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Proceedings of the 38th International Conference on Social Sciences, Business, Technology and Management (SBTM)

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*38th International Conference
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CONFERENCE CHAIR MESSAGE

Dr. Vincent

International Conference of Akademika Nusa Internasional Association of Social Sciences and Humanities} is a platform that thrives to support the worldwide scholarly community to analyze the role played by the multidisciplinary innovations for the betterment of human societies. It also encourages academicians, practitioners, scientists, and scholars from various disciplines to come together and share their ideas about how they can make all the disciplines interact in an innovative way and to sort out the way to minimize the effect of challenges faced by the society. All the research work presented in this conference is truly exceptional, promising, and effective. These researches are designed to target the challenges that are faced by various sub-domains of the social sciences and applied sciences.

I would like to thank our honorable scientific and review committee for giving their precious time to the review process covering the papers presented in this conference. I am also highly obliged to the participants for being a part of our efforts to promote knowledge sharing and learning. We as scholars make an integral part of the leading educated class of the society that is responsible for benefitting the society with their knowledge. Let's get over all sorts of discrimination and take a look at the wider picture. Let's work together for the welfare of humanity for making the world a harmonious place to live and making it flourish in every aspect. Stay blessed.

Thank you.

Dr. Vincent

Conference Chair

Email: conference.chair@anissh.com

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The Quality Management about Process of Electronic Parts Manufacturing: The case study of XYZ Co., Ltd.

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Abstract From the study of this research had following objectives, (1) In order to study the process of electronic parts manufacturing. (2) In order to study the method to improve quality of electronic parts by use PDCA and 5 s Activity. XYZ Co., Ltd. was the company manufacturing of electronic parts. The researcher had used the form qualitative research was applied in conducting the research. The population to be used in the study were the head of the manufacturing department and related staffs. This had done the study to gather the information from documents, related researches, websites and doing the interview in order to bring the information to use in analyzing of the process of electronic parts manufacturing in order to adjust to have more efficiency. Main process of electronic parts manufacturing were as follows; 1) Issue of electronic parts materials from the store 2) Drilling, Determining the working position of work pieces 3) Bonding of work electronic pieces 4) Baking of work pieces with the glue tightly and had no dust 5) Washing, this had to wash work pieces and this mightn't let work pieces to attach with the dust or the glue 6) Magnetize to press the magnetic field in work pieces 7) Assembling work pieces 8) Packaging, before this had done the packaging, this might have to inspect the product condition not to be defected or damaged 9) Finished work pieces, prepared to delivery. It was result from the research of XYZ Co., Ltd. that the company had rapid the process of electronic parts manufacturing that would help the manufacturing department to have the time in manufacturing products more. And study the Quality Management about process of electronic parts manufacturing by PDCA cover since the receiving of orders from customers, the disbursement of manufacturing equipment, the working systematization including delivering of products to customers. And the company had the controlling of the manufacturing process of electronic parts by focusing on quality and rapidly. And XYZ Co., Ltd use 5s activities to clean the equipment after operation finish to reducing of the dust problem that had an effect on work pieces.

Keywords: Quality Management, Efficiency, The Manufacturing Process , Electronic Parts

INTRODUCTION

The electronics industry was held as the industry that had the importance for the economic sector of the country and had the important role in developing continuously. The development of the modern industry was due from equipment components, tools, machines that the human was the person who had invented the new technology in order to create the competitive advantage for the own business. The increasing of the efficiency in the working process in the production to have the correctness, the accuracy, the rapidity and had reduced the time and had increased the most productivity. This would be one way that would help to contribute the administration to let the business to be able to move forward. The electronics industry was held to create the convenience, the comfort for the human more. This would reduce the procedure, the working time and could control the working automatically and efficiently that was the thing that everyone were familiar with and had become the one part of living of peoples in the current situation inseparably. By many electrical products and electronic products had been used widely. No matter would be electrical machines in the house (such as, the television, the mobile phone, the refrigerator, the washing machine and the computer etc.). This would make the electrical machines and electronics industry was the industry that had the importance for Thai economy system very much.

The electronics industry had used consumer goods more due to the higher population rate. Hence, the production process that had used human labors in controlling in the past couldn't increase the production rate more as required. This had to use machineries to help in the production process to reduce the using of human labors. This would make products that were produced to have low prices, high quality and the regular production process. And the electronics industry were held as the industry that had expanded in the economy quite high due to electronic equipments were composed of various products that had the continuity in the production process and was the industry that had the connection with producing of other many products. The industrial production index in March, 2015 had increased by 2.5 % but when this had compared to the last year. This had reduced by 1.8 % from the export industry as the main issue that had the lower production such as, the hard disk drive, the television and the electrical machine due to the world economy problem had recovered slowly than the expectation (Office of Industrial Economics, March, 2015) The Thai electronics industry had the limitation and the risk for both the export structure and the production that most of it were in the computer and equipment group. This had lacked the connection of the industry, the more competition in the world market and the risk in the moving of investments of foreign investors. Thailand would hurry to adjust. In order that, in order to face with the challenge of Thai electronics industry, in the future, Thailand would need to develop the capacity in the growing of the industry and increase the capacity in the competition. No matter would be the adjustment of products, the innovation and the technology, the expansion of product bases including the creation of the connection of the industry by the public sector might have the way to contribute and support (Kasikorn Research Center, September, 2013, Thai electronics structure with the changing trend and the adjustment direction in the future).

In the case of XYZ Co., Ltd., this had kept the quality of the production process of electronic equipment components by using PDCA and 5S activities in controlling the production that had 5 components that were (cost), (quality), (quantity) and (method) by covering since the production process of electronic equipment components by using PDCA as follows; The planning before working (Plan) since the disbursement process of equipments and planning to prepare to design products, the readiness of staffs, equipments, machines, materials in order to reduce all mistakes that would create the lateness and this had performed (Do) of all production processes. The company had controlled the production process of electronic equipment components by focusing on producing of quality products, producing according to customer requirements. The checking (Check) would have QC staffs to check work pieces before the packaging every time and the adjustment to solve (Action) for damaged products. The researcher had procedures in studying of the research that were the study of the working operation in the production process of electronic equipment components, the keeping of the quality with PDCA and 5S activities. This research result could use to be the way in adjusting in order to increase the efficiency in working of the company and developing the organization to create the highest benefit for the business continuously.

OBJECTIVES

In order to study the process of electronic parts manufacturing. In order to study the method to improve quality of electronic parts by use PDCA and 5 s Activity.

LITERATURE & THEORY

The researcher had prepared the qualitative research by gathering of the information by requesting of the cooperation in interviewing to ask the information from staffs in the organization of XYZ Co., Ltd. XYZ Co., Ltd. was the company that had operated the business type of manufacturing of other electronics components that had manufactured following component parts such as, Yoke Down, Yoke Up, Magnet, Sub Assy, Plate etc. that those equipment were components of the refrigerator, the computer, the hard disk drive and the telephone. The population to be used in the study were the head of the manufacturing department and related staffs.



PDCA (plan-do-check-act, sometimes seen as plan-do-check-adjust) is a repetitive four-stage model for continuous improvement (CI) in business process management. And 5S is a simple tool for organizing your workplace in a clean, efficient and safe manner to enhance your productivity, visual management and to ensure the introduction of standardized working. 5S is a team run process and should be conducted by the people who work within the area in which the principles of 5S are being applied, it is not a tool that can be applied by an outsider onto an area without the knowledge and cooperation of the people within it.

RELATED WORKS

Phatrawat (B.E. 2544) had studied the quality management plan in the factory of accessories. This was found that the factory example had many mistakes such as, the quality target wasn't clear, the form of the organizational structure wasn't clear and there was no preparing of the detail to determine the function. This had lacked the clearness in preparing to be the document of the working method standard and this had lacked the information technology in the quality. Those other mistakes had effects to create other problems such as, the problem in management, the problem of the creation of the waste and the problem in the delivery not in time according to the determination etc. The researcher would propose the guideline to adjust mistakes of the plan in 3 sides as follows; this had proposed the layout of the organizational structure for managing of the quality and preparing to do the detail of the job description in other positions clearly and had more efficiency. There was preparing of the quality plan for the production process, accessories, the working procedure manual and the manual of other working operation methods in the form of the document clearly and preparing the storing system of the information of the waste that would help the executive to have the information in evaluating, analyzing, adjusting and controlling the quality that would make to create the solving of the problem systematically and performing continuously according to the cycle of P-D-C-A. From the case study, this could reduce the percentage of the waste in the foundry from 5.49% to be remained only 3.06%.

Thanawan (B.E. 2535) had proposed the guideline in increasing the productivity in the factory producing toys that had used the driving and iron furnitures by adjusting the working method and planning the production plan. This was found that the preparation of the standard time, the setting of the layout of the factory had created the convenience to reduce the time and the damage from moving, the setting of the quality control system, the arrangement of the job in order to make the machine to create the least leisure time, the planning of using of materials and the placement of the document system to be used in that factory that would help to make the production system more rapid.

