly improved, and the enrollment scale is also expanding, which has made great contributions to the transformation of college education. On the other hand, due to the expansion of the scale of running a school and the continuous transformation of the mode of running a school, the single education mode centered on "scientific research" in the past has been transformed into the mode of synchronous development of teaching, scientific research and other activities, technology development, consulting services and production and management. The financial activities of colleges and universities are gradually diversified. Many colleges and universities are aware of the importance of simultaneous financial management. University financial data management is facing an unprecedented test. Financial management is one of the important contents of normal operation and career development in colleges and universities. Of all kinds of resources in digital campus, financial data information is the most important. Therefore, in the rapid development of colleges and universities in the era of digital transformation, we must attach importance to the construction of financial information system, and take the financial data management information of colleges and universities as an important task for the overall development of digital campus. With the development of information technology and the wide use of computers, human society has already entered the information age from the industrial age, and the digital campus has rapidly become an important trend in the development of colleges and universities under this background. The modernization of education and

management in colleges and universities requires that the management system of colleges and universities be combined with information technology to realize the goal of campus digitization or informatization. In the process of information technology development, colleges and universities have realized or basically realized accounting computerization and financial informatization, and managed the funds of colleges and universities by using different accounting software or financial software instead of traditional manual accounting, which has greatly improved the efficiency and effect of the use of funds in colleges and universities. It has made an important contribution to the development of education in colleges and universities. However, with the further development of information technology and network technology, as well as the fierce competition in talent training and academic research in colleges and universities, the single accounting or financial software use in the financial department can no longer meet the demand. The financial management information system of the financial affairs department of colleges and universities needs to be integrated with the information management system of relevant functional departments, such as personnel department, academic affairs office, science and technology department, student department, logistics department and so on, to form an integrated information system, to provide timely, accurate, comprehensive and comprehensive information for the decision-making of the management of colleges and universities, fierce competitive environment. In order to achieve this, it is necessary for colleges and universities to renew their thinking, ideas and models of financial management, establish a financial information platform for colleges and universities, and integrate it with other information management systems in colleges and universities to form a digital campus. Under this background, it is necessary to construct the financial information platform of colleges and universities actively, which is the trend of future development and has very important significance.

Foreign information technology started earlier, developed rapidly, had sufficient funds, and its overall level of information construction in colleges and universities is very high, which has certain guiding significance for the construction of financial information in colleges and universities in China, but because of the different sources of funds at home and abroad, the financial management methods are different. Based on the previous research, this paper systematically summarizes the problems and causes in the construction of financial information in colleges and universities, and puts forward some solutions. (3) It puts forward concrete construction plan for the construction of financial information platform in A colleges and universities.

The research object of this paper is the construction of financial information platform in colleges and universities. Firstly, it combs and evaluates the relevant documents of accounting information and financial information at home and abroad. On this basis, it discusses the concept and existing model of financial information platform in colleges and universities. This paper puts forward some countermeasures according to the existing

problems, and finally takes A colleges and universities as an example to explain the present situation and existing problems of the financial information platform construction in colleges and universities, including the significance, present situation and existing problems of the financial information platform construction in A colleges and universities.

Literature Review

2.1 Introduction

The establishment and perfection of digital campus environment has a profound influence on the establishment of financial data information management in colleges and universities. From the reality, the establishment of financial management information system in colleges and universities can not only promote the reform of financial management system in colleges and universities, but also improve the rationality of financial business processes and standardize financial work. Speed up the efficiency of funds extraction in circulating colleges and universities, strive to improve the quality of financial work, minimize financial decision-making errors in colleges and universities, and strive to improve the work efficiency of financial workers, so as to improve the quality of colleges and universities and the speed of construction and development.

Under the overall goal, financial management is mainly the management of financing, asset acquisition and capital operation, as well as the management of financial profit distribution. Financial management is a part of organizational management and an important part of organizational management. Financial management in colleges and universities is a basic economic management that follows the relevant financial rules and regulations of the state and the principles of financial management, carries out financial management and organizes financial activities.

According to the Financial System for Institutions of Higher Learning promulgated by the relevant departments of the State, the important contents of financial management of institutions of higher learning are: first, to vigorously supervise the economic activities of institutions of higher learning and optimize the allocation of financial resources for institutions of higher learning; third, to compile and carry out follow-up supervision in the light of their own circumstances; fourth, to follow the relevant principles and then raise funds for undertakings; fifthly, to reduce the loss of state-owned assets and their management capacity; sixthly, to strengthen the management of state-owned assets, to establish and improve various economic systems related to finance and to strengthen the standardized construction of the economic environment; and seventh, to truly reflect the income and expenditure of various undertakings of the school and so on.

Financial data management information is to combine modern management means with advanced information technology, take accounting information system as the good basic condition, vigorously carry out the accounting computerization of various financial

undertakings in colleges and universities. With the implementation of financial networking, it promotes the digitization of university management to a certain extent, and finally realizes the informatization of financial data management. With the continuous development of modern information technology and the promotion of economic globalization, the information management mode of financial data in colleges and universities has become an important means to improve the management level and enhance the competitiveness of colleges and universities.

At present, our country is vigorously promoting the construction of information technology, and the financial informatization of colleges and universities is also booming. The original financial data management model of colleges and universities is facing great challenges. The construction of digital campus is the inevitable trend of the financial development of modern colleges and universities. Since 1995, the informationization of higher education has been fully launched. its logo is the implementation of "211 project ". So far, the education sector has proposed the goal of continuing to move towards the development and construction of digital campuses. This target already covers about 30% of Chinese universities, and this number will continue to increase. The construction of "Digital Campus" is a hard and long-term work, and it is also an important part of the information construction of colleges and universities. The information construction of colleges and universities is an important symbol to measure the overall construction level of colleges and universities, and it is also an important standard to measure the status of colleges and universities in today's society. Therefore, colleges and universities urgently need to use modern information technology to realize the construction of "Digital Campus Park ".

With the arrival of the new era and new stage, the development speed of colleges and universities is accelerated. On the one hand, many colleges and universities seize the opportunity to achieve leapfrog development, the conditions for running a school are greatly improved, and the enrollment scale is also expanding, which has made great contributions to the transformation of college education. On the other hand, due to the expansion of the scale of running a school and the continuous transformation of the mode of running a school, the single education mode centered on "scientific research" in the past has been transformed into the mode of synchronous development of teaching, scientific research and other activities, technology development, consulting services and production and management. The financial activities of colleges and universities are gradually diversified. Many colleges and universities are aware of the importance of simultaneous financial management. University financial data management is facing an unprecedented test. Financial management is one of the important contents of normal operation and career development in colleges and universities. Of all kinds of resources in digital campus, financial data information is the most important. Therefore, in the rapid development of colleges and universities in the era of digital transformation, we must attach importance to the

construction of financial information system, and take the financial data management information of colleges and universities as an important task for the overall development of digital campus.

2.2 Literature review

The development of information and computer technology, So that management has changed a lot. One of the important changes in financial management is financial informatization. Accounting management is the basis of financial management, So the research of financial informatization begins with the research of accounting informatization. The research of accounting informatization has laid a solid foundation for the theoretical research and practical development of financial informatization. In the research of accounting information, The first to start was American accountants, their research results are also the most. Specifically, On accounting information, Scholars study the context from the accounting model, To accounting information systems, To the financial information system, The research of accounting model and accounting information system is the main content of accounting information research. Since 1960s, American scholars have explored and studied the development and innovation of accounting model based on the background of information technology development. The basic theory of accounting is the starting point of the research on the innovation of accounting mode. In the study of accounting models, Sorter put forward the concept of event accounting in 1969, Golantoni et al. introduced the database accounting model in 1970, In 1982, Mr. Jing proposed a three-form account, REA accounting model I. proposed in McCarthy1982 year Of which, W.E.McCarthy, professor of accounting at Michigan State University, In 1982? The The RE A Accounting Model: A Generalized Framework for Accounting Systems in a Shared Data Environment's REA accounting model is the most iconic, And the most profound. REA model began to attract attention in American academic and educational circles in the 1990s. And applied to the development of financial information system, These financial information systems, developed in REA mode, compare with traditional DCA accounting models, have obvious advantages. Accounting Information System (ASIS), based on REA, has been used as a textbook in some American universities.

For financial (accounting) information systems research, The research results of scholars at home and abroad are extremely rich, and plays an important role in constructing the whole management information system of the enterprise. As part of business management information, The financial (accounting) information system mainly studies from the financial (accounting) information data model and the system control angle, The research of financial (accounting) information data model is closely related to the research of accounting model. Research on accounting information systems, The research and application of financial (accounting) management information system abroad have also made

breakthrough progress. Has produced a number of application information systems, e.g. Logistics demand plan (Material Requirements Planning,) MRP), (Manufacturing Resources Planning,) MRPII), Enterprise resource plan (EnterpriseResources Planning,) ERP), Supply chain management (Supply Chain Management,) SCM), Customer relationship management (Customer Relation Management,) CRM) etc system. Since the 1990s, Is widely used in manufacturing and commercial enterprises. American colleges, The research and application of financial information is also ahead of the world, Especially in practical applications, Information technology in the management of things on campus, played a huge role. In the summer of 1996, norida University, First came campus smart cards, In 1997, more than a dozen colleges and universities began to run the "one-card" system, Then this new management, To some universities in Europe and Asia, It promotes the development of university towards the integrated management of campus finance and business. American colleges and universities in budget management, fund management, financial analysis and decision-making, etc. Has formed a complete management system and management information system, And plays an important role in the management of colleges and universities.

Compared with foreign countries, China's research on accounting informatization and financial informatization is relatively late. The important reason for this is that our country's information technology and computer technology started late and developed slowly compared with developed countries, especially the United States. As a whole, the research on financial informatization in our country has not only the research on accounting mode and accounting information system, but also the research on accounting computerization, accounting management informatization and financial management informatization with the characteristics of accounting and financial management in our country. From the literature published in recent years, scholars have formed a large number of research results on these contents. From its impact on the university this special industry, the current collection of foreign research literature is relatively limited. Because of the particularity of the management system, the research on financial information in colleges and universities in our country may be more instructive and practical. With the rapid development of China's economy after the reform and opening up, China's informatization process has been accelerated, and financial informatization has been paid more and more attention. In the 1980s, accounting computerization began to be introduced into the daily work of accounting. With the continuous improvement of people's understanding, the concept of accounting (management) informatization is also considered to be able to describe the combination of information technology and accounting work more accurately. As the content of financial management is more and more introduced into the function of information system, the concept of financial informatization is more and more accepted and recognized. On the

whole, the research on financial informatization in our country mainly starts from the following aspects:

To address the question of how to change the traditional financial (accounting) model, Chinese scholars have conducted all-round research, and put forward a lot of theoretical ideas. In the study of accounting models, Professor Xu Yongbin (1996), in "The Theoretical Basis of Computerized Accounting Information System Model Reform in China ", A CAIS model is proposed. Professor Xue Yunkui (1999) proposed the concept and model of accounting channel. Professor YANG Zhou-nan (2003) presented the ISCA Model of Accounting Management Informatization (Information System) Control and Auditing) models. Professor Wei Pei-wen (2003) proposed a model to reconstruct the accounting model in the revolution of information REA accounting model. In lieu of debit and credit, more suitable for computer processing financial information and so on. These findings, The traditional AIS (which Prof. Wei calls DCA accounting) is a theoretical breakthrough, is also a breakthrough in the way of thinking.

On the coming of the information age, the change and influence of accounting model and accounting theory , " the current enterprise report is often limited to financial statements, and does not take into account the extensive information needs of users, so it can not meet the needs of users to fully understand the opportunities and risks of enterprises and the development prospects of enterprises, the basic function of accounting is by no means fixed, his development and change depends on the change of accounting environment, but also depends on the level of people's ideological understanding "(Guo Daoyang ,1997). "In the past, when we expounded the relationship between accounting objects and methods, we often only talked about object-determining methods, but not under certain conditions, methods can also affect objects, and together with objects to determine the signs of accounting.

Many experts and scholars have also discussed this problem in depth. For example, Yang Zhounan (2005) proposed that the development stage of accounting information system and financial management information system construction can be divided into three stages: the practical processing stage, the system-oriented stage and the decision-oriented stage. As for the development of accounting information system, Wang Hailin put forward the view that EVC method can be applied to the development of accounting system.

The research of Liu Hong (2005) shows that the construction of accounting computerization in colleges and universities is the basis of financial informatization in colleges and universities, while financial informatization in colleges and universities is the development of accounting computerization in colleges and universities, which can provide more timely, effective and more financial data for university management to make decisions. The construction of financial information in colleges and universities transforms the general financial software into management software, which makes the financial software not only

have the functions of general data entry and collation, but also the functions of financial analysis, budgeting, financial forecasting and financial control. At the same time, the financial software and other information systems in colleges and universities are docked to form an integrated processing of various kinds of information.