PrakaneKeereewan (B.E. 2554) had studied about the increasing of the efficiency in the process of transporting and storing canned fruits by using the study technique of the movement and the time by reducing the time and the labor cost in the department closing the can cover and the storing department. This was found that before the adjustment, in the department closing the can cover and the storing department had low efficiency, high labor costs and product codes mixing together. This had done the analysis of the problem condition with 7 qualitative tools. This had used the study principle of the time and the movement. This had adjusted by using the increasing of equipments to work instead of working of staffs. After this had adjusted, This was found that the department closing the can cover had the transportation of canned longans in the area of the head and the tail of the disinfection rail, No. 3 that had the time period in the production per kilogram to be reduced by 7.49% and 8.07%. The productivity had been increased by 15.40% and 15.37% respectively. All labor costs were reduced by 50.16% in the storing department. The storing of canned longans in the point No.1,2,3 and 4 had the time period in the production per kilogram to be reduced by 9.56%, 9.99%,13.33% and 13.33% respectively. The productivity was increased by 10.59%, 11.08%, 15.42% and 15.39% respectively. Labor costs were reduced by 25%.

METHODS

In the study of the research about *The Quality Management about Process of Electronic Parts Manufacturing* . The researcher had prepared the qualitative research by gathering of the information by interviewing to ask the information from staffs in the organization of XYZ Co., Ltd. and had studied of the content, searched for the information from other documents, books, theses and related researches with the increasing of the efficiency of the manufacturing process of electronics equipments. The population that were used in this research, were the head of the manufacturing department and staffs that had worked in the manufacturing process of electronic parts for 15 persons.

The study of *The Quality Management about Process of Electronic Parts Manufacturing* by having following procedures; Studied the information from the real place that was gathering of the information from interviewing and observing from working staffs and taking notes to record the information. Studied the manufacturing process of electronic parts since the disbursement to receive equipments until to delivering of completed equipments to the store. Analyzed to find the cause that was the happened main problem that hadn't increase the value inside the manufacturing process of electronics equipments.

RESULTS

Before XYZ Co., Ltd. improve new process of electronic parts , they use old process of electronic parts that increase the time in the procedure of receiving raw materials from suppliers because they can't control supplier to deliver electronic parts. The new process of electronic parts manufacturing would make the manufacturing department to be able to produce products easily and when had finished manufacturing products, this would bring the finish goods to send to the store directly. Main process of electronic parts manufacturing were as follows;

- 1) Issue of electronic parts materials from the store by writing about other required equipment that according to purchase orders of customers that what electronic parts did they want?, How much of those amount?, by writing in the form in order to be ready to bring into the manufacturing process.
- 2) Drilling, Determining the working position of work pieces this would perform to determine the drilling position, the position of the walking blade, the position of assembling of electronic parts, drilling of electronic parts such as, Yoke Down, Yoke Up, Magnet Down, Magnet Up, Plate.
- 3) Bonding of work electronic pieces this would bring work pieces that were drilled to do the Auto bonding. The process that had used the machine as the assembly. This would do by bringing the plate with the magnet to bond together by using the machine as the automatic assembly.
- 4) Baking of work pieces with the glue tightly, work pieces were attached with the glue tightly and had no dust.
- 5) Washing, this had to wash work pieces and this mightn't let work pieces to attach with the dust or the glue.
- 6) Magnetize to press the magnetic field in work pieces , when this had finished cleaning it, This would bring work pieces to magnetize to press the magnetic field in work pieces by bringing the plate to press the magnetic field with the magnet. This would come out to be the Sub Assy.
- 7) Assembling work pieces , the process of assembling components with the plate and the magnet, and the Cash stop inner would assemble with Stud cash stop. From the study, this was found that most of the waste would be happened from the assembling process. Due to this might inspect work pieces that had standard sizes, not defected. When this had assembled together, this won't have the problem of work pieces didn't fit to the lock, didn't be able to assemble together.
- 8) Packaging, before this had done the packaging, this might have to inspect the product condition not to be defected or damaged.
- 9) Finished work pieces, prepared to delivery.

In the case of XYZ Co., Ltd., this had kept the quality of the production process of electronic equipment components by using PDCA and 5S activities in controlling the manufacturing. The quality management (PDCA) were as follows;

1. The planning (Plan) before working would make to create the readiness in working really. The production department would receive purchase orders of customers from the sales department. When the production department had received the information that, How much work pieces did customers want?, What types? and the production department would produce according to the schedule. Later, the production department would contact to the warehouse (Store) that the purchasing department had prepared all materials there in order to disburse of equipments and plan to prepare to design products, the readiness of staffs, equipments, machines, materials in order to reduce all mistakes that could create the lateness. The sales department would forecast customer requirements (demand forecasting) in advance annually that in each year, How much jobs did customer want? and then the sales department would breakdown the detail monthly. Later, the sales department would send the information of the production amount for the production department to produce products to keep in advance for 7 days (Make to Stock) in order to support customer requirements. In the case of some days that customers would like to have more or less work pieces and How much work pieces did customers want?, customers would plan for the factory that What date?, What model? and How much work pieces did they want?
2. The performing (Do) to produce work pieces according to the determined process that was Jigging that had done the function to determine the drilling position, the position of blading, the position of composing components of Yoke down, Yoke up, Magnet down, Magnet up, Plate. Later, this would bring work pieces to have the auto bonding and when this had finished bonding, this would magnetize and bring all work pieces to compose components with bases of work pieces and the magnetic disk that was the plate with the magnet. When this had finished composing together, this would check work pieces not to be damaged. If work pieces were damaged, this might bring to solve again and when work pieces were completed, this would bring it to pack in packages in order to deliver to customers. When this had performed according to the determined process, this would create the smoothness. This wouldn't make the job to be obstructed.
3. The checking (Check) before the production would disburse electronic equipment components. This would have to check the component of each model. This had to receive components to the production department in order to be ready to produce and after this had finished producing work pieces. This would have QC staffs to check work pieces before packaging every time. If work pieces couldn't pass the standard, it had to be sent back to solve and produce again.
4. The adjustment to solve (Action) in the case that working results weren't as the target. This would have to check that what procedure that would create the mistake such as, the machine system was defected, this would make work pieces have the mistake. The production department would have engineers to check the machine and solve it immediately in order not to create the lateness in working.

After this had finished produced work pieces, the factory would have 5S activities for every staffs to participate to help to keep clean. By 5S activities were as follows;

1. Sort This had to clear up, every staffs would have to check other things in the factory especially in the responsibility area and might distinguish needed things and unneeded things separately. Every staffs had to get rid of unneeded things or things that had too much for the need.

2. Set In Order This had to be convenient, this should place needed things to be easily for bringing to use by storing neatly to be convenient to pick that was needed very much to have to study the method to place things by considering of the quality, the efficiency, the safety. Every point of the factory might have the clear notice board. This had to determine to place clearly. This had to separate the zone to place things by drawing the line to see clearly. This had to put the label to show the place to place that things and the area of the footpaths mightn't have garbage's or barriers to block footpaths to make to walk inconveniently. And when this had brought things to use. This should focus to bring to store in the same place. Things that were used daily should be placed near the body.
3. Sanitation This had to keep clean, that was keeping clean of the place, equipment, things, tools to be looking good all the time. Points that should be interested in keeping clean, were the wall floor, the corner area of the room, footpaths might be kept clean, the area of machines and equipment and the body of machines. This might have to wash to keep clean every time by having not allow to create the dust such as, Keeping clean of clean room garments.
4. Standardize This might have the hygiene, that was the clean condition, the neatness by keeping of the first of 3S to preserve or make it better as always. The good hygiene would be happened when we had done the first of 3S continuously and try to adjust better in order to check that this had done the first of 3S continuously or not. The factor would let the head of the department to check the area often and the obtaining benefit from doing to have the good hygiene was the good health of staffs both the body and the mind, the working place that was neat, clean, pleasant to work, had the safety in working.
5. Sustain This had to create the good habit, the correct performing and doing as the good habit of 5th S was the important point of 5S activities because this activity would be good or not, this would depend on the person to bring activities to use. The factory would foster staffs to have the good attitude to adjust the job better as always by the head of the department would have to be the good pattern for staffs to see as the example.

CONCLUSION

The dust was the main problem that was happened in the manufacturing process of electronic parts. If the dust had entered to contaminate in the board and the hard disk drive. This would make the board and the hard disk drive to have the electric shock and couldn't be used. This would make customers to refuse to receive products and reduce purchasing orders because products had no quality and this still had an effect on the company in the job quality that was reduced. The productivity was lower. There was no reliability and the company had no net profit. The company would need to have to discard or have to bring to do it again. This would make to waste the time and lose the expense in bringing to solve it again. If that work pieces were too much damaged and it couldn't solve it, this would have to destroy that work pieces. This would have to call the head in each related department that were the engineering department, the manufacturing department and the finance department together to take the responsibility. Because the destruction of one delivering work piece, this would have an effect on the expense and the investment fund in purchasing of things to do work pieces of the company. The company would give the importance in the caution of the dust that had the very small particle. This would create the clean room to control the cleanness and the moistness.