Foreign research on financial information of colleges and universities is to take colleges and universities as non-profit institutions to study, forming a relatively complete set of financial management system and information system. Especially in the United States, colleges and universities began to build a "one-card" system in 1996, and realized intelligent management in colleges and universities, and became the leader of information development in colleges and universities.

(1) From the content of the research, the research of financial informatization in colleges and universities can be divided into the following aspects: the influence of the development of informatization on the financial management mode of colleges and universities, the countermeasures of financial management in colleges and universities under the information environment, the difference and connection between traditional financial management and financial management informatization, the goal and function of management information system and the different construction mode of financial management information system in colleges and universities.

(2) In the study of financial information in colleges and universities, the research focuses more on the characteristics of their own management system and financial management. In the construction of financial (management) information system research, pay more attention to the needs of financial management in colleges and universities. In recent years, the improvement of financial management level and the acceleration of information process in colleges and universities have a great relationship with the related research. From the point of view of the research, the concept of accounting informatization and financial informatization in colleges and universities and the related research mainly focus on the following aspects: what is accounting informatization in colleges and universities, what is financial informatization in colleges and universities, what is the significance of financial informatization construction in colleges and universities, what is the situation of financial informatization construction in colleges and universities, what are the main ideas and measures of financial informatization construction in colleges and universities, and the advantages and ideas of financial informatization platform construction in colleges and universities. For the study of these issues, with relatively strong Chinese characteristics and industry characteristics.

Research Methods

The evaluation model established in this paper starts from two aspects: one is to establish the evaluation index system of financial data management ability in colleges and

universities, the other is to study the index weight, and the final evaluation basis is the index system and the weight result. In the construction of index system, it is mainly carried out on the basis of literature research, field research in colleges and universities and expert interviews.

Combined with previous research and field research, this paper intends to evaluate the data collection ability, data analysis ability and data application ability from three aspects. It is supplementary to evaluate the data definition ability and data security defense ability by using interview method, questionnaire method and expert interview method, respectively. Therefore, from five aspects of data definition, collection, analysis, application and security prevention, this paper establishes the evaluation index system of financial data management ability in colleges and universities.

Results and Findings

4.2 Descriptive statistics

To meet the requirements of the information age, the construction of financial information platform in colleges and universities is the inherent requirement of digital campus, which needs to be coordinated with the financial reform of government departments and the construction of information technology to meet the actual requirements of financial management in colleges and universities at present. In the concrete construction of financial information platform in colleges and universities, we should make full efforts to strengthen the function and function of financial information platform, so as to better serve the management of colleges and universities and teachers and students and staff.

In the specific construction of financial information platform in colleges and universities, mainly from the following aspects to consider:

The construction of financial information platform in colleges and universities can not be separated from the necessary network environment. Before the definition of financial informatization in colleges and universities has already told us that financial informatization needs to use network technology. Safe and reliable campus network is the foundation of financial information platform construction, and it is also the foundation of the integration of information management system in colleges and universities. At the same time, safe and reliable campus network is the necessary prerequisite for data security. Therefore, in the construction of financial information platform in colleges and universities, we should first fully consider the security and reliability of campus network, and strengthen the construction of network environment.

The goal of the construction of financial information platform in colleges and universities is to integrate with other information management systems in colleges and universities into an integrated information system to form a digital campus where different management information can be circulated and shared in time. Based on this, the

construction of financial information platform in colleges and universities should fully consider the development trend of digital campus in colleges and universities, standardize the data interface between different information management systems, and consider the consistency of data structure and so on.

The construction of financial information platform in colleges and universities is a systematic project, which involves not only all aspects of financial management in colleges and universities, but also different information management systems in the whole school. Therefore, before building the financial information platform of colleges and universities, we should make overall planning and overall layout. Colleges and universities should do a good job of pre-research, demand and feasibility analysis, and at the same time investigate whether the campus hardware and software facilities meet the needs, must ensure that the financial information platform is established in a stable and reliable environment.

Future developments are uncertain, but it is certain that future demands will increase and _ become higher. In order to make the expensive financial information platform can play a role for a long time, the construction of hardware platform, under the applicable premise, consider leaving the necessary redundancy, to leave space for the future financial management information system, to ensure that there will not be less than three years after the construction of information platform backward situation. The construction of software platform also needs to fully consider the choice of this point, as far as possible to choose the strong, in line with the future direction of software to use, and not to use for a period of time after being disappeared.

The construction of financial information platform is to make full use of computer and network technology and financial management to meet the needs of people to work efficiently, use easily, and make decisions useful. Simply put, the purpose of the construction of financial information platform in colleges and universities is to meet the needs of use. In the early stage of construction with high cost and high cost, we should fully take into account the needs of different subjects in colleges and universities, such as the management needs of university management, the teaching and scientific research requirements of teachers and employees, and the students' learning and living requirements.

4.3 Implementation of the Financial Information Platform in Colleges and Universities

Generally speaking, the financial information platform of colleges and universities is mainly implemented in the following seven aspects, which are described as follows:

4.2.1 Account Management Module

This module processes the financial data involved in the school finance department, including financial data entry, budget issuance, final accounts preparation, financial statements generation and so on. Specific content has 1) voucher management, including voucher entry, voucher modification and voucher deletion ;2) cashier management, including

cash cashier, bank cashier and cashier review ;3) account book management, including general ledger, detail account, auxiliary account and query results can be printed ;4) report management; and 5) accounting post authority setting management.

4.2.2 Asset Management Module

This module mainly completes the school's state-owned assets, construction projects in progress, teachers and students rent and water and electricity management and related contract management. The specific contents are 1) fixed assets management and non-fixed assets management ;2) project management ;3) rent management ;4) water and electricity management for teachers and students; and 5) contract management, unified management of the various contracts signed by the school.

4.2.3 compensation management module

This module is to provide the personnel department with the function of adding and modifying the basic data of the staff, as well as the management functions of the staff attendance, travel, leave, overtime and so on. The specific contents are as follows :1) wage management includes wage standard setting ;2) data query can be found in salary management module including wage information, wage standard, wage change ;3) time management, including attendance management, overtime management and travel management ;4) report printing, including payroll summary form, change approval form, payroll and attendance form, etc., or exported in Word and Excel format; and 5) system setting, including authority setting and user management.

4.2.4 Student Charge Management Module

This module is mainly for the Department of academic Affairs to manage student fees, which is closely related to finance, including: tuition fees management, agency fees management, arrears management and so on. The specific contents are 1) student charge management ;2) tuition fee, agency fee management ;3) arrears management; and 4) other functions, such as the generation, inquiry, printing function of various related reports or the fee help function for students in difficulty.

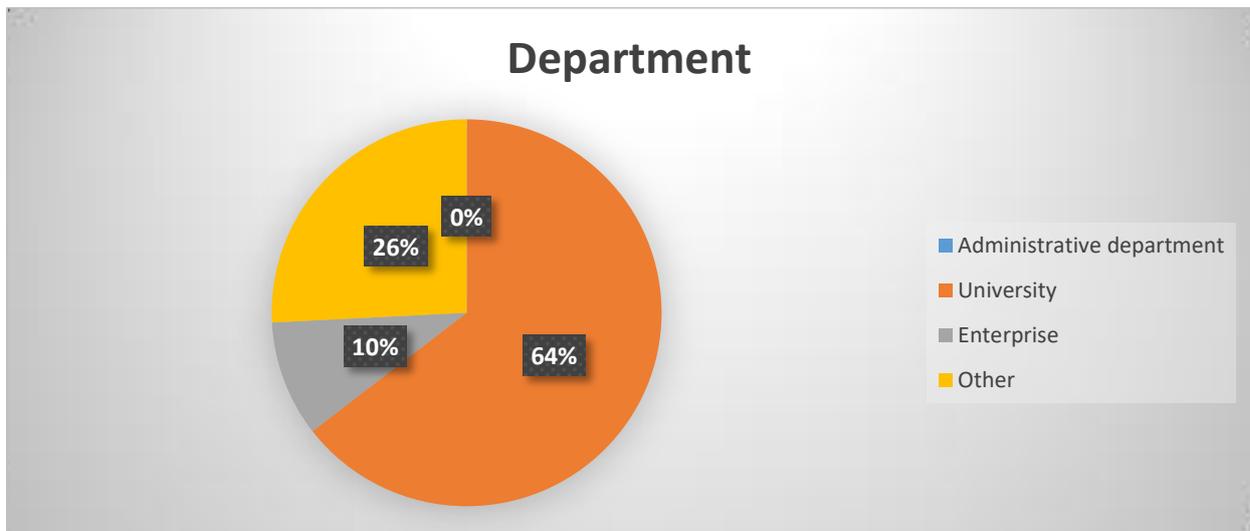
4.2.5 information management module

This module mainly realizes financial related information query, maintenance, statistics, exchange, printing, data export and other functions. Specific contents include 1) information maintenance, including information input, information modification and information deletion ;2) information query, statistics, including providing query according to various conditions, query results and statistical analysis and query results can be printed, with the function of exporting to different electronic file formats ;3) information exchange, as a key link of the system, should have the functions of information reporting, receiving and backup; and 4) report printing, can generate information reports through system conditional query, export to different types of electronic format files and print.

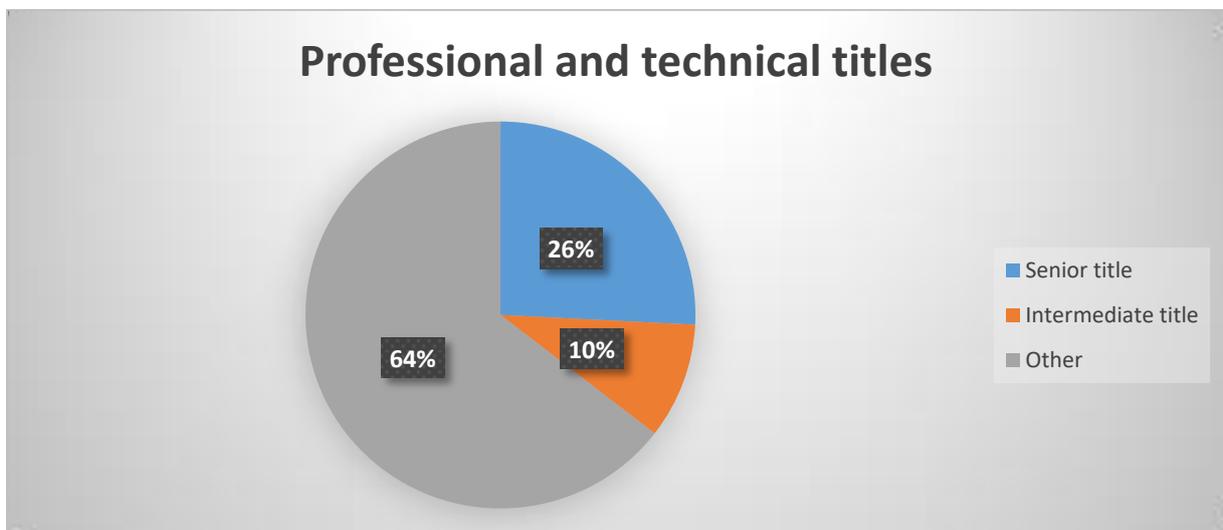
4.2.6 Statistics and Analysis Module

This module mainly provides the function of custom conditional statistical analysis across modules. Concrete content has 1) the module provides the statistical condition setting function, the report use authority management function and the display format design and the storage function and 2) provides the import own WORD、 EXCEL format report function and the graph statistics analysis function.