In order to get rid of the dust not to pass into the clean room, the company would set the rule to let staffs might pass the air shower before passing to the clean room and staffs had to wear dresses to cover all bodies such as, shoes, the mask, glasses, the hat to protect the contamination and this might have to check up bodies to be clean as always including materials and other parts might be cleaned before passing to the clean room. QC staffs would have to check every staff before entering into the clean room by there was the prohibition to apply the powder, make up. This was allowed to apply some creams that each room would be different such as, the Auto Bonding, this would have the dust only 1,000 microns. In each room would have staffs to inspect the dust in order not to over the standard and QC staffs would have to evaluate cosmetics of staffs that had determined according to the rule.

From gathering of the information in this time, this would make to know that the company had the happened problem in the manufacturing department that was the dust had given an effect on work pieces to create the damage. This would make customers to refuse to receive products. This would make the company to have the solving method by creating the clean room to protect the dust and there were QC staffs to perform to examine every staffs to clean their bodies and wear dresses to protect the dust such as, the hat, glasses, shoes, the suit and had the cosmetics audit by prohibiting to apply the powder, make up and could apply some creams before entering to the clean room. If staffs didn't follow this rule, staffs would be punished. The first time would be the warning. Later, This had to have the job suspension. Because for the way that the dust had attached to work pieces, this would make work pieces to have the electric shock and be damaged. Customers didn't receive products. This would make to pay the expense and waste the time in solving work pieces again.

The company had adjusted the manufacturing process in the new form by reducing working procedures to create the working rapidly by comparing with the old manufacturing process and the new manufacturing process. The new manufacturing process could help the manufacturing department to be able to reduce the time in the procedure of receiving raw materials from suppliers and inspecting raw materials including cleaning of raw materials that the department had used the time from that part to increase the production capacity to be able to manufacture products in time in order to know the requirement clearly. The company had forecasted customer requirements in advance annually in order to know the amount of products to be produced to be able to respond customers immediately. When the sales department had the certain information, the sales department would send the information about the amount to be produced to the manufacturing department to keep the stock in advance for 7 days in order to respond to each customer requirement that wanted different amount of products. And customer would like to get how much of the job.

The sales department would plan the job for the manufacturing department that what day customers would like to get the job. What was the kind of the model?, and How much of the amount of products?, and the manufacturing department would coordinate with the engineering department to perform to take care of the machine, inspect other equipments to be ready to be used all the time before starting of the manufacturing every time in order to reduce the lead time in waiting to repair the machine and create the discontinuity in working.

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REFERENCES

- Benjamaporn Peeranunthapunya.2006, the adjustment of the efficiency of the excavating and carrying soils system at Mae Moh mine by using the technique of the study of the movement and the time. The thesis of Master of Engineering, Program in Industrial Engineering.Faculty of Engineering, Chiang Mai University.
- Charoen Limchayada, 2014, the adjustment of the efficiency in the manufacturing process of the pulp water with the technique of the operation management. Thesis would be proposed to Ramkhamhaeng University, Master of Business Administration (General Management).
- Ho, S. K., Cicmil, S., & Fung, C. K. (1995). The Japanese 5-S practice and TQM training. *Training for Quality*, 3(4), 19-24.
- Ishikawa, K. (1985). *What is total quality control? The Japanese way*. Prentice Hall.
- KittipongWiwakanond, KritchaiAnakmanee, KumpolKijcharapoom and his group (the management of the process of the way to create the quality, increase the productivity and the capacity for the competition, Bangkok: Thailand Productivity Institute, 2004, Page 81-82).
- Kraemer, A., Lin, S., Brabandt, D., Böhlke, T., & Lanza, G. (2014). Quality control in the production process of SMC lightweight material. *Procedia CIRP*, 17, 772-777.
- Naor, M., Goldstein, S. M., Linderman, K. W., & Schroeder, R. G. (2008). The role of culture as driver of quality management and performance: infrastructure versus core quality practices. *Decision Sciences*, 39(4), 671-702.
- NI,G.-L.and JING,C.-X.,2002,Flow and electronic application of ISO9001:2000 quality management system, activity. China standard publishing company.
- Pavletic, D., & Sokovic, M. (2009). Quality improvement model at the manufacturing process preparation level. *International Journal for Quality Research*, 3(4), 309-315.
- PrachuabKlomjing (logistics supply chain: the design and the basic management, Bangkok: SE-Education, 2013).
- RachadaKumboon, PongsaiPetcharak and his group, (the manufacturing management and the operation, Bangkok: Pearson Education Indochina Ltd. 2008).
- SomboonKongtongvattanaand YuwatVuthimedhi , 2015 A Management Efficiency Prototype of Electrical and Electronics Parts Industries in Thailand
- SutasinePotijan , 2015 PDCA Productivity World /Operations/PDCA Journal, Thailand Productivity Institute
- Vivek A Deshpande , 2013 ,PDCA -Analysis for Quality and Productivity improvement in BISE plant of Apollo Tyres Limited Company
- Zu, X. (2009). Infrastructure and core quality management practices: how do they affect quality?. *International Journal of Quality & Reliability Management*, 26(2), 129-149.

Strategic Logistics Marketing Management of Retail Stores in Salaya Subdistrict, Phutthamonthon District Nakhonpathom

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Abstract The purposes of this research were 1) to study the strategic logistics marketing management of retail stores in Salaya Subdistrict, Phutthamonthon District Nakhonpathom 2) to compare demographic characteristics towards strategic logistics marketing management of retail stores in Salaya Subdistrict, Phutthamonthon District Nakhonpathom 3) to study the guidelines for the development of strategic logistics marketing management of retail stores in Salaya Subdistrict, Phutthamonthon District Nakhonpathom. The sample group in this research is the retail stores in Salaya Subdistrict, Phutthamonthon District Nakhonpathom with a total of 400. Found that retail stores operators in Salaya Subdistrict, Phutthamonthon District Nakhonpathom had opinions about the strategic logistics marketing management of retail businesses in the overall picture is at a very important level, with an average value of 4.85 when considering each aspect of the variable. In order from highest to lowest, as follows: data have an average of 4.52, packaging has an average of 4.47, material-handling management in production averages 4.46, demand for products averages 4.24, warehouse management has mean 4.35, inventory management average 4.37, financial average 4.25, transportation systems average 4.26, Order process the process of purchasing an 4.15 and an average of 4.13.

Keywords: Strategic, Logistics Marketing Management, Retail Stores, Salaya Subdistrict

INTRODUCTION

Kantaphon Povawate and Kritada Chianwattanasuk, (2019), Production is the creation of products and services to meet the endless human needs. Due to the limited resources available, it is a very important role in the production process. Production management to help produce products that meet the quality requirements of consumers, will help to bring the resources to maximize use as well. Production that has processed various inputs through a process that results in higher production value than inputs. Therefore, production is one of the main functions of business administration that directly affects the survival of the organization. And must relate to other duties, such as the relations of the marketing department, the finance department, and the production department. Must be efficient and must coordinate effectively In order to achieve the ultimate goal of business organization is Business profits.

Ploy Yamsanoh, (2016), Modern marketing strategy, which is a marketing mix (8P's for short, which requires the idea of marketing communication (IMC) using modern communication tools with consumers, which is further divided from Many original parts Both education both inside and outside the country, linking to doing business New, which focuses on creating maximum profits on consumer satisfaction, which is a long-term business with the changing behavior of modern consumers, which has changed dramatically, especially market segmentation. (Segmentation) which can not be divided into traditional market segments, which the study documents in the first part is a way to do business and cause behavior in the purchase of various products as well The determination from the government by using the power of "civil state" to drive the new policy to push Thailand into the "Thailand 4.0" model in order to adjust the structure to a value driven economy is considered a major turning point. In the industrial sector In order to step into an era that focuses on production with innovation and advanced technology. By focusing on the development of target industries in 5 groups: food, agriculture and biotechnology Public Health, Health and Medical Technology Group Group of tools, intelligent devices, robots and mechanical systems using electronic controls Digital group, internet technology that connects and controls various devices Artificial intelligence and embedded technology and creative industry groups, culture and high value services To meet the said strategy The electronics industry is an important part. As well as being the heart of driving and performing various duties To be effective in other industries Which will become even more important in the role and higher value in the future, as can be seen from the Thai economy tends to slow down at 3.3 and 3.7 percent in 2019 and 2020, respectively, lower than Assessed in the Monetary Policy Report Previous issue from foreign demand. The volume of exports of goods and services tends to expand lower than expected according to the economy of the trading partners and the world trade volume is slowing down. In addition, private consumption and investment grew at a slower pace from the previous year. Government spending is still supportive of the economy, but lower than previously assessed. Data from: Bureau of Industrial Management Development (2018).