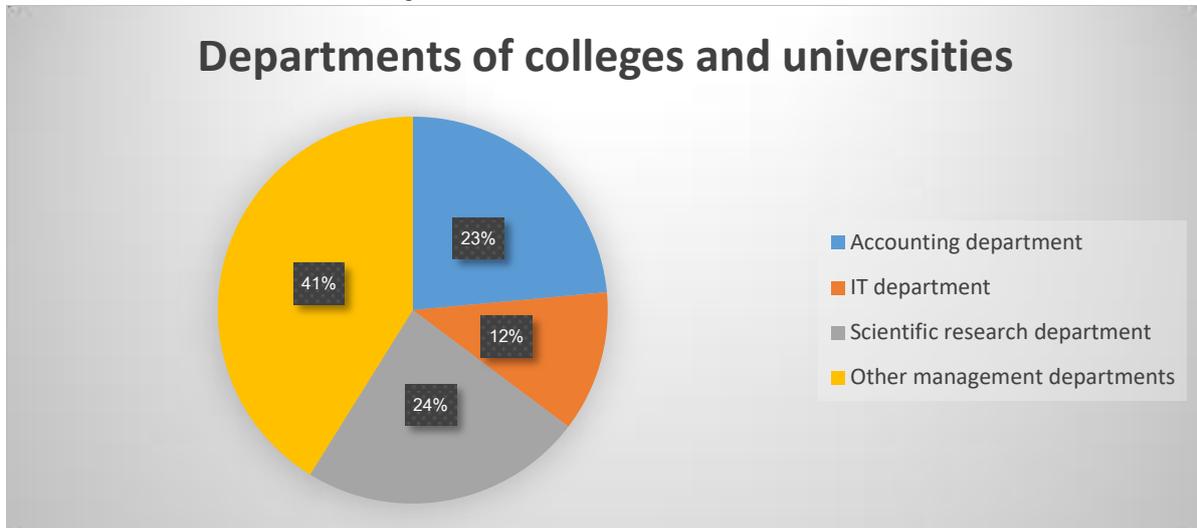
This data survey adopts the form of online anonymous questionnaire survey, which is filled out by the respondents in an anonymous test, and the number of survey persons is controlled within the number and range of 5000-8000, reducing the impact of extreme data on the results, and ensuring the accuracy and availability of the results. Credibility.



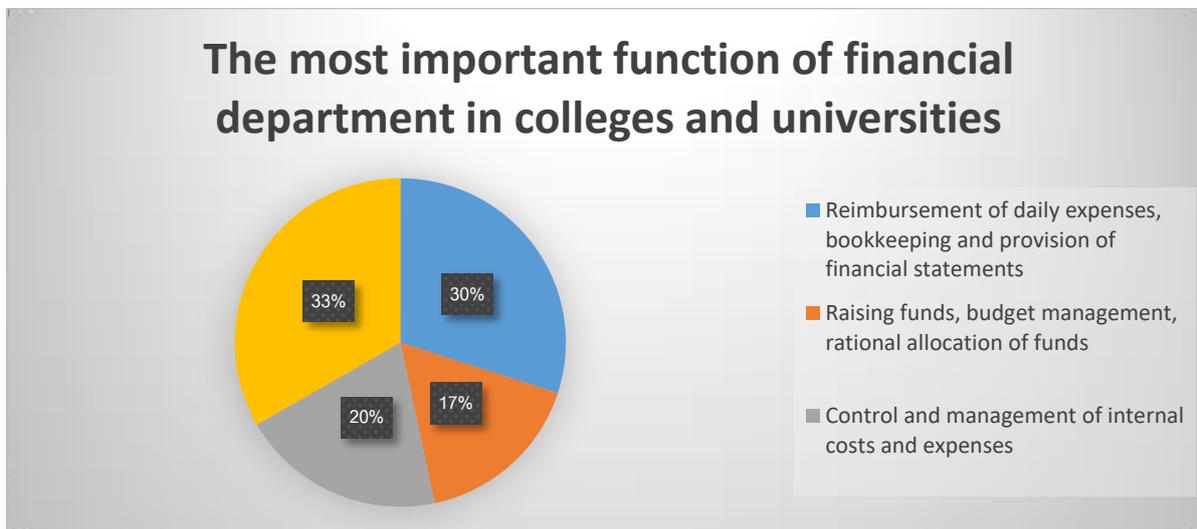
64% of the target units of the groups involved in this survey are colleges and universities, 10% are employees of in-service companies, and 26% are other practitioners. The survey group is more in line with the objectives of this survey and has certain authenticity and effectiveness.



In the survey group, 26% are senior professional titles, 10% are intermediate professional titles, and 64% are basic professional titles. The distribution of professional titles is also more in line with the current distribution of people at all levels, reducing a certain fault tolerance rate and making the results more accurate .

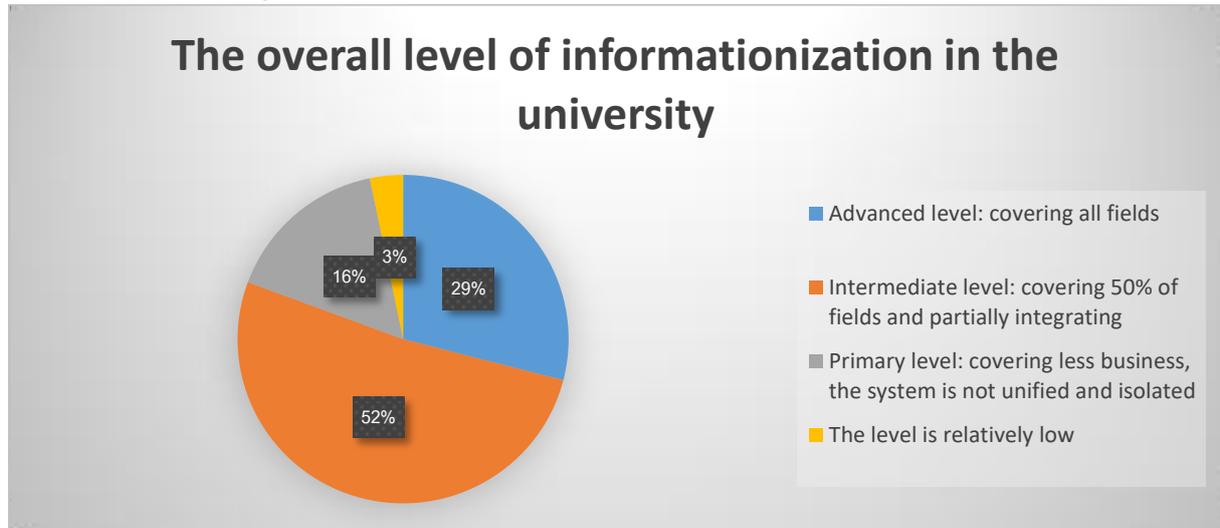


The target unit is the population of colleges and universities, of which 23% are in the accounting and finance department, 12% are in the IT department, 24% are in the research and teaching department, and 41% are in other management departments. The positions of the investigators are relatively evenly distributed

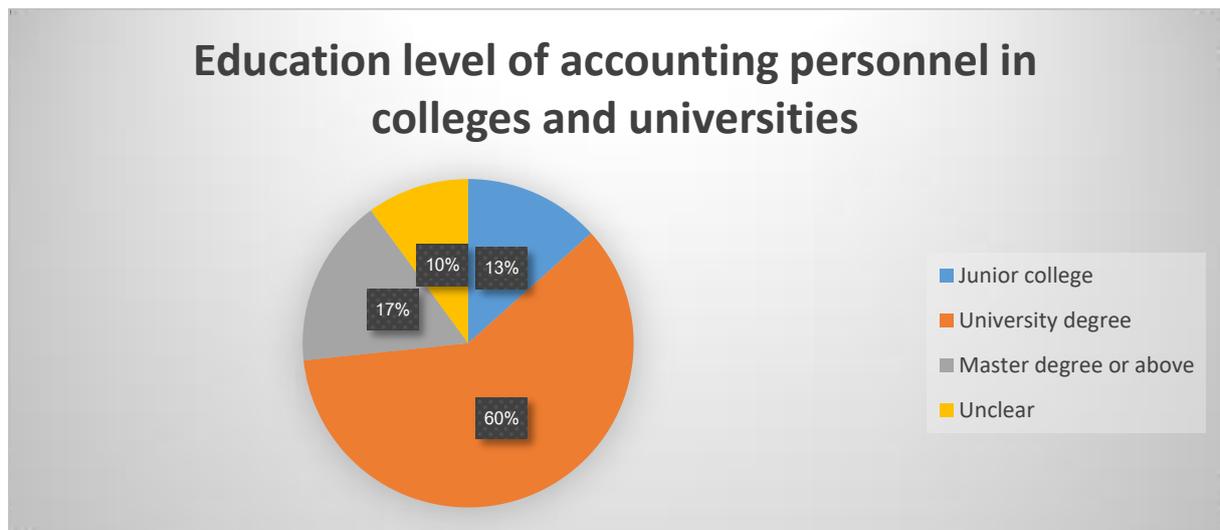


According to the survey, 30% of the people think that the most important function of the financial department of colleges and universities is for the work, and 30% think that it is used to raise funds, budget management, and provide financial statements. Reasonable allocation of funds, 20% of people think that it is to implement internal cost control management, 33% of people think that budget performance management, strategic budget and other issues provide a basis for decision-making. It can be seen that most of the responsibilities of the financial department of colleges and universities are relatively

conservative, and they are generally considered to be used for daily financial management and decision-making.



According to the data, 81% of people believe that the overall level of informatization in their colleges and universities is above average, and only 3% believe that the overall level of informatization in their high-level universities is low.



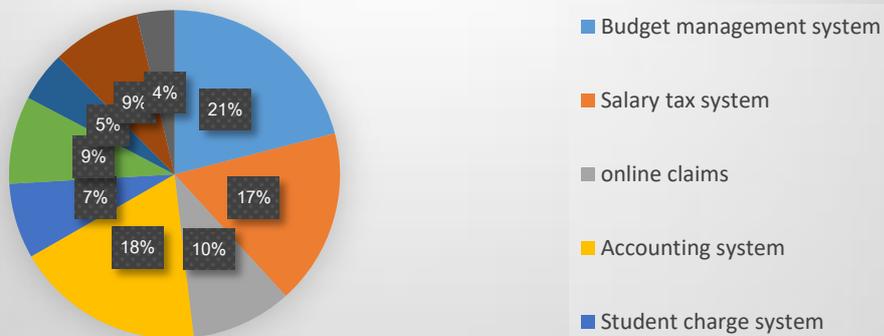
When investigating the current education level of accounting personnel in colleges and universities, 13% of people think that they have a college degree, 60% think that the current education level of accounting personnel in universities is a bachelor's degree, and 17% think that they have a master's degree or above. 10% of people do not know. Most people believe that the educational level of college accounting personnel is generally below a master's degree.

Time of contact or use of financial management information system



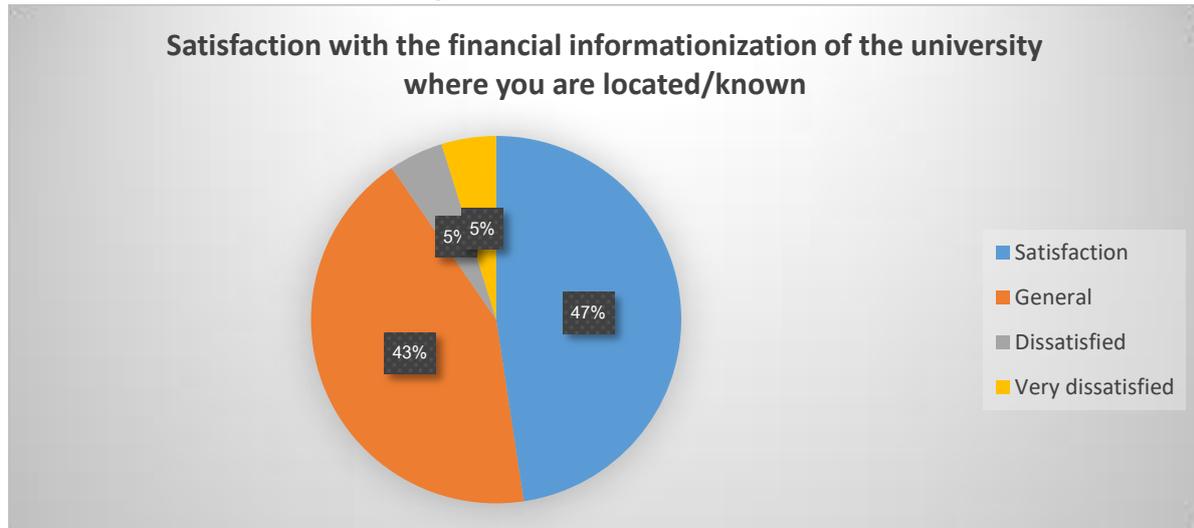
When investigating the time of contacting or using the financial management information system, 76% of the people said that the time of contacting or using the financial management information system was only 1-2 years, 14% were 3-5 years, and 3% were 6 In - 9 years, 7% of people are more than 10 years old. It can be concluded that the time of general contact is not long, and the financial information management of universities is not very popular.

The financial management system module being used in colleges and universities

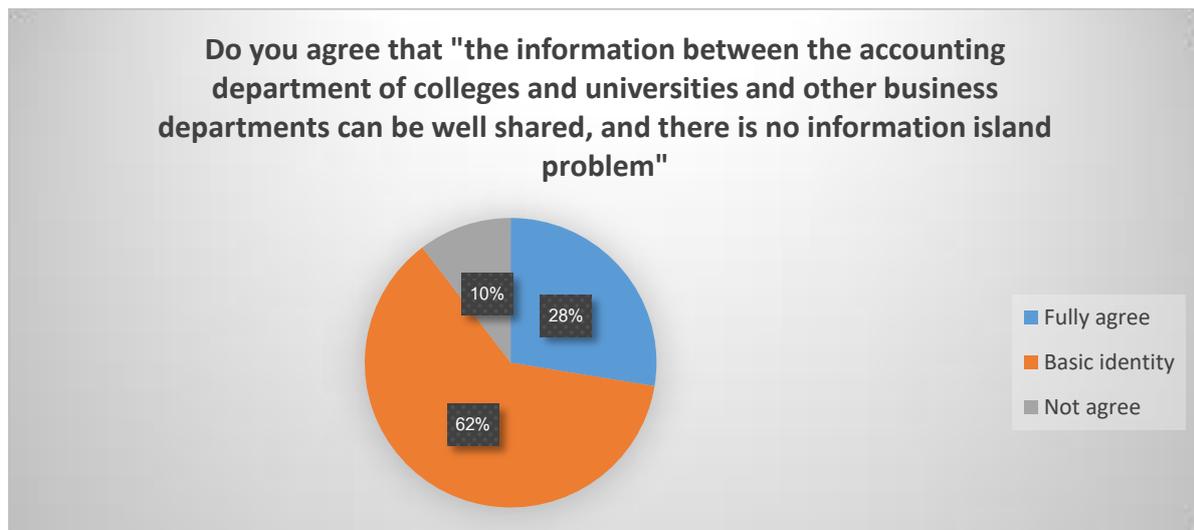


When investigating the financial management system modules used by colleges and universities, 21% said it was a budget management system, 17 said it was a salary and tax system, 10% said it was online reimbursement, and 18 said it was an accounting In the accounting system, 7% of the people said it was a student charging system, 9% said it was a direct connection system to a bank, 5% said it was a financial management cockpit platform, 9% said it was an online inquiry system, and 4 % Of people said that it is a unified decision-making support platform, and the results of the survey are many. It can be seen that the financial management system of colleges and universities does not have a very standard and unified platform or system commonly used by everyone. It is of great practical significance to

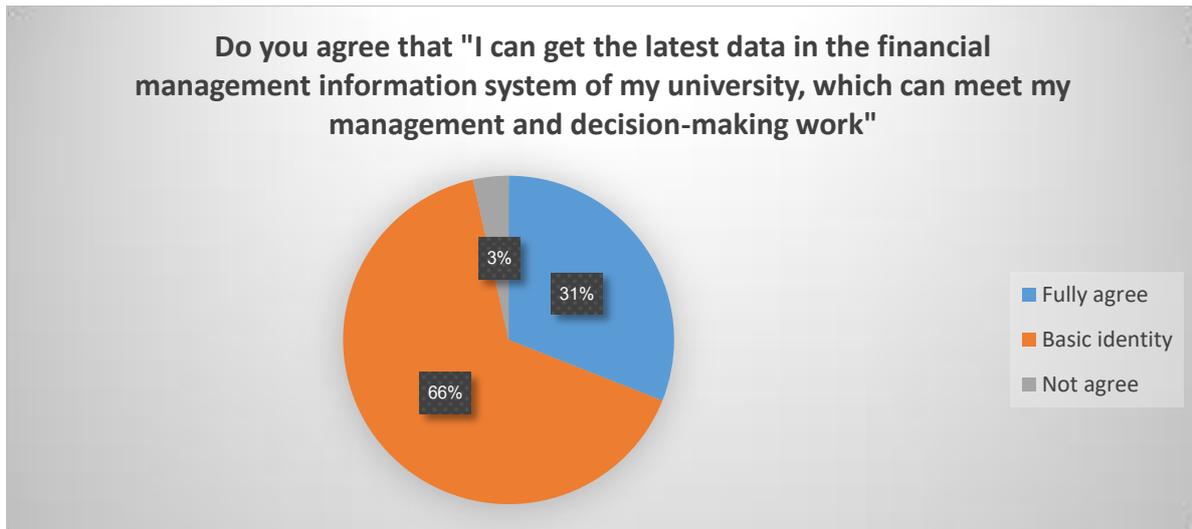
build a financial information platform that can meet the financial needs of colleges and universities for normalized management.



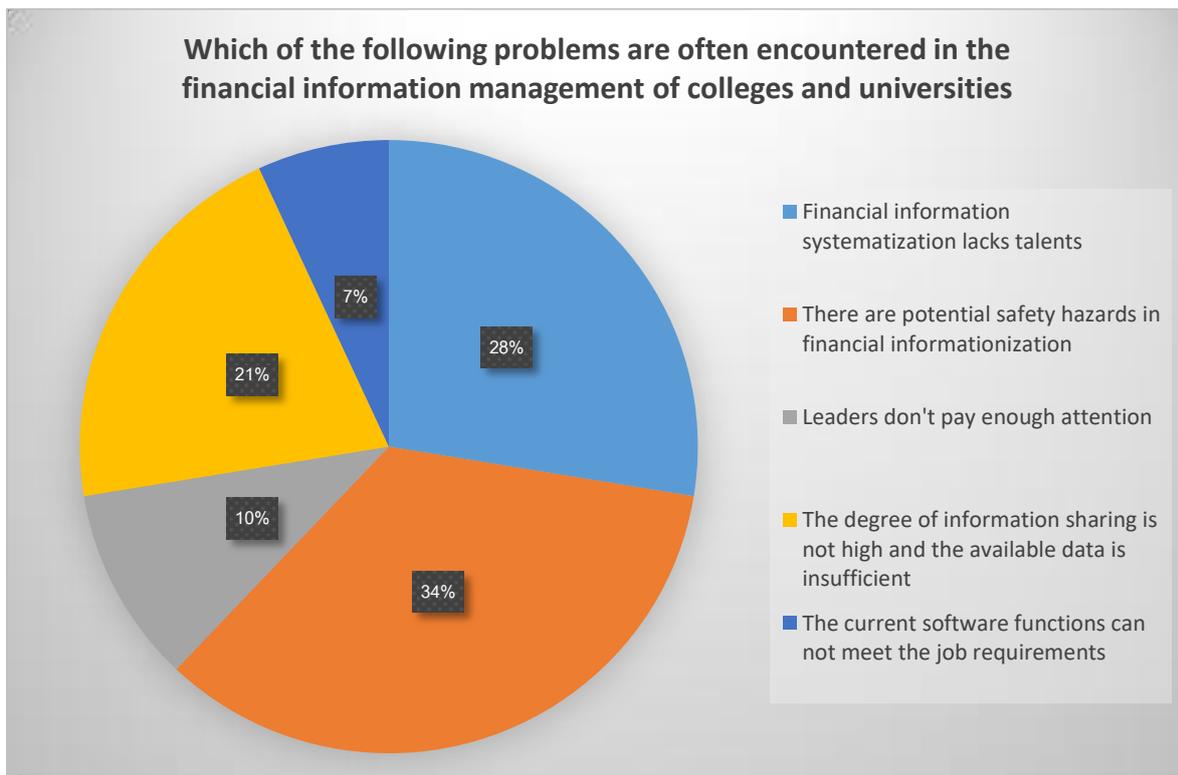
In the satisfaction survey, 52% of people said they were satisfied or very satisfied with the financial informatization of their university/known universities, 43% said it was fair, and 5% said they were not satisfied.



When investigating the information sharing between various departments, 90% of people agree that the accounting department of a university can share information with other business departments well, and there is no information island problem, while 10% of people disagree .

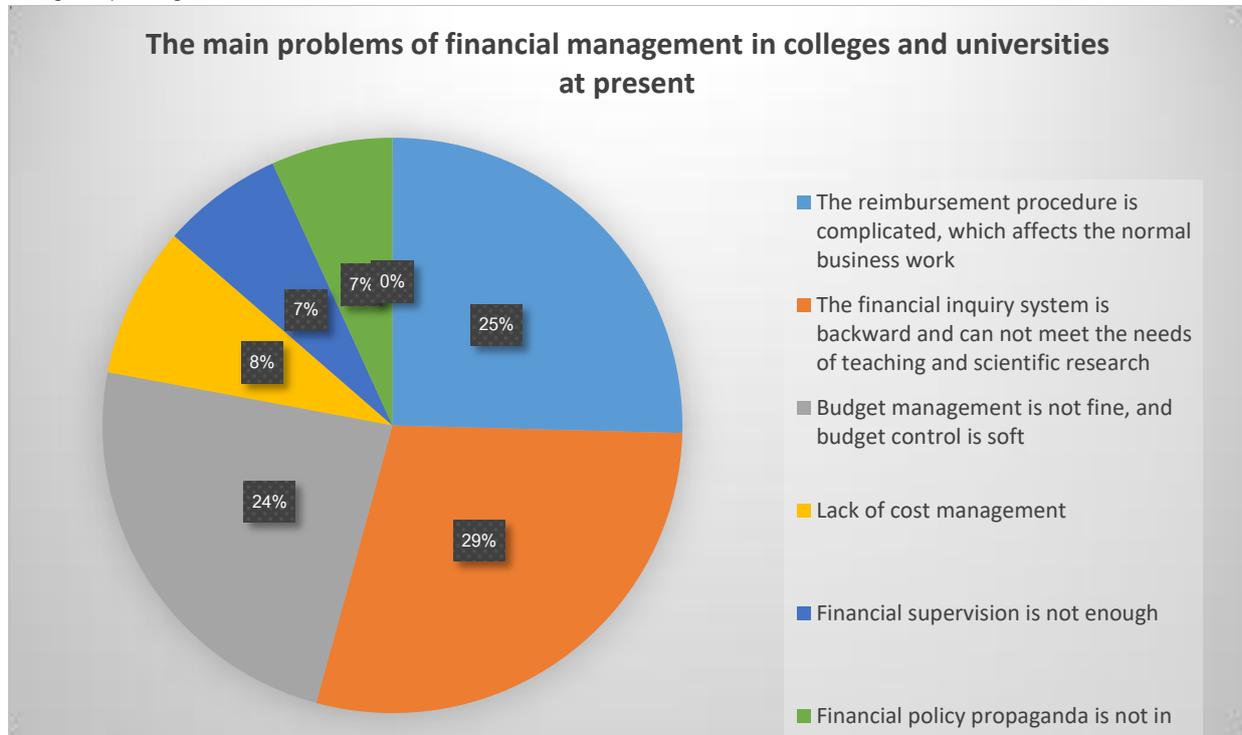


97% of people agree that "I can obtain the latest data in the financial management information system of the university where I am/known, which can satisfy my management and decision-making work". It can be seen that everyone agrees with the financial management system of the university. It also reflects the importance of college financial management systems.