The problem affecting the community economy is the study of the production of products in the community. There are many problems with the Industrial Production Index (MPI) for February 2018, which grew by 4.66 percent from the same period last year. Grew positively for 10 consecutive months as a result of continuously improving exports in accordance with the global economy. Data from: Ministry of Industry (2018) A study of the production of products in the community found that there are several problems as follows

1. Products or products from rural industrial businesses still do not have access to overseas distribution channels.
2. Products or products from rural industrial businesses are competed and marketed from products in the industrial system Which are usually products that use production technology or use brand names from foreign countries Which is the result of advertising influence or foreign product values

3. People or groups of people in rural areas lack knowledge and understanding of product product development. As well as packaging in accordance with the tastes of the market
4. The people or the group of people still lack the knowledge about technical techniques to produce products with consistent quality, standards, and hygiene.
5. People or groups of people still lack skills in the process of managing business systems, including lack of entrepreneurial skills.
6. People or groups of people lack the funding source to support the operation. Including improving the business to be effective



Information from: Ministry of Industry (2018)

The researcher is interested to study about important issues that are How to create a retail logistics system in Salaya district Phutthamonthon District Nakhon Pathom Effectively resulting in the researcher studying the strategic logistic marketing of retail products in Salaya Subdistrict Phutthamonthon District Nakhon Pathom To lead to creating guidelines for the development of strategies for each business product to progress further

RESEARCH OBJECTIVE

The objectives of this research are as follows:

1. To study the strategic logistics marketing management of retail businesses in Salaya Subdistrict Phutthamonthon District Nakhon Pathom
2. To compare the demographic characteristics on the strategic logistics marketing management of retail businesses in Salaya Subdistrict Phutthamonthon District Nakhon Pathom
3. To study guidelines for the development of strategic logistics marketing management of one Tambon One Product products of retail business in Salaya Subdistrict Phutthamonthon District Nakhon Patho

RESEARCH FRAMEWORK

Research framework of this research is shown in figure 1.

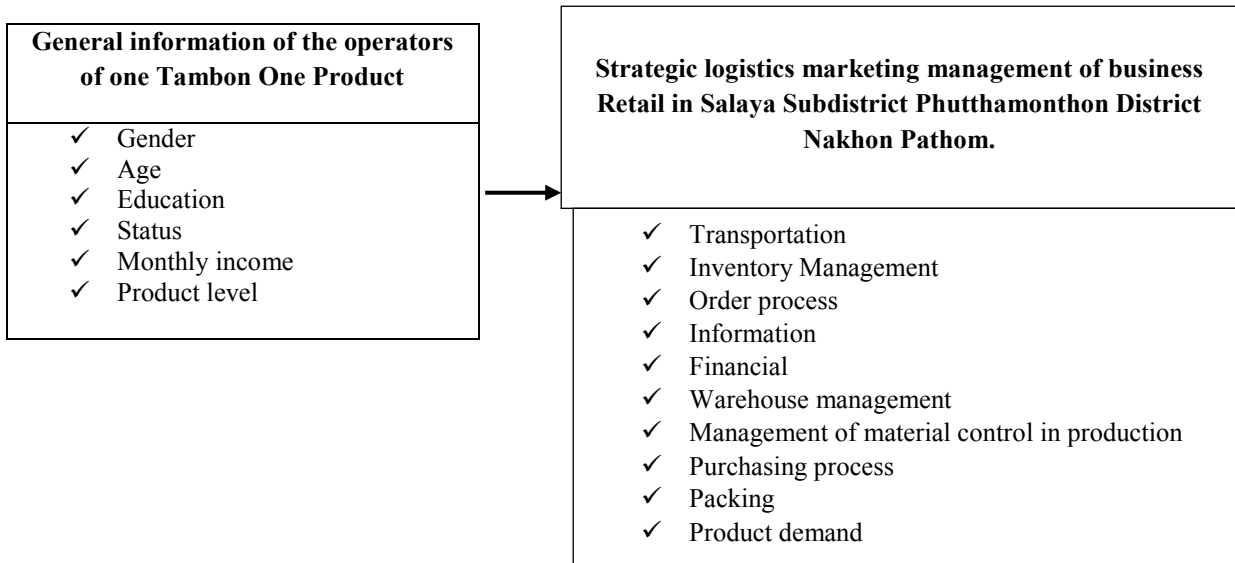


Figure 1. Research framework

This data collection covers only one district product trader. One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Province, consisting of 400 people, divided into 2 methods which are data collection by structured interviewing, 5 cases and data collection by using questionnaires of 400 people. Using mixed methods research

(1) Qualitative Research by structured interview.

(2) Quantitative research (Quantitative Research) by using questionnaires (Questionnaires) to get important information in the study, analysis and conclusion completely.

HYPOTHESIS OF RESEARCH

H1: One Tambon One Product Trader, Salaya Subdistrict Phutthamonthon District Nakhon Pathom province that has gender, age, education level, status, monthly income Product levels vary Have marketing management Strategic Logistics of One Tambon One Product Products in Salaya Subdistrict Phutthamonthon District Nakhon Pathom province, overall, different.

H2 : As for the operators of one Tambon One product, Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different types of products There is a strategic logistics marketing management of the products of One Tambon One Product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Overall is no different.

LITERATURE REVIEW

Strategic Logistics Marketing Management of One Tambon Products One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences were statistically significant at the level of .05 which is consistent with the study of Nimit Siriwor, (2011). Have studied A study of factors affecting route selection in Udon Thani Province To support the transport of goods by double railways The research found that The results of the data analysis using Independent sample t-test at the statistical significance level of 0.05. The Sig. Value is greater than the statistical significance level at $\alpha = 0.05$. There are 5 aspects indicating that entrepreneurs of different sex are more efficient. Of logistics management Transportation costs Convenience Response Security Economic value added and the overall picture is not different. Strategic Logistics Marketing Management of Sub-district Products One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences were statistically significant at the .05 level, which is consistent with the studies of Jidapa Nguan Heng Seng and Jiraporn Khanthong. (2019). Have studied Strategy to develop the competitive advantage of the road freight business in the lower northeastern region The research found that The results of the analysis with One way ANOVA statistics at the statistical significance level of 0.05. The Sig. Value is greater than the 0.05 value in all 1 areas, indicating that operators of different ages have the efficiency of logistics management. Transportation

costs But the Sig. Value is less than the statistical significance level at 0.05 with 4 aspects, indicating that entrepreneurs of different ages have the efficiency of logistics management. Facilitation Response Safety, value added, economic and overall different.

Strategic logistic marketing management of a product One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences in statistical significance level .05, which is not consistent with the study of Duangjai Chandasang.(2015). Factors Affecting the Efficiency of Container Freight Services: A Case Study of Industrial Companies in Bang Na District, Bangkok By truck, transportation routes, central region The research found that The results of the analysis with One way ANOVA statistics at the statistical significance level of 0.05. The Sig. Values are greater than the 0.05 values in all 5 areas, indicating that entrepreneurs with different educational levels have the efficiency of logistics management. Transportation costs, convenience Response Security Economic value added and the overall picture is not different.Strategic Logistics Marketing Management of One Tambon Products One product in the Roi - Sin Sub - Sin group was significantly different at the .05 level, which was not consistent with Supasara's study. Pano Rattarot (2016). Conducted a study on Logistic management That affects the competitiveness of the pottery product group operators, Ko Kret District Pak Kret District Nonthabur Province Chao Phraya River And the Pasak River The research found that The results of the analysis with One way ANOVA statistics at the statistical significance level of 0.05. The overall Sig. Value greater than 0.05 indicates that the water carrier That have different marital status Managed Water freight Planning Organization, motivation, control and overall not different.

Strategic Logistics Marketing Management of One Tambon Products One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences in statistical significance at the level of .05, which is consistent with the study of Jatturong Ploenhad.(2015). Increasing the capacity of one Tambon One product in the industry Tourism (floating markets) of Thailand. Before entering the ASEAN Economic Community, it was found that manufacturers of products in one district One product that has age, education level Monthly income, product level and product type are different, there is a degree of strategic management of the marketing of one district product. One product In the central region of Thailand is different.Strategic Logistics Marketing Management of One Tambon Products One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences were statistically significant at the level of .05, which is consistent with the studies of Viroj Jesadalak and Wanlaya Kamraman. (2017). Strategies for creating a competitive advantage of the One Tambon One Product Project: a case study of the Herbal Ball House Phra Pradaeng District Samut Prakan province found that One District Product Manufacturer One product that has age, education level Monthly income, product level and product type are different, there is a degree of strategic management of the marketing of one district product. One product in the central region of Thailand Differences were statistically significant at the .05 level.

Strategic Logistics Marketing Management of One Tambon Products One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Not significantly different at the .05 level, which is consistent with the studies of Terdsak Bunthot and Chalit Santiwatkhankhana. (2018). Have studied the subject Factors Influencing the Effectiveness of Logistics Management: A Case Study of Mukdahan Special Economic Zone by Truck, Transportation Route, Central and Eastern Region The research found that The results of the analysis with One way ANOVA statistics at the statistical significance level of 0.05. The Sig. Value is greater than the 0.05 values in all 5 areas, indicating that entrepreneurs with different types of businesses have the efficiency of logistics management. Transportation costs Convenience Response Security Economic value added and the overall picture is not different.

RESEARCH METHODOLOGY

Due to this research, the researcher has specified guidelines, research methods used in the study In order to obtain findings that answer the research objectives That uses quantitative research guidelines By using a questionnaire To inquire from the operators of one Tambon One Product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Therefore making the sample selection must have the principles of sample selection To set a good example and have enough Therefore, the researcher has determined the method of selecting the sample group which is the operator of one product district. In the Salaya sub-district group Phutthamonthon District Nakhon Pathom By using a simple sample selection method And determining the proportion of sample sizes The sample size can be determined by using Yamane's 1973 sample size formula at 95% confidence level for 400 subjects.

The sample group used in this research consists of 2 groups as follows

3.1 Sample group used for quantitative research (Quantitative Research) by using the questionnaire, the researcher determined the method of sample selection, namely the method of multi-stage random sampling in order to obtain good representative data of the population (Term Saksuk Suwibun, 2015) Which has the following steps:

3.1.1 List the names of one Tambon Product Operator One product To classify the products into 5 categories which are food, beverage Clothes and garments, utensils / decorations / souvenirs, and non-food herbs By group cluster sampling (Cluster Random Sampling) (Toemsak Sukwibun, 2015)

3.1.2 List the product name of One Tambon One Product by classifying product level by dividing into 5 levels which are 1 star, 2 stars, 3 stars, 4 stars, and 5 stars by stratified sampling method (Stratified Random Sampling) (Toemsak Sukwibun, 2015)

3.1.3 List the names of the entrepreneurs of one Tambon, One product Classified by product type and product name list One product Classified by the product level to take to classify only the number of entrepreneurs of one Tambon One product in the Khlong Yong subdistrict group Phutthamonthon District, Nakhon Pathom, classified by product level and product type.

3.1.4 Carry out a simple random sampling by using the lottery method (Fill Sak Sukvibun, 2015) to get the sample in proportion to the sample size of the one-Tambon One Product Operator (Probability proportionate to size sampling)

3.2 Sample group used for qualitative research by structured interview. The researcher determined the method of selecting the sample group (Praphapip Suthiwasinont and Prasopchaipunon 2018). Choose a simple random sampling by using the lottery from the number of entrepreneurs in one Tambon One product. Classified by product type, each product type will have one sub-district, one product entrepreneur In Khlong Yong sub-district group Phutthamonthon District, Nakhon Pathom, classified by product type Total 5 persons.

RESEARCH RESULT

1. General information of the manufacturer of One Tambon One Product In the central region of Thailand, one Tambon trader One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom The majority are 225 women, accounting for 81.09%, aged 41 years and over, a total of 172 people, representing 62.15%. Marital status: 215 people, representing 75.34%, with an average monthly income 10,001-15,000 baht, 63 persons, representing 24.64%, 82-star 2-star entrepreneurs, representing 30.00% , 136 items of clothing and clothing, accounting for 47.86%.

2. Strategic logistic marketing management of one Tambon One Product products One Tambon One Product Trader, Salaya Subdistrict Phutthamonthon District Nakhon Pathom The entrepreneurs in the sub-district, one product, the opinions of the strategic logistics market management in general are at the high level with an average of 4.87 when considering each aspect of the variable. In order from highest to lowest, as follows: data have an average of 4.53, packaging has an average of 4.59, material handling for production has an average of 4.47, demand for products has an average of 4.32, warehouse management has The average of 4.32 in inventory management has an average of 4.27. In the financial aspect, the average of 4.27 in the transportation system has an average of 4.26. Average of 4.75 and the purchasing process averaged 4.17. One Tambon One Product Trader, Salaya Subdistrict Phutthamonthon District Nakhon Pathom province that has gender, age, education level, status, monthly income Product levels vary Have marketing management Strategic Logistics of One Tambon One Product Products in Salaya Subdistrict Phutthamonthon District Nakhon Pathom province, overall, are significantly different at the .05 level of significance.

As for the operators of one Tambon One product, Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different types of products There is a strategic logistics marketing management of the products of One Tambon One Product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Overall, there is no significant difference at the .05 level of significance.

DISCUSSION

One Tambon One Product Operator One product in Khlong Yong Subdistrict Group Phutthamonthon District, Nakhon Pathom with different gender There is a strategic logistics marketing management of the products of One Tambon One Product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom The hypothesis testing found that the entrepreneurs in one Tambon product One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different genders Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences were statistically significant at the .05 level. One Tambon One Product Trader, Salaya Subdistrict Phutthamonthon District Nakhon Pathom with different ages Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom province is different. The hypothesis testing found that the entrepreneurs in one subdistrict One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom with different ages There is a strategic logistics marketing management of sub-district products. One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences were statistically significant at the .05 level. One Tambon Product Entrepreneur One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom with different educational levels Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom the hypothesis test results show that one product trader is important. One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom with different educational levels There is an important strategic logistics marketing management of a product. One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences were statistically significant at the .05 level. One Tambon Product Entrepreneur One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different statuses Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom The hypothesis testing found that the entrepreneurs in one Tambon product One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different statuses Strategic logistics management of one district product markets One product in the Roi - Sin Sub - Sin group was significantly different at the .05 level.

One Tambon Product Entrepreneur One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different monthly incomes Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom The hypothesis testing found that the entrepreneurs in one Tambon product One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different monthly incomes. One Tambon Product Entrepreneur One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different product levels Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom The hypothesis testing found that the entrepreneurs in one Tambon product One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different product levels Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Differences were statistically significant at the .05 level. One Tambon Product Entrepreneur One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different types of

products Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom The hypothesis testing found that the entrepreneurs in one Tambon product One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom With different types of products Strategic logistics management of one district product markets One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom Not significantly different at .05 level.

CONCLUSION AND RECOMMENDATIONS

1. Interested persons can study about the strategic logistics marketing management of products from One Tambon One Products in Salaya Sub-district, Phutthamonthon District Nakhon Pathom That can upgrade the operations of the product district One product in Salaya Sub-district, Phutthamonthon District Nakhon Pathom By using the strategy that was discovered mainly in education Or the research results may not be covered for further studies on transportation systems. (Transportation) Inventory management, Order processing, Database, Finance, Warehouse management, Production control in the purchasing process, packaging, and product demand.
2. Variables in research studies may have other interesting variables in the future. Which may be caused by the rapid change of society Therefore, those interested can learn about human resource management. Finance and Accounting Information systems and the ability to increase the ability to compete etc.
3. The findings of the strategy should be used for studying with the entrepreneurs of the One Tambon One Product in the northeast region. Or to improve the study of other strategies and compare with other operators in order to develop the strategy to be more appropriate.
4. It should be a participatory action research. (Participatory Action Research) by various agencies. Affiliated with community development in each province Took part in joint research.
5. There should be additional strategies to be able to meet the needs of customers and the market better than the competitors, such as Marketing Information System, Business Information System and Logistics Information System. (Logistics Information System) by encouraging entrepreneurs to product one Tambon One Product Strategic electronic commerce applications To increase efficiency and business competitiveness And more importantly, the application of electronic commerce as a tool to support the creation of new markets Develop new products or services that have value in innovation that is market-oriented and with product differentiation. Present value of innovation in the market where there is no trader who presents products or services in that industry gap before, by using the strategy that is mainly found in the study from the results of research about the above factors beginning It can be applied as a guideline for managing the strategic logistics market of the sub-district products. One product in Salaya Sub-district, Phutthamonthon District Nakhon Pathom In order to develop new knowledge for the academic community about the factors that affect the success in managing the strategic logistics market of one district product One product in Salaya Subdistrict Phutthamonthon District Nakhon Pathom In addition, general interested parties can apply the results of the study to be a tool to set guidelines for the development of strategic logistics marketing management strategies of One Tambon One Products in Salaya Subdistrict. Phutthamonthon District Nakhon Pathom Which will be a tool for local development and prosperity Able to raise the success of one district product trader One product in Salaya Sub-district, Phutthamonthon District Nakhon Pathom To continue to improve.