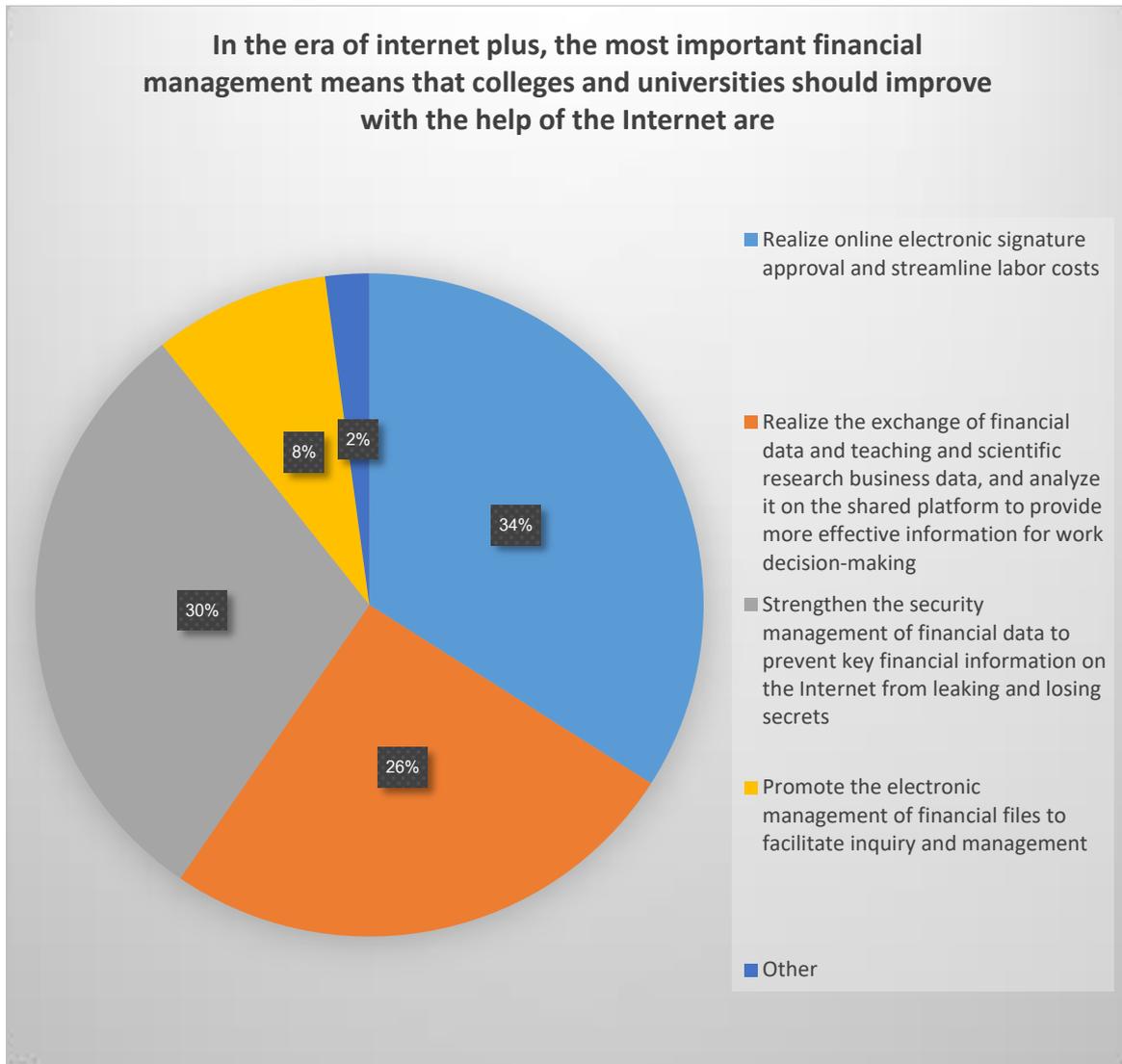


When faced with problems in the management of financial informatization in colleges and universities, 28% of people said that financial information systemization lacks talents, 34% said that financial informationization has security risks, 10% said that leaders did not pay enough attention to it, and 21% said that Some people said that the degree of information

sharing is not high and the available data is insufficient. 7% of the people said that the current software functions cannot meet the needs of work, and their concerns about information management are different. University financial information management has a long way to go.



25% of the people think that the main problem in the current financial management of colleges and universities is that the reimbursement procedures are complicated, which affects normal business work. 29% think that the financial inquiry system is backward and cannot meet the needs of teaching and research. 24% think that the budget management is not good. Sophisticated budget control is weak. 8% of people think that it is lack of cost and expense management, 7% of people think that financial supervision is insufficient, and 7% of people think that financial policy promotion is not in place.



34% of people think that in the Internet+ era, the most important financial management method for colleges and universities to use the Internet is to realize online electronic signature approval and streamline labor costs. 26% think that it is to realize the exchange of financial data and teaching and research business data, and share Analysis is performed on the platform to provide more effective information for work decisions. 30% of people believe that it is to strengthen the security management of financial data and prevent key financial information on the Internet from leaking and losing secrets, and 8% believe that it is to promote financial archives The electronic management is convenient for query and management.

Conclusions

Through analysis and demonstration, the following conclusions are drawn:

In the era of Internet big data, financial informatization in colleges and universities has made great contributions to improving the management level of colleges and universities and promoting the development of colleges and universities. With the deepening of financial

informatization in colleges and universities, the financial departments of colleges and universities will play more and more important roles. By improving the understanding of financial information construction, changing thinking, accumulating experience of updating and upgrading, and strengthening the training of compound talents, we can clearly define the orientation of financial information in colleges and universities, realize the transformation of financial management mode, deepen the comprehensive integration degree of financial system, maintain the advanced nature of financial system, achieve better service, control risk, provide decision support, realize the all-round development of financial information in colleges and universities, contribute a force to the sustainable development of colleges and universities, and make universities play more important social functions.

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HUI RENT A CAR NETWORK SECTION AND MARKETING IMPLEMENTATION

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Abstract

The car sharing economy is one of the most fascinating and elusive business models of the 21st century which had disrupted innovation in various industries, including the traditional car rental industry. Through market analysis, it can be seen that, although the overseas tourist market population base is large and growing rapidly, overseas self-driving as an emerging mode of tourism has also spread in the minority and the response is good, but the overall size of the market is limited, for most people, is still in the wait-and-see or even unknown stage, Competitors in the market are also facing homogenization.

After a comprehensive analysis of the current situation and environment of Hui car rental, the development of "Hui car rental - overseas self-driving tourist book" as the theme of the integrated marketing communication program. Through the communication between enterprises and customers to meet the value of customer needs as the orientation, with a voice as an intrinsic support point, to pass to consumers a unified, distinct and easy to remember the unique signal, choose a suitable for the current situation of rental vehicle media. In order to enable users to have a complete access path, the Hui car rental has a relatively good access experience, the creative description of the rhythmic optimization, and the corresponding landing page.

Keywords: Hui Car Sharing Network, marketing implementation, self-driving tourist

1. Introduction

Through market analysis, it can be seen that, although the overseas tourist market population base is large and growing rapidly, overseas self-driving as an emerging mode of tourism has also spread in the minority and the response is good, but the overall size of the market is limited, for most people, is still in the wait-and-see or even unknown stage, Competitors in the market are also facing homogenization. It is facing the dual pressure to enhance the popularity of overseas self-driving this mode of tourism and the brand awareness of the rental car, this marketing communication will follow the core concept of integrated marketing communication, with consumers as the core, through the communication between enterprises and customers to meet the value of customer needs as the orientation, with a voice as an intrinsic support point, Coordinate the use of different means of communication to take advantage of different means of communication, while meeting the actual needs of consumers and persuading consumers to take action. (C. M. Christensen, M. E. Raynor and R. McDonald, 2015)

"Eleven" seven-day long vacation as the Chinese long-term travel rate of the golden holiday, but also the peak season of self-driving travel. We seize the opportunity of eleven travel hot implementation program, to show the role of integrated marketing communication program. At the same time, because users have a lot of demand space for overseas car rental channels, then this program to "Hui car rental - overseas self-driving tourist" as the theme, to consumers to pass a unified, distinct and easy to remember unique signals, creating users to actively spread the topic. At the same time, the introduction of Hui car rental features service concept, so that users feel in addition to the price value, the service is more than expected (I. Scott and E. Brown, 2017; K. Zale, 2016). This integrated marketing communication program covers a variety of communication channels and user contact points at the same time, so it is necessary to use a communication principle as the axis of the whole communication program, it runs through the design of the whole communication program, guiding all aspects of communication.

This communication program "overseas car rental magic" for the core of communication, coordinated the use of a variety of communication means and channels to achieve maximum communication benefits. Different media coordinate with each other, for the media form, delivery time, delivery methods of co-consideration, first consumers and products or brands of the identification of feasible points of contact, and then at all points of contact with consumers to communicate information. This communication program for the "11" travel crowd, in accordance with the AISAS consumer behavior model will be the implementation period of the program in the "11" before 1 month. Communication activities cover search engine marketing, social marketing, topic marketing and so on.

This paper examines the gradual progression of China's marketing implementation of online Hui car rental network. Section 2 explains the background and review of literature.

The deficiencies of free growth of the online car hailing business, as will be argued, highlighted the need for an urgent regulatory response. Section 3 illustrates the current framework from a local perspective. Section 4 Lessons from the marketing implementation of this framework. Here, the article highlights the negative aspects of China's experimental approach to regulation, especially pointing out that the current system's choice for a segmented market strategy heavily impairs the sustainable development of the sharing economy. After introducing several positive attitudes that have been adopted by the Chinese government and the judiciary. The final section concludes with some final remarks and suggestions to further develop the framework for online car hailing in China.

2. Review of Literature

The sharing economy is one of the most fascinating and elusive business models of the 21st century which had disrupted innovation in various industries, including the traditional taxi industry. The current sharing economy is highly dependent on Internet technology and Internet platforms. For those reasons, it is also been considered as a type of internet economy or platform economy. In China, online car booking, in The sharing economy is one of the most fascinating and elusive business models of the 21st century which had disrupted innovation in various industries, including the traditional taxi industry.¹ The current sharing economy is highly dependent on Internet technology and Internet platforms. For those reasons, it is also been considered as a type of internet economy or platform economy (I. Scott and E. Brown, 2017; K. Zale, 2016). In China, online car booking, in combination with carpooling applications such as Uber and DiDi (here in after, online car hailing), is a typical example of a sharing economy service pertaining to transportation. Since the emergence of such services many heated discussions regarding questions relating to "innovation or regulation?" have taken place (I. Scott and E. Brown, 2017). Questions whether or not and/or how the operation of online Hui car rental network should be regulated as opposed to their direct competitors in the traditional (offline) taxi services, were often mixed with political considerations (X. Song, 2017). Internationally, too, the expansion of Uber and Airbnb has triggered

In China, Internet companies are primarily responsible for the development of the software that acts as the foundation for the online car hailing industry. As information asymmetry is a serious problem in the context of the operation of traditional taxis, the integration of instant messaging services has allowed car hailing platforms to effectively provide matching information between taxi drivers and customers, thus reducing the vacancy rates of running taxis.¹⁵ In the early days following the emergence of the software there was no competition, and the traditional taxi industry benefited from the new technology (J. Wang, 2016). Later, the developers of the software made several enhancements, and a new online service named "tailored car booking" or "special car" was introduced. This was a

special service designed for VIP passengers guaranteeing their airport pick-up service. At this stage, Internet platforms began to acquire more mid-sized cars, or mid-sized luxury cars, at more expensive prices to provide high-end customers with a better service. Due to these high prices, only a small number of people could afford to use the tailored car (special car) booking option. Consequently, there was only limited competition between tailored cars and traditional taxis (J. Ling and G. Chen, 2014).

In the opinion of Standing et al., despite the existing growth of general services, the impact of the sharing economy on transport is not clear. Car sharing, probably, will be a part of solution of transport problems and congestion and may be used in combination with other technologies such as unmanned transport means. The authors also warn about the danger of excessive regulation and under regulation of the car sharing market. The future will require complete transport strategies that consider the possibility of exchange of variants and will require the joint work of the governmental authorities (Standing, Standing, & Biermann 2018). Some studies aimed at estimating the impact of the environmental aspects of car sharing on the development of the metropolitan cities confirm that car sharing shall contribute to a decrease in greenhouse gas emission also due to the replacement of a private car with a car with more power efficient gas consumption and a decrease in the number of cars (Jung, & Koo 2018).

It should be mentioned that in recent years the attention to car sharing as an innovative model of urban transport development has been growing constantly and it causes the necessity of the further research of problems and determination of the perspective vector of car sharing development in large cities of China

3. Research Methodology

The objective of this research is to determine the perspective directions of the car sharing market development to solve the problems of transport in China as one of the largest metropolitan cities of the world. To achieve the set objective, some problems are solved within the framework of this work with qualitative research by in-depth interview of 10 managers of Hui car sharing network in:

- To analyze the modern state of the transport system in China in comparison with other metropolitan cities of the world;
- To study the China car sharing market and estimate its impact on the transport situation of the city;
- To study the foreign experience, the opinions of market experts and to determine the further actions for car sharing market development in the largest cities of China.

The methodological work is based upon the comparative analysis of the statistical indicators characterizing the state of the transport availability in China and other metropolitan cities of the world.

4. Lessons from the marketing implementation of Hui car rental network

4.1 Search engine marketing optimization strategy

In the Internet age, search occupies an important position in the user's consumption habits. Through the information collected by search engine to make up for the consumer and hui car rental in the exchange of information on both sides of the indifference, will directly or indirectly affect the user's consumption decisions. Online marketing services that price transactions with user effects can help demanders find the products and services they need more efficiently. This brings practical effect to Hui car rental, can accurately implement marketing means to the designated crowd. Greatly increased cost delivery, with the smallest cost to win the most potential customers. What's more, this precise marketing has effectively increased the influence of the corporate brand.

Different consumers on overseas car rental self-driving, the degree of understanding of hui car rental is different, the search keywords must be different. The advantage of search engine is to be able to selectively actively push information for users, different users in different purchase decision-making links, the degree of understanding of overseas car rental brand demand is also different. Therefore, it is necessary to do analysis of consumer shopping decision-making, through different keywords to match different stages of the population, in each consumer's search path through different ideas to contact consumers, to obtain the right exposure and correct guidance. At the same time, between the user's habit of searching sticky high, search engine is also the integration of marketing traffic in the "receiving."