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REFERENCES

- Bunthot, T., & Warangkana, C. S. (2018). Factors influencing the effectiveness of logistics management: A case study of Mukdahan special economic zone. *Pathum Thani University*.
- Chaichat, C. & et al. (2019). *Strategic plan for 3-year logistics and supply chain research* (TDRO Report), Thailand Research Fund, No. 149 February 2019.
- Chandasang, D. (2015). Factors affecting the efficiency of container transport services: A case study of industrial companies in Bang Na District, Bangkok. *Journal of College of Logistics and Supply Chain*, 1(1).
- Chatanon, W. (2017). *Research equipment quality inspection*. Kasetsart University.
- Chienwattanasuk, K., & Boonminimit, O. (2016). Analysis of customer segmentation by using social responsibility standards for consumer issues of a small hotel business in Thailand. *Burapha Commercial College Journal Burapa University*.
- Demonstration for a long time. (2017). *Principles of writing, quantitative research discussion*. Academic article Humanities, Social Sciences and Arts, Silpakorn University.
- Exports Recovering Continuously with the Global Economy. (2018). *Data from: Ministry of Industry 2018*.
- Imjit, P., & Panitkulsiri. (2015). Retail store management influencing consumer behavior: The study of convenience stores in Bangkok. *Journal of Research and Development. Humanities and Social Sciences*. Issue 37/2562.
- Khamhaeng, S. & Faculty. (2018). Modern marketing of new entrepreneurs based on Thailand 4.0. *Journal of Thonburi University*, 12(29).
- Lertwiwatchaiyon, S. & Others (2018). *Logistics and supply chain management for Haeo farmers. Suphan Buri Province*. Faculty of Business Administration and Information Technology Rajamangala University of Technology Suvarnabhumi.
- One Tambon One Product Trader, One Product in Khlong Yong Subdistrict, Phutthamonthon District, Nakhon Pathom (2019). Retrieved from <http://www.thaitambon.com/OPC2553/Provinces.htm>
- Phim, P., Suthawasinan, & Pasunont, P. (2016). Sample selection strategies for qualitative research. *Parichat Journal Thaksin University*, 29(2).
- Ploenhad, J. (2015). Increasing the potential of one tambon one product in the industry tourism (floating market) of Thailand before entering into the ASEAN Economic Community. *Journal of College of Logistics and Supply Chain* 1(2).
- Povawate, P., & Chianwattanasuk, K. (2019). Consumer media usage behavior and adaptation of digital television business. *Economics and Business Administration*.
- Punyaratrathot, S. (2016). *Logistics management that affects the competitiveness of the pottery product group operators, Ko Kret District Pak Kret District Nonthaburi*. Humanities and Social Sciences Journal Article Rajapruet University.
- Rangsariyakar, C., & Chanmontha, K. (2018). Study of factors affecting the selection of the route in Udon Thani Province to support the transport of goods by double railways. *Kasem Bundit Engineering Journal* 8(2).
- Santi, P. (2019). Qualitative research in community health system research. Academic article *Journal of Humanities and Social Sciences Rajapruet University*.
- Seng, H., & Khanthong, J. (2019). Have studied strategies for developing competitive advantages of the lower Northeastern Road Transport Business. *Nakhon Ratchasima College*.
- Sukwibun, T. (2015). *Sampling techniques and estimation*. Faculty of Management Science Kasetsart University.
- Sutthichaimethee, P. & Chienwattanasook, K. (2012). The model of coincident indicators and leading indicator for Thailand. *Journal of Accountancy and Management*, 2012, 170–184.
- The Growth Trend of the Thai Economy. (2019). *Office of industrial management development*. Bank of Thailand,
- Wongkhan, K. (2018). *Create a new generation of researchers (Chicks)*. Department of Chemistry, Faculty of Science. Ubon Ratchathani University.
- Yamsanoh, P. (2016). Factors that have a positive influence on the decision to buy silver or gemstone jewelry of customers in Bangkok. *Master of Business Administration Bangkok University*.

Product Development of Palm Jaggery Sorbet

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Abstract: The purpose of this paper is to develop the standard recipe of palm jaggery sorbet. Also, to study the chemical quality and shelf-life of palm jaggery sorbet at 1 month. Additionally, to evaluate customers' satisfaction of palm jaggery sorbet. The result indicated that recipe 2 of palm jaggery sorbet had the highest scores. Therefore, it was chosen to be the basic recipe and used to substitute palm sugar for coconut juice in the sorbet recipe. The study found that substituting palm sugar for coconut juice had a 100% positive result. The palm jaggery sorbet had 26 °Brix of sweetener, yellow color, jaggery aroma, sweet flavor, and smooth texture. A 30% stabilizer had the highest overrun and 140.31 cps. of viscosity. Thus, the more stabilizer is added, the more viscosity of ice cream is seen since it had the consistency of air bubbles. Also, the melt-down rate slowed down because of the higher stabilizer. The study demonstrated the chemical quality of palm jaggery sorbet had Energy 110 kcal, Carbohydrate 27.6 grams, Protein less than 1.25 grams, Fiber 0.08 grams, Moisture 72.0 grams, and Ash 0.44 grams. Additionally, the shelf life of palm jaggery sorbet that is stored at -18°C for a month didn't change in quality. The physical quality was tested every week. The results indicated that the color value (L*), a*, b* was non-statistically significant (P-Value ≥ 0.05), the microorganism was less than 6x10⁵ CFU/g complies to the standard, and the customers' satisfaction was 100% approval of palm jaggery sorbet.

Keywords: Sorbet, Palm Jaggery, Stabilizer, Shelf-life

INTRODUCTION

Sorbet ice cream has 2 main ingredients which are fruit and sugar. Perhaps, it contains a few more ingredients such as water, acid, or other ingredients. There is no milk or fat included. The flavor would be sweet and sour based on the original fruit that is the main ingredient. Palm is a robust tree that has the scientific name of "Borassus flabellifer", commonly known as Asian Palmyra palm, Toddy palm, Sugar palm, Cambodian palm. In Thailand, palm trees are found all over the country. However, they are mainly grown in the south especially in Songkha province. Next is Petchaburi and other provinces. The center of Thailand also grows some palm trees, however, less than in the south specially in Nakhon Patom and Chainat. There are many kinds of palm tree which are distinguished by the fruit characteristics. For example, the one that has black fruit is called "Crow Palmyra Palm" or another that has red fruit is called "Rice Palmyra Palm". Palm fruit is found on female trees only which grow from clusters called "Palm bunch." The gender of the palm will be determined after 15 years of growing. Thai people knew and used to consume palm fruit since ancient times. In fact, Thai people use palm fruit as an ingredient in food, dessert, beverages, and some seasonings. Well known foods which use palm fruit as an ingredient are spicy palm fruit salad, curry soup or sour soup, and stir fried palm fruit with shrimp, etc. In addition, there are some desserts using palm fruit such as toddy palm cake, sweet palm kernels, Kanom Ko (Chinese pancake made of rice flour), peanut sesame bar, etc. Moreover, palm fruit can be made into some beverages such as fresh palm juice, palm wine, fermented palm juice, etc. Additionally, palm fruit is used to produce some seasoning such as palm vinegar, palm sugar, and palm jaggery sugar, etc. (Suwat, 2009)

Thus, the researchers focused on benefits of palm jaggery sugar to human health. The palm jaggery sugar is sweet, easy to eat, and has numerous health benefits for all ages and genders. Therefore, the researchers developed the new sorbet ice cream from palm jaggery sugar to improve nutrition. The researcher anticipated the new sorbet ice cream would be another choice for customers. Moreover, the researchers expected this innovation would promote the most effective way to use Thai fruit as a dessert ingredient.

Objective

1. To develop the standard recipe of product development of palm jaggery sorbet
2. To study the chemical quality of product development of palm jaggery sorbet
3. To monitor the shelf-life of palm jaggery sorbet that is stored for 1 month
4. To evaluate customers' satisfaction of product development of palm jaggery sorbet

Method

1. To develop the standard recipe of product development of palm jaggery sorbet

1.1 Basic recipe study

This experiment studied the three basic recipes of coconut sorbet by Randomized Complete Block Design (RCBD) (Saichol, 2003) at 95% confidence interval. The results evaluated sensory quality such as appearance, color, aroma, flavor, texture, and satisfaction. This experiment was performed with 40 participants who are professors of the Department of Food and Nutrition, Food Science and Nutrition, Food Service Industry of the Home Economics Technology Faculty in Rajamangala University of Technology Phra Nakhon. The products were tasted and evaluated. The satisfaction was separated into 9 scales (9-Points Hedonic Scale) and compared the difference of average by DMRT (Duncan’s New Multiple Range Test) software.

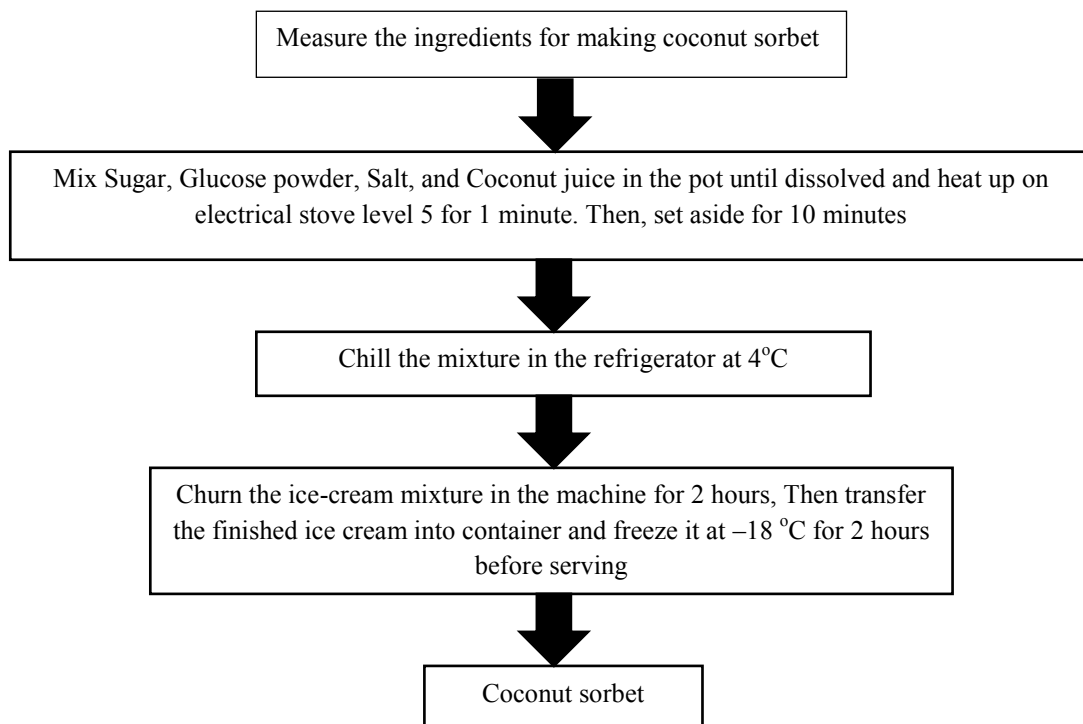
Table 1 The three basic recipes of coconut sorbet

Ingredient	Volume (Percent)		
	1 st recipe	2 nd recipe	3 rd recipe
Coconut juice	90.68	92.62	81.73
Syrup	1.00	0.00	0.00
Sugar	0.00	5.88	8.34
Gelatin	0.63	0.00	0.21
Salt	0.12	0.04	0.04
Glucose	0.00	1.44	0.00
Water	0.00	0.00	9.66

Source : The 1st recipe = No name 2 (2016)

The 2nd recipe = foodtravel.tv (2013)

The 3rd recipe = No name 3 (2015)



Flowchart 1 The production steps of basic coconut sorbet

1.2 Study of appropriate amount of product development of palm jaggery sorbet

According to 1.1, one of the 3 basic recipes that received the most approval from participants was chosen to be the standard recipe in the experiment. The standard recipe substituted palm sugar for coconut juice and adjusted the palm sugar volume into 3 different levels: 50%, 75%, and 100% of total coconut juice volume. The experiment was Random Complete Block Design (RCBD) (Saichol, 2003). The result analyzed sensory quality including appearance, color, aroma, flavor, texture, and satisfaction. This experiment was performed with 40 participants who are professors of the Department of Food and Nutrition, Food Science and Nutrition, Food Service Industry of the Home Economics Technology Faculty in Rajamangala University of Technology Phra Nakhon. The products were tasted and evaluated. The satisfaction was separated into 9 scales (9-Points Hedonic Scale) (Penkhun, 2006) and compared the difference of average by DMRT (Duncan’s New Multiple Range Test) software.

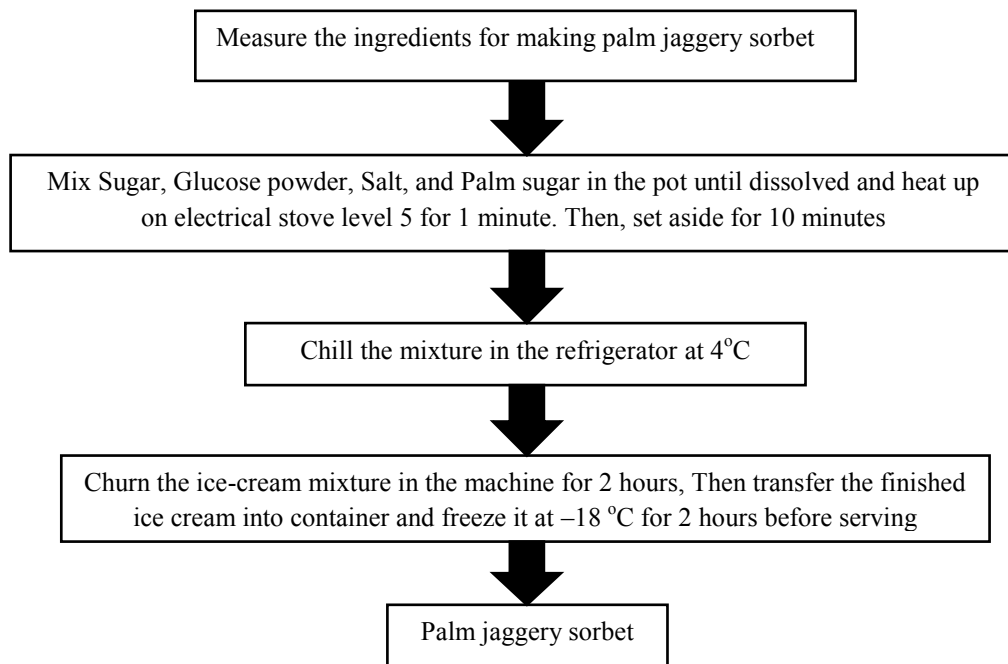
1.3 Study of stabilizer and emulsifier quantity to product quality of product development of palm jaggery sorbet

According to the study the appropriate amount of palm jaggery for sorbet making (1.2), the stabilizer and emulsifier quantities were adjusted to 0%, 15%, and 30% to find the best appearance. In addition, the palm jaggery sorbet tested physical qualities such as overrun rate and melt down rate. Moreover, the sensory quality was evaluated to determine the stabilizer and emulsifier. The experiment was conducted with 40 participants who responded in a 9- Point Hedonic Scale. The quality of palm jaggery sorbet was assessed as below.

- 1) Viscosity measurement measure the viscosity of 600 ml. sorbet ice cream that keeps at 4-8 oC by TA.XT.plus Texture Analyser (Stable Micro Systems brand) with conical probe P/60C.
- 2) Overrun measurement measure the overrun by weighing liquid ice cream and frozen ice cream in a cup. The overrun was calculated by the formula below.

$$\text{Overrun (Percent)} = (\text{Liquid ice cream} - \text{Frozen ice cream}) \times 100 / \text{Frozen ice cream}$$
- 3) Texture measurement by Texture Analyzer with cylinder probe (1 cm diameter, 5.5 cm height) . Loading cell 1 kN and Speed test 2 mm/s.
- 4) Color measurement by MB- 800 Benchtop Spectrophotometer. The color was measured before and after freezing by the ice cream maker machine.
- 5) Melt-down rate measurement by taking ice cream samples that were kept at -18oC overnight to measure at the control temperature (25±1oC). Then, the researcher recorded the ice cream weight every 5 minutes until all was melted. The data was calculated as formulated below.

$$\text{Percent of melt-down rate} = (\text{melt down ice cream weight} \times 100) / (\text{Original ice cream weight})$$



Flowchart 2 The production steps of product development of palm jaggery sorbet

2. Study of chemical quality of product development palm jaggery sorbet

2.1 Total carbohydrate volume(%). Calculated by 100 % carbohydrate minus with moisture, ash, fat, and protein following AOAC method (1993).

2.2 Protein volume (%) by Formal titration following AOAC method (2012).

2.3 Fat volume (%) by Roesse–Gottlieb following AOAC method (2012).

2.4 Fiber volume (%) by AOAC method (2012).

2.5 Moisture volume (%) by AOAC method (2012).

2.6 Ash volume (%) by AOAC method (2012).

3. Study the shelf-life quality of palm jaggery sorbet that is stored for 1 month

The sample that received the most approval from participants was chosen from 1.3, the sample was stored at -18°C for a month. Then, the sample was tested for quality once a week every week. The physical quality was assessed in color and microorganism of palm jaggery sorbet.

4. Study of customers' satisfaction of palm jaggery sorbet

This experiment studied customers' satisfaction of palm jaggery sorbet based on approval from participants. The study was a Customer Test performed with 150 subjects who are staff of the Home Economics Technology Faculty. The study was a random sampling. The product was tasted and scored indicating satisfaction into 5 levels (5-Points Hedonic Scale). The first score is strongly disagree, the fifth score is strongly agree (Penkhun, 2006). The participants responded to the sense of appearance, color, aroma, flavor, texture (flexibility), and satisfaction. The score was averaged by computer software. The question divides into 5 parts.

Sensory quality assessment

The experiment was Randomized Complete Block Design (RCBD) (Saichol, 2003) by studying the three-standard palm jaggery sorbets. The customers' satisfaction was evaluated in 9-Hedonic Scale (Penkhun, 2006). The experiment was conducted with 40 participants who are professors and students of the Department of Food and Nutrition, Food Science and Nutrition, Food Service Industry of the Home Economics Technology Faculty in Rajamangala University of Technology Phra Nakhon. The product was tasted and evaluated for sensory quality in appearance, color, aroma, flavor, texture, and satisfaction.

Statistical Analysis

The results were analyzed by Analysis of Variance (ANOVA) statistic and compared the average by Duncan's New Multiple Range Test (DMRT) at confidence level of 95 percent.