4.2 Keyword deployment strategy

According to the different stages of user consumption decision-making, users are divided into: potential population, target population, brand population three categories, each user's retrieval path contact with consumers. Potential crowds are those who have recent plans for overseas travel, and who have not yet made detailed travel itineraries, but have collected information on the Internet in general terms. At this stage the user is the most uncertain, so the user chooses a wider range, will retrieve the keyword angle is also the most. Attracting the attention of non-self-driving users, making it interested in overseas self-driving cars, which in turn affects the choice of travel options for potential people to rent a car. In the deployment of keywords, not only include transportation, but also in the attractions, climate, strategy and other keywords to do layout.

Target group refers to has clearly chosen the overseas self-driving mode of travel, there is also a general itinerary planning, but has not yet identified the consumer brand of the population. This group of people have not yet self-driving has a certain awareness, hope that the search engine to complete the implementation of the travel details, including vehicle booking, driver's license preparation, overseas driving and other relevant information. Most users are renting a car overseas for the first time, and what may happen is still unknown and needs to find something to trust. At this stage, if the target users can feel that Hui car rental has professional, comprehensive overseas self-driving knowledge, convenient and secure

service, the ultimate contribution to transformation has a decisive role. In the deployment of keywords, choose to cover car rental products covering scenic route information, driver's license, traffic regulations and other more segmented and professional keywords. Of course, this part of the user may also be aware of the Hui car rental, but also synchronously absorb information from the competition, so the contest words also need to start to deploy.

Brand crowd is through the above keyword ads and external other channels, the hui car rental brand has a certain understanding, will directly search the brand words into the Hui car rental site users, is able to play the most direct help to the conversion of the core users. For this part of the user, just put the brand word. But the most important thing is to pay attention to the creative description and conversion rate of brand words.

According to the attributes of keywords, the key words are generally divided into core words, brand words, generic words, competing words, long-tailed words, etc., with the core words as the center constantly broaden the depth and breadth, covering more users.

4.3 Creative Description Optimization Strategy

Creativity and description are the first impressions of the user's perception of the brand. In order to meet the searcher's information needs through the information provided by the business owner, and to achieve the promotion purpose. Creativity includes both copywriting and design elements. It is necessary to ensure that users can get the information they want to see by retrieving this keyword, but also to communicate brand advantages. This network integrated marketing communication program will be "Hui car rental - overseas car rental self-driving weapon" as the only dissemination caliber, in the creative description, need to mention as many relevant words, triggering many contacts, the formation of memory points. In the time dimension, mention "Eleven", with the help of the tourist season bonus, stimulate users to place orders within the target time of the activity, improve conversion.

Different users, when searching for different keywords, want to know the message is also different. First, collect ideas. About the user wants to know the message, reference to search advertising keywords, the top SEM, SEO ideas and descriptions, perceive the user pain point, and give answers when writing a copy. This marketing program for the 11 travel this wave of travel peak, users in the near future to retrieve travel information, for the time node tips are also very important. About the brand characteristics display, the main overseas self-driving convenience, preferential car rental services intimate. And combined with the rhythm of the promotion, the focus of energy into the activities, in the activity began to release warm-up copy, in order to achieve the drainage effect.

In the rules of creative description, creativity or description and search words have similar or consistent content, creativity will be highlighted, in the form of red, from the perspective of visual impact and user mentality, netizens pay more attention to the red creativity and description, can bring more clicks for hui car rental, at the same time, the keyword as the center to form a direct edgy creativity and description to ensure the logic of this content and

the accuracy of the presentation. The requirement for keywords to be grouped according to the principle of "same structure and similar semantics" is also conducive to creative collective writing.

4.4 Media Delivery and Ranking Strategies

Media is the bridge between advertisers and visitors, advertisers will need to pass on the message to visitors, strengthen high-quality media delivery, improve the overall quality of advertising display environmental quality, deepen the visitors' memory of brand promotion. In the choice of media, the first consideration is Baidu, 360 and Sogou. Combined with the above analysis, the target users are mostly young and middle-aged people with certain income and social status, concentrated in the first-tier cities, have a foreign understanding and awareness, there is the habit of using foreign software. So in the media delivery choice, the addition of google, bing. According to the above search engine's internet coverage, Baidu, google as the focus of the media. Through comprehensive coverage of key media and integrated media, we break down the differences between different types of media, and classify and summarize relevant media, while directing.

According to the above network integrated marketing communication program design, sorted out the communication planning table, see Table 1

Table 1 Network Integrated Marketing Communication Planning Table

Timeline	SEP 1-SEP 4	SEP 5-SEP 25	SEP 26- SEP 30
stage	Warm-up period	Big promotion period	Systole
Master carrier	WeChat Moments Virus Spread Mini Game	Main site-static page Main site-promotion page	
Main push activity	H5 mini game The world is so big, Hui rent a car to help you ask for leave!	"99 yuan travel around the world" Featured hot models from all over	
Search engine strategy	Mainly show brand characteristics	Improve ranking, increase exposure, Attract the crowd	Shrink delivery
Topic marketing	"How to fight the National Day holiday"	"How do I play during the National Day holiday? Of course it's an overseas driving!"	"Taking travel photos and writing travel notes can also win big prizes"
Auxiliary carrier	WeChat forwarding, forum community topics	WeChat, Weibo; KOL	Wechat, Weibo

After the media selection, the ranking directly affects the display of advertising. Ranking optimization, as one of the important links in search engine marketing, is the object we need to understand. It involves: click-through rate, ad ranking, click cost (cost of single click), quality score. The vast majority of SEMs emphasize these elements, and there is a

relationship between them: ad ranking (ad rank). Combine the characteristics of the media with the content of the guest analysis, creative analysis and landing page optimization analysis, design the relevant advertising strategy and combine the system to optimize the relevant. Media exposure, first with a lower cost to win the advertising position of the comprehensive media to obtain a large number of exposure, improve media coverage, while improving the overall media comprehensive, improve the effective coverage of visitors. Through the high bidding of important media, to achieve effective exposure to improve the target population coverage, enhance the media exposure value, in order to effectively cover the relevant high-quality people.

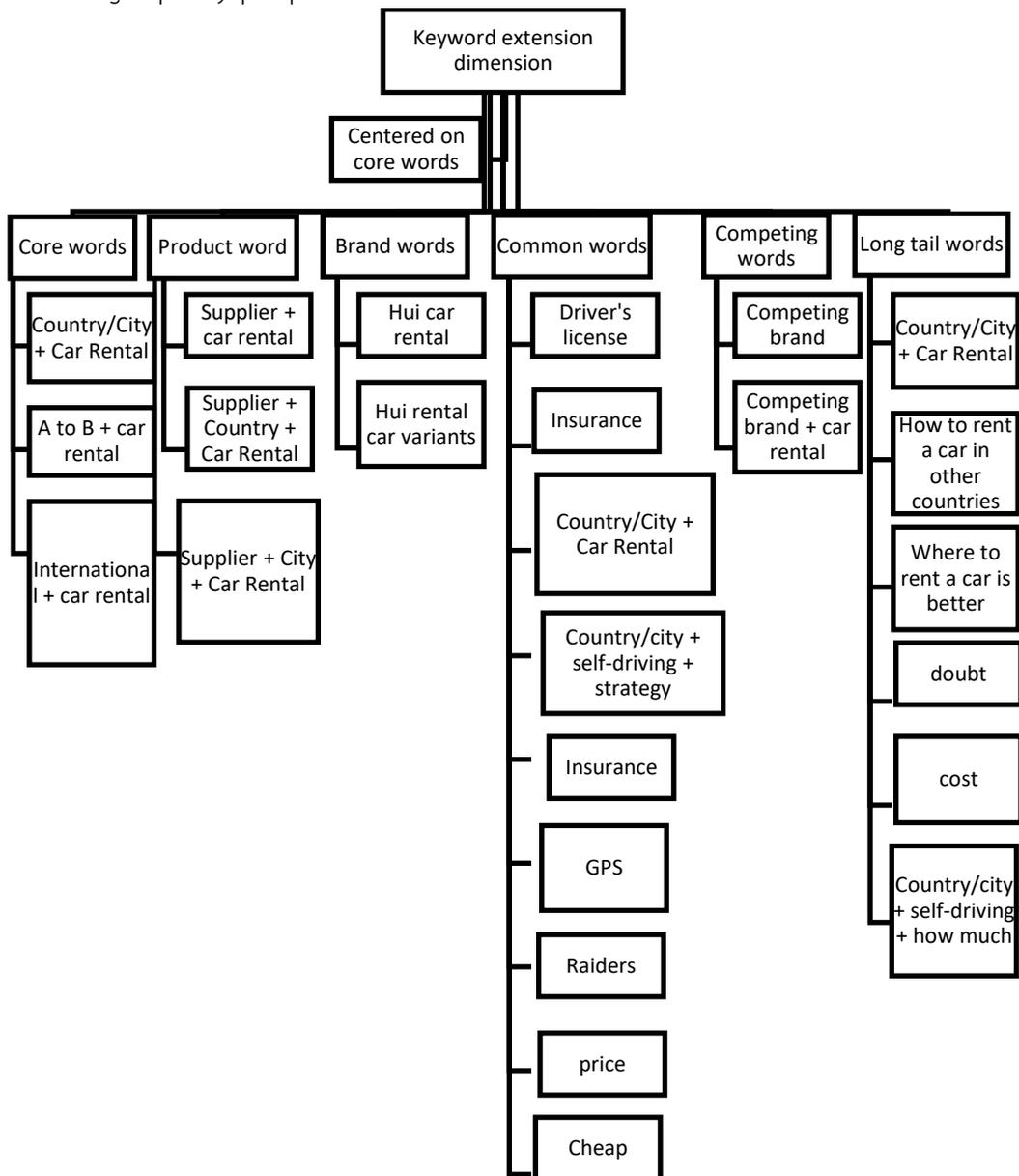


Figure 2 Keyword deployment diagram

At the executive level, the logic and integrity of the search engine account have a certain impact on the quality of keywords, but also for the convenience of operators, it is necessary to build a set of accounts in line with the characteristics of the website, the

classification of account keywords in accordance with the same structure, semantic similar principles. According to the above analysis, combined with word and similarity, the hui car rental account structure, as shown in Figure 2.

Regarding the geographical selection, according to the above survey of the target consumers, selected to Beijing, Shanghai, Guangzhou, provincial capitals and 3-4key cities to launch, combined with the previous website traffic time period distribution, the delivery time period will be set at 8:00 Beijing time to 2:00 a.m.

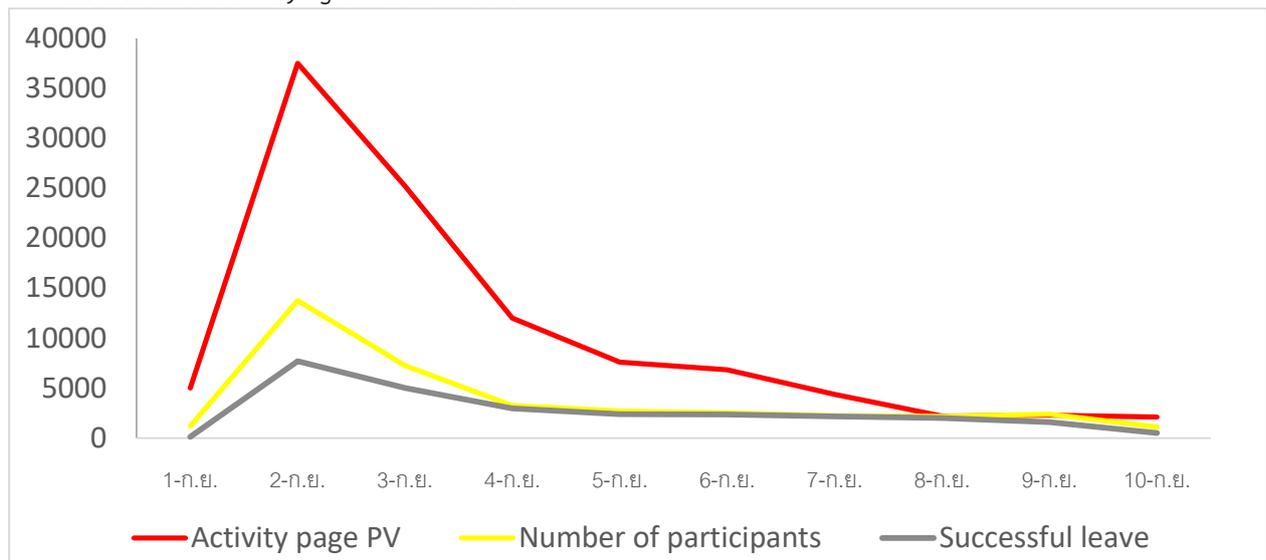


Figure 3 Distribution of traffic periods on the Hui car rental website

5. Conclusion and discussion

As a result of the performed reforms including the implementation of the car sharing project, the state of the ground transport of China improved, the popularity of the urban ground transport increased and the quality of the transport system improved. According to the statistics, (C. Koopman, M. Mitchell and A. Thierer, 2015) 1 car of car sharing service substitutes 10 private cars and this leads to a significant reduction of traffic jams. Thus, according to the data of TomTom, in 2017 the traffic congestion in China decreased from 57% in 2010 to 44% in 2017 (The TomTom Traffic Index).