Result and discussion

1. Result of the standard recipe of palm jaggery sorbet development

1.1 Result of basic recipe

The sensory quality results of the basic coconut sorbet recipe determined that recipe 2 had the most approval in appearance, color, flavor, texture, and satisfaction. The average scores were 7.84, 7.27, 7.31, 6.90, and 7.56 respectively. On the other hand, recipe 1 had the most approval in aroma which the average score was 7.10 but the other qualities in appearance, color, flavor, texture, satisfaction were in the middle. The result was calculated using Variances value and analyzed statistical difference. The result indicated that flavor and satisfaction were statistically significant at 95% confidence level. Therefore, the researcher selected recipe 2 to design the quantity of palm sugar in jaggery sorbet.

Table 2 The average of satisfaction of 3 different coconut sorbet

Sensory quality	Average		
	Recipe 1	Recipe 2	Recipe 3
Appearance	7.26 ^b ±0.97	7.84^a±1.01	7.46 ^b ±0.90
Color ^{ns}	7.14±1.52	7.27±1.35	7.16±1.17
Aroma ^{ns}	7.10±1.63	6.93±1.47	6.90±1.49
Flavor	7.29 ^a ±1.63	7.31^a±1.65	6.30 ^b ±1.95
Texture (smoothness) ^{ns}	6.77±1.94	6.90±1.56	6.77±1.66
Satisfaction	7.34 ^a ±1.80	7.56^a±1.35	6.59 ^b ±1.77

Remark : 1) a and b represent statistically significance at 95%Confidence level

2) ns represents non–statistically significance at 95%Confidence level

1.2 Result of palm sugar quantity in coconut sorbet

The result revealed that substituting coconut juice with 100% palm sugar of total coconut juice volume in coconut sorbet had the sweetener 26 oBrix. The result had the most approval in appearance, aroma, flavor, texture (smoothness),and satisfaction which had average scores of 7.21, 6.67, 7.19, 7.40, and 7.20, respectively. On the other hand, substituting coconut juice with 75% palm sugar of total coconut juice volume in coconut sorbet had the most approval in color which was 7.27 but the other qualities in appearance, aroma, flavor, texture, and satisfaction were in the middle. The result was calculated using Variances value and analyzed statistical difference. The result revealed that flavor, texture, and satisfaction were statistically significance at 95% confidence level because the difference of palm sugar quantity. Palm jaggery sorbet that had 50%palm sugar was light yellow and sweet. Palm jaggery sorbet that had 75% palm sugar was light yellow but high sweetness. Palm jaggery sorbet that had 100%palm sugar was yellow and high sweetness and had palm sugar aroma and smooth texture. The result was shown in Table 3.

Table 3 The average of satisfaction of 3 different palm jaggery sorbet

Sensory quality	Palm sugar volume (Percentage)		
	50%	75%	100%
Appearance	6.61 ^b ±1.27	7.07 ^a ±1.29	7.21^a±1.23
Color ^{ns}	6.69±1.29	7.27±1.21	7.17±1.30
Aroma ^{ns}	6.40±1.12	6.47±1.38	6.67±1.54
Flavor	6.56 ^b ±1.29	7.00 ^a ±1.31	7.19^a±1.18
Texture (smoothness)	6.39 ^b ±1.41	6.96 ^a ±1.44	7.40^a±1.09
Satisfaction	6.57 ^b ±1.07	6.99 ^a ±1.40	7.20^a±1.39

Remark : 1) a and b represent statistically significance at 95%Confidence level

2) ns represents non–statistically significance at 95%Confidence level

1.3 Result of stabilizer and emulsifier quantity to product quality of palm jaggery sorbet

According to physical quality assessment, it indicated that 30% of stabilizer and emulsifier had the highest overrun (24%) as Figure 1 shows. Because the more stabilizer that is added, the more viscosity of ice cream is seen. The viscosity helps carry air bubbles and distribute them in the texture. Therefore, the ice cream sorbet had consistency of air bubbles when adding more stabilizer. On the other hand, 30% of stabilizer had the melt down rate slower than 15%

and 0% of stabilizer as Figure 2 shows. Because stabilizer helps increase smoothness of ice crystals in the ice cream, the melt down rate slowed down when adding more stabilizers. Additionally, stabilizer makes creamy and smooth texture. Therefore, it's easier to scoop it up because the texture was well attached. Palm jaggery sorbet had viscosity 140.31 cps. The sensory quality was presented in Table 4, and it indicated that 30% of stabilizer had the highest scores in all aspects. The product was tasted and evaluated in appearance, color, aroma, flavor, and satisfaction. The average scores were 7.32, 7.80, 7.45, 7.70, 7.81, and 7.32, respectively. The result was calculated using Variances value and analyzed statistical difference. The result was statistically significance at 95% confidence level because 30% of stabilizer had a smoother and softer texture.

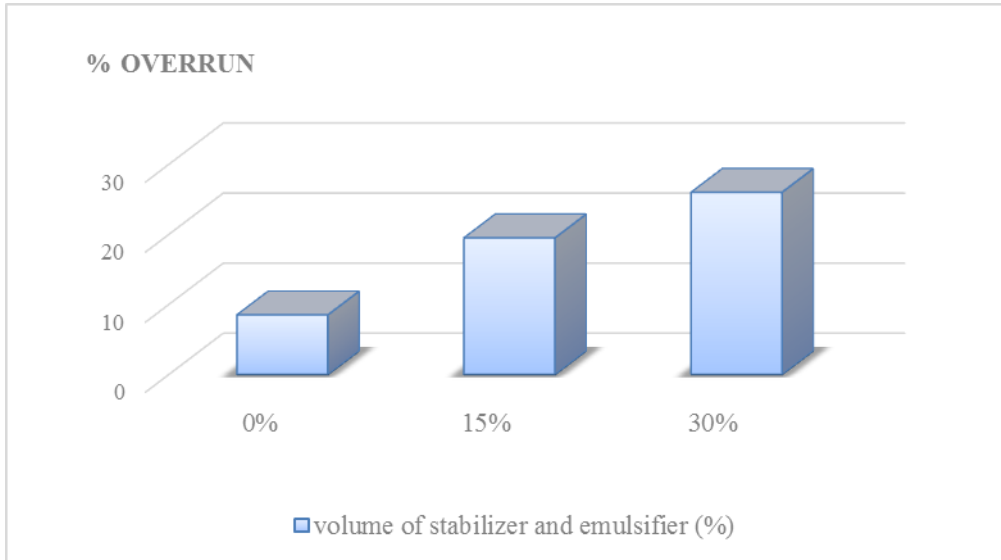


Figure 1 The overrun rate of palm jaggery sorbet at 3 different volume of stabilizer and emulsifier.

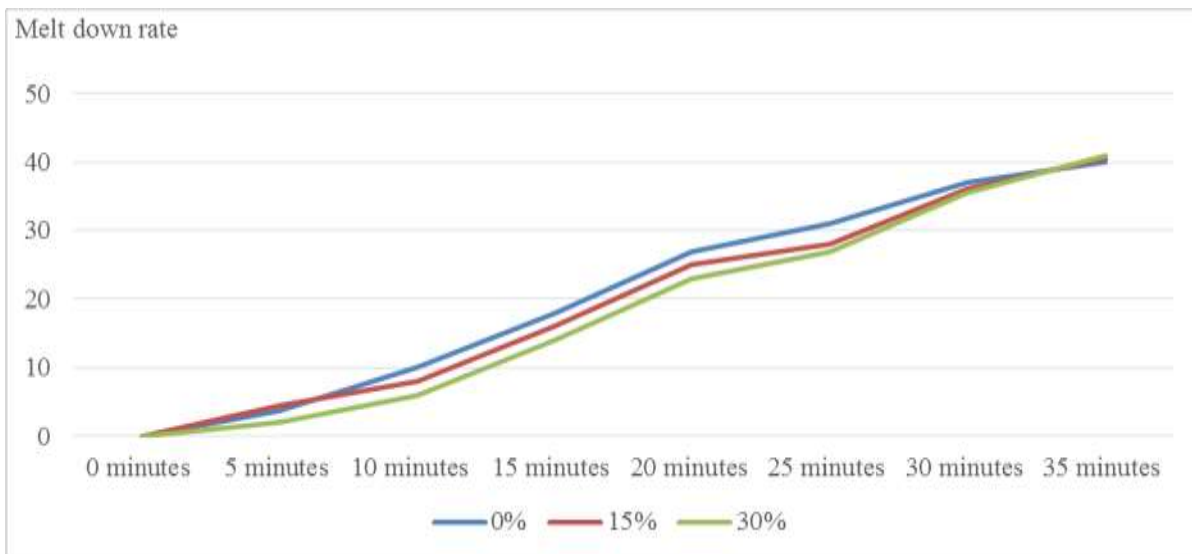


Figure 2 The melt down rate of palm jaggery sorbet that has 3 different levels of stabilizer when left at room temperature