In 2016, the average speed of transport on the main roads in the morning and evening hours increased from 17 km/h to 26 km/h. The average speed of public transport in the rush hours increased from 14.85 km/h to 22.3 km/h.

The average time of trip on public transport from the China Ring Road to the center of the city decreased by 15%, from 67 to 57 minutes. Also, the level of observing the timetable of urban public transport increased from 76% of the total number of trips to 95%. The average traffic interval of the ground urban transport decreased from 7.7 minutes in 2010 to 6.2 minutes in 2016 (Figures and Facts, Transport 2016).

In general, car sharing in China proved to be a service of high demand. During the first year of work, the indicators were achieved that could be compared with the cities where car sharing has been developing for many years already (Department of Transport and Development of Road and Transport Infrastructure of the City of China 2016).

The results of the research performed allow making the following conclusions: Public transport is especially important for everyday life; the growth of automobilization creates new problems in the field of mobility and the sustainable development of the city. The growth of atmospheric pollution caused by the exhaust gases, congestions on the roads and lack of parking places are the main driving forces of the car sharing market in the metropolitan cities. The car sharing market is enlarging fast in the volume due to high flexibility that the companies rendering the car sharing services offer in comparison with the taxi.

The results of the first years of car sharing in China confirm the reasonability of development of such services. Due to the reduction of trips by private cars, transport congestion in the center of the city and the main roads is decreasing. This contributes to an increase in the speed of transportation of cars on the roads, regularity, and quality of work of ground transport.

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TRANSFORMATIONAL LEADERSHIP AND CUSTOMER LOYALTY AFFECTING SUPPLY CHAIN PERFORMANCE OF THAILAND LOGISTICS SERVICE PROVIDERS

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Abstract

The objectives of this research are 1. To explore the personal information characteristics of logistics service business executives Transformational leadership Customer loyalty and supply chain efficiency of logistics service providers in Thailand. 2. To analyze the appropriate components of transformational leadership Customer loyalty and supply chain efficiency of logistics service providers in Thailand. 3. To examine the influence of transformational leadership factors Customer loyalty and supply chain efficiency of logistics service providers in Thailand. 4. To propose business management guidelines to logistics service providers in Thailand. Population are the logistics services business in Thailand, who are the member of the Thai Logistics and Manufacturing Association and the Thai-Thai Logistics Association, number 1500, selecting a sample group of 300. Data obtained from the number of questionnaires and then converted into statistical data by SPSS program to be used to analyze other statistical data according to research objectives, which detailed statistics used for analysis as follows Exploring the characteristics of individual variables Building customer relationships Customer loyalty And business success using analytics too Descriptive statistics such as percentage, mean, standard deviation, skewness and kurtosis were also analyzed to measure the distribution of the data that appropriate in the analysis of structural equations model.

Keyword: Customer loyalty, Supply chain efficiency, Logistics services providers

Introduction

The value of the business will increase and decrease in line with the expansion of gross domestic product, or GDP, according to Figure 1.1, with the continued decline in gross domestic product in 2020. Due to factors such as the COVID-19 epidemic, delayed state budget, and drought, it is expected that The country's economy may slow. This may be due to many factors such as the decline in domestic consumption. Political instability This is in line with the world economy, which is expected to slow down due to rising policy interest rates. It has a negative impact on emerging markets such as flow, flow loss, liquidity, and local currency that will weaken by comparison. Which makes these countries lose their commercial ability Including the higher financial costs of the operators. And business war problems that intensify sequentially (Thawatchai Asawapornchai, 2018), together with Thailand in recent times, has joined the ASEAN Economic Community. Causing more international businesses to do business in Thailand, which will lead to more competitors in the market (Krungsri GURU SME, 2019)

From these events, it will greatly affect the logistics service provider business in Thailand. Because besides the already fierce domestic competition There will be more foreign competitors to share the market share. Along with the trend of the new economy (New Economy) that is an economy driven by innovation, technology and creativity. Taking into account both social and environmental sustainability. (National Science and Technology Development Agency, 2019) As a result of the above situation, the logistics service provider business in Thailand is faced with a high investment. To compete in an increasingly intense market The government does not have a clear strategy for developing Thai logistics industry to cope with these obstacles. (Office of Industrial Economics, 2019), in line with information from the Ministry of Commerce (2019) that found that the logistics service business is gaining the attention of both Thai and foreign investors. This can be seen from the number of small and medium logistics providers that are increasingly competing in the market and are continuing to increase. This is partly due to the government's accelerating the development of infrastructure such as trains, ports, roads, distribution centers. And warehouses, etc. It is connected to a variety of transportation systems that can facilitate more The exponential growth of the domestic e-commerce business, as well as the government's promotion of the Eastern Special Economic Zone (EEC) and the Southern Special Economic Zone (SEC), has made logistics services a business. The star that has always increased the market competitor. These factors are driving the logistics providers in Thailand to find ways to survive the economic crisis and the increasingly intense competition.

Research objectives

From research questions to get answers to how leadership styles, change and customer loyalty influence supply chain performance of logistics service providers in Thailand. The researcher set the study objectives as follows.

1. To explore the personal information characteristics of logistics service business executives Transformational leadership Customer loyalty And supply chain efficiency of logistics service providers in Thailand
2. To analyze the appropriate components of transformational leadership Customer loyalty And supply chain efficiency of logistics service providers in Thailand
3. To examine the influence of transformational leadership factors Customer loyalty And supply chain efficiency of logistics service providers in Thailand
4. To propose business management guidelines to logistics service providers in Thailand.

Scope of content

This research focuses on the study of content on transformational leadership. Customer loyalty And supply chain efficiency of logistics service providers in Thailand Which will study concepts, theories and research related to transformational leadership Customer loyalty And supply chain efficiency only

The scope of location and duration

In order to accomplish this study in accordance with its objectives Researchers have established study areas in Thailand. The implementation period for semester 1/2020 to semester 2/2020 has begun to study the related latent and observable variables in all conceptual frameworks. Later, all the variables obtained from the component survey were analyzed and developed into a model of leadership, change and customer loyalty that influences the efficiency of the supply chain of the logistics service provider business in Thailand. In the semester 2/2020, then the results will be written and prepared for the thesis booklet to complete the semester 1/2021.

The scope of the studied variables

The variables in this research consisted of casual variables, mediating variables, and effect variables, each of which was composed of a different variable. With details as follows

Casual variables consist of transformational leadership factors of companies, entrepreneurs, logistics service providers, with the following components: Idealized Influence (Charisma Leadership: II or CL) Inspiration Motivation (IM) Intellectual stimulation (Intellectual Stimulation: IS) and consideration of individuality. (Individualized Consideration: IC)

The variables passed (mediating variables) are: Customer Loyalty Factors of Entrepreneurs, Logistics Service Providers With elements Customer engagement with the company (Company Commitment), the reliability of the company (Company Trust) and the satisfaction (Company Satisfaction) of customers, companies, business operators, logistics service providers.

Effect variables are: Supply Chain Efficiency Factors for Logistics Service Providers There are elements including Supply Chain Reliability, Supply Chain Responsiveness, Supply

Chain Agility, Supply Chain Costs, and Supply Chain Asset Management. Chain Asset Management)

Population scope

The quantitative research population is the logistics companies in Thailand. And the qualitative research population is the top executives of logistics service companies in Thailand. And academics who have knowledge and expertise in logistics services

Benefits expected from the research

The researcher expects this study to benefit entrepreneurs, logistics service providers. Government agency And academics With details as follows

1. Entrepreneurs, logistics service provider in Thailand This model can be carried out in the field of customer retention of the company. Along with being able to resolve the fierce business competition situation and the rapid technological change.

2. Government agencies with direct supervision The results of this research can be used to formulate a policy for helping entrepreneurs, logistics service providers in Thailand. Facing business problems

3. Scholars and interested people can use the research results for further study and research in the future

Introduction to the logistics service provider business in Thailand

The business situation of logistics service providers in Thailand in 2020-2022 is expected to continue growing from the economic environment. The accelerated slightly accelerated from government investment and continued expansion in exports. Public investment is likely to increase continuously. And budget disbursement that the government sector expedite project approval In addition, the export sector of Thailand continues to expand. Despite the expansion from slowing down But it will still play a role in supporting the economy to keep the economy growing. Which will result in The Thai logistics sector expanded in the same direction. The logistics service business should grow well in the midst of intense competition. The trend of adopting technology to help logistics services is likely to increase. To meet the need for efficient logistics cost management And to be in line with the trend of changing to the digital economy society, so next year will see a clearer picture of the competition of logistics service providers in supporting E-Commerce in order to compete for market share. Of online trade that expands leap Resulting in the demand for logistics services Rose as a result

The logistics service business that will expand well will include land transportation, warehousing, international shipping and logistics. Postage and delivery In which the land transportation business is expected Will expand in line with the continuous economic growth direction Both from public and private investments Along with the strong support of E-Commerce, however, there are still challenges. Due to the slowdown in exports, it is likely to be a factor to hinder the expansion of the land transport sector. In the warehouse business It

is growing in the same direction as the land transportation business. Due to the expansion of economic activities in both production and trade As well as the economy of neighboring countries is likely to grow at a high rate. Supporting trade, storage and distribution activities at border checkpoints. In addition, the expansion of E-Commerce business will bring Warehouses are increasing, ie, the trade model from offline platform (Offline Platform) or retail store / department store format. Become an online platform (Online Platform) or digital (Digital platform), a variety of new, resulting in the need for premium warehouses to store and distribute products to consumers instead of storing them at stores or department stores. branch As for the international shipping business (Freight Forwarder), there was a slight expansion in the direction of Thai exports. This is in line with the expansion of the postal and delivery business as well, due to the expanding E-Commerce business and the intense competition in the service of the market players. (Krungsri Research, 2020) <https://ri>
Summary

Transformational leadership of companies, operators, logistics service providers, with the following elements: Idealized Influence (Charisma Leadership: II or CL) Inspiration Motivation (IM) Intellectual stimulation (Intellectual Stimulation: IS) and consideration of individuality. (Individualized Consideration: IC), the loyalty factor of the company, business operators, logistics service providers. The elements are customer engagement with the company (Company Commitment), the reliability of the company (Company Trust) and the satisfaction (Company Satisfaction) of customers, companies, business operators, logistics service providers and Supply Chain Efficiency Factors of Logistics Service Providers There are elements including Supply Chain Reliability, Supply Chain Responsiveness, Supply Chain Agility, Supply Chain Costs, and Supply Chain Asset Management. Chain Asset Management)

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FACTOR OF TECHNOLOGY INNOVATION MANAGEMENT AFFECT TO POTENTIAL OF LOGISTICS SERVICE PROVIDERS: A REVIEW PAPER

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Abstract

This article aimed to study factor of Technology Innovation Management affect to Potential of Logistics Service providers. This conducts a compile study, analysis and synthesis concept, theory, academic article and research articles related to Technology Innovation Management. Which the result was found that Technology Innovation Management variable consists of 6 components: Product or Service Innovation, Process Innovation, Marketing Innovation, Organizational Innovation, Cost Reduction and Information Management. All of these components had a positive impact on the potential of logistics service providers.

The results of this study can be used for research that includes statistical analysis, multivariate data analysis, including Multiple Regression Analysis (MRA), Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM). Moreover, it can be applied to any service other than logistics service provider.

Keywords : Technology Innovation Management, Service Provider Potential, Logistics Providers

Introduction

In recent years, innovation is an important factor for developing organizations in a highly competitive world. Most scholars agree on the positive effect of the innovation on organization, and there are a few studies on the subject. (Alharbi, I.B.A., Jamil, R., Mahmood, N.H.N. and Shaharoun, A.M. :2019)

Service capabilities reflect service providers' ability to successfully employ their resources to satisfy their customers' needs (Lai, 2004). With the significant changes taking place in the global business environment, the container shipping industry has become highly competitive and seeks to enhance its service capabilities in order to better meet the various requirements of shippers (Lu, 2007). In the container shipping industry, the capability relates to transit time, freight rate, and frequency of service. Service capabilities are drivers for superior competitive advantage (Lu and Yang, 2006), and have been discussed in previous research (Barney, 1991). However, in an uncertain environment with increasingly higher costs and risks (UNCTAD, 2015), container shipping companies also need to focus on dynamic capabilities to renew and adjust their management strategies (Tsekouras et al., 2011; Yang et al., 2009).

The competitiveness of logistics firms increasingly relies on their ability to adopt innovations that add value to the shippers' bottom line (Kwak, D.-W. et al. 2018) Panayides and So (2005, pp. 192-193) noted that "as supply chain parties become more innovative in terms of adopting new processes, operational routines and investing in new technological systems, supply chain effectiveness in terms of ability to fulfil what was promised, meet standards and solve problems will improve"

1. Technology Innovation Management :TIM

Table 1 Variable Factors of TIM

Academic / Researcher	Findings Variable Factors.
Izadi Z.D., J., Ziyadin, S., Palazzo, M. and Sidhu, M. (2020)	They studied to investigate the impact of innovation management capability on organizational performance. The results of this study innovation management capability has a statistically significant positive impact on a company's performance. The innovation management capability depends on the type of innovation, type of innovation consists of processes and products
Chege, S.M. and Wang, D. (2020).	They studied to Innovation from management and employee participation in environmental protection practices can improve the company's performance and enhance its image to stakeholders.

Academic / Researcher	Findings Variable Factors.
	They have identified management innovation consists of Product Innovation, Process Innovation and Market Innovation.
Yoopraphat, P. and Tantakool, T. (2020).	<p>Mr. has studied Development of Technology Innovation to Promote Competitiveness of Industry Entrepreneurs Automotive parts Manufacturing in Thailand. The development of innovative technologies innovation to enhance the competitiveness of automotive parts manufacturers in Thailand consists of the following priorities: Digital technology innovation, Strategic Leadership and Re-organization. This study identified factors consists is :</p> <ol style="list-style-type: none"> 1. Digital technology innovation was consists of 3 elements: Innovation in product and service technology, Process technology innovation, and Technological innovation in management. 2. Strategic Leadership was composed of 3 components: Transformational leadership style, and creative leadership styles 3. Re - organization was composed of 3 components: Policy, Organizational structure, and Human resources
Hsiao, W.-H. and Chang, T.-S. (2019)	<p>They have studied to “Exploring the opportunity of digital voice assistants in the logistics and transportation industry”, which three factors of considered has details are as follows :</p> <ol style="list-style-type: none"> 1. Organizational innovation <ol style="list-style-type: none"> 1.1 Knowledge innovation 1.2 Productivity innovation 1.3 Innovation of organization for external activities 2. Technological innovation capabilities <ol style="list-style-type: none"> 2.1 Business process 2.2 Innovation of products/services 2.3 Cost reduction 3. Logistics service capabilities <ol style="list-style-type: none"> 3.1 Technology embedded service capability

Academic / Researcher	Findings Variable Factors.
	<p>3.2 Added-value service capability</p> <p>3.3 Freight forwarding service capability</p> <p>The analysis results showed that the most important factor was Logistics service capabilities, Technological innovation capabilities and Organizational innovation.</p>
Hwang, B.-N. and Hsu, M.-Y. (2019)	<p>They have studied Technological innovations are usually the key strategies to gain their competitive advantages. Technological innovations will consist of Product innovation and Process innovation.</p>
Dansomboon. S. and Pingta, S.. (2019).	<p>They have identified Organizations which focus on innovation need to develop their resources and the ability to profit from those innovation. Product innovation is the creation and introduction of new components or services that are either new, or an improved version of previous versions. Process innovation is the implementation of a new or significantly improved production or delivery method. For the study, innovation consisted of organization innovation, product innovation and process innovation.</p>
J. Hong, et al.. (2019)	<p>They have studied “The effect of supply chain quality management practices and capabilities on operational and innovation performance: Evidence from Chinese manufacturers”. Which in this study Innovation efficiency variables consist of 3 components is Product innovation, Process innovation and Management innovation.</p>
Bonacina Roldan, L., Hansen, P.B. and Garcia-Perez-de-Lema, D. (2018)	<p>They have research purpose is to develop a framework for analyzing favorable conditions for innovation in technology parks, the innovations produced and organizational performance. They have identified Innovation Technology consist Product Process and Marketing</p>
R.P. Jayani Rajapathirana and YanHui. (2018)	<p>They have identified Innovation in the service sector is technology innovation Technological innovations that can be created at the same level as combined with new technologies. Innovation of service</p>

Academic / Researcher	Findings Variable Factors.
	consists service product innovation, process innovation and marketing innovation.
V.-H. Lee et al.. (2018).	They have studied The effects of supply chain management on technological innovation: The mediating role of guanxi. Most of the previous studies have emphasised mainly on product and process innovation, which have been used to signify TI.
Sirinarud, L. et al., (2018).	They have studied Logistics Innovation Factors Affecting the Competitive Advantage for Large sized Logistics Service Providers in Thailand, where innovation level variables consist of 4 aspects which are Product and Service Innovation, Process Innovation, Marketing Innovation and Organizational Innovation.
Crowley, F. (2017),	The literature has predominantly focused on how innovation activities (product and process) are created within firms and its effect on firm outcomes.
Ahu Tuğba Karabulut. (2015)	An innovation is “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational\method in business practices, workplace organization or external relations.” assified innovation as product innovation, process innovation, marketing innovation and organizational innovation.
DilaraDereli, D.. (2015)	Innovation management refers to creating a new product, a new process, a new organizational or marketing method by starting from an idea

Results of studies, both domestic and international research related to TIM, Therefore concluded that TIM consists of 6 components: Product and Service Innovation, Process Innovation, Marketing Innovation, Cost reduction, Information Management and Organizational Innovation. The researcher then synthesizes the components / variables obtained from this study for use in this research shown as Table 2.

Table 2 Variable composition synthesis TIM

Id.	Academic / Researcher	Factors of TIM
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		Business process	Product and Service	Marketing	Cost reduction	Information Management	Organizational
1	Izadi Z.D., J., Ziyadin, S., Palazzo, M. and Sidhu, M. (2020)	✓	✓				
2	Chege, S.M. and Wang, D. (2020).	✓	✓	✓			
3	Yoopraphat, P. and Tantakool, T. (2020).	✓	✓			✓	
4	Hsiao, W.-H. and Chang, T.-S. (2019)	✓	✓		✓		
5	Hwang, B.-N. and Hsu, M.-Y. (2019)	✓	✓				
6	Dansomboon. S. and Pingta, S.. (2019).	✓	✓				✓
7	J. Hong, et al.. (2019)	✓	✓			✓	
8	Bonacina Roldan, L., Hansen, P.B. and Garcia-Perez-de-Lema, D. (2018)	✓	✓	✓			
9	R.P. Jayani Rajapathirana and YanHui. (2018)	✓	✓	✓			
10	V.-H. Lee et al.. (2018).	✓	✓				
11	Sirinarud, L. et al., (2018).	✓	✓	✓			✓
12	Crowley, F. (2017)	✓	✓				
13	Ahu Tuğba Karabulut. (2015)	✓	✓	✓			✓
14	DilaraDereli, D.. (2015)	✓	✓	✓			✓
Total frequency		14	14	6	1	2	4

Table 2 shows the synthesis of the component variables of TIM consists of 6 components show at Figure 1 and the details are as follows:

Product and Service Innovation definition: Most studies of innovation in organizations do not distinguish between service and product innovations. Generally, services offered by organizations in the service sector are conceptualized to be similar to products introduced by organizations in the manufacturing sector. In this vein, like product innovations, the drivers of service innovations are clients' demand for new services and executives' desire to create new services for existing markets or to find new market niches for existing services. However, as firms in both goods and services industries offer services, we define *service innovations* as the introduction of new services to increase the effectiveness and quality of the organization's output, whether products or service, to the customers or clients.

Process Innovation definition: A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease

unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products.

Marketing Innovation definition: The implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales.

Cost reduction definition: cost reduction is a critically important organizational goal which means each incremental innovation gives you a potentially better way of doing business. Also service providers can also innovate their way to lower costs though cost reduction in the service model is different and more abstract than manufacturing.

Information Management definition: Information technology (IT) innovation in an enterprise involves using technology in new ways to create a more efficient organization and improve alignment between technology initiatives and business goals. IT innovation can take many forms.

Organizational Innovation definition: Reorganization and new operational processes such as adjustments new operations department, communication systems within the organization to be effective and accounting operation process. Organizational innovations enable organizations to operate efficiently, that resulted in all Stakeholders to be more satisfied.

TIM and SPP

The service provider potential is the element that makes the organization successful. (Izadi Z.D., J., et al.2020) and TIM are the key elements affecting the viability and survival of an organization (Beltramino, N.S., et. Al.2020). When a company has high technological innovation (Whole product And innovation in the process) will have a greater influence on the start-up of the company's services (Hwang, B.-N. and Hsu, M.-Y. 2019), also impacts a competitive advantage in small and medium enterprises (Wahyono, W. 2019, Dansomboon. S. and Pingta, S..2019). A possible explanation of this model is that innovation capability enables the firm to gain more relational resources, which in turn improve firm performance ([Shou, Y.](#), [Shao, J.](#) and [Chen, A.](#) 2017). The researcher can summarize the relationship as shown in Figure 1 and hypothesis in this research as

Hypothesis: TIM have direct effect to SPP

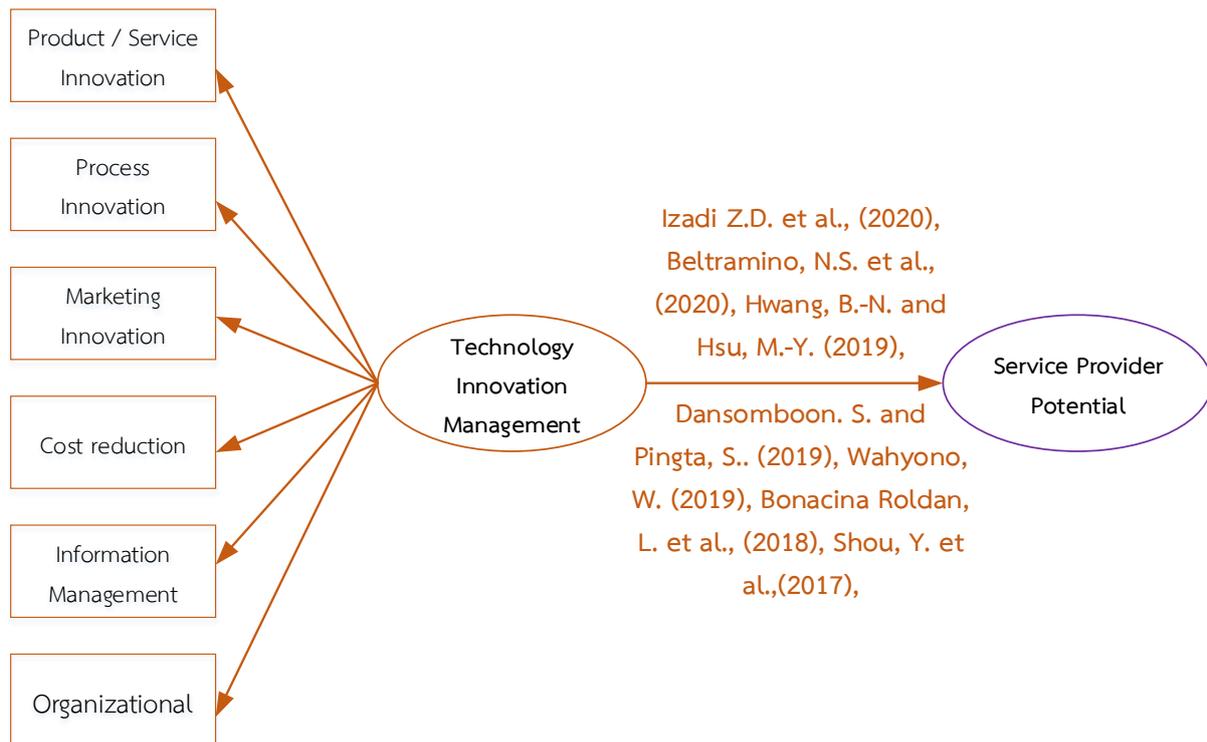


Figure 1 : Factor of Technology Innovation Management affect to Potential of Logistics Service providers.

Source : Research synthesis of researchers

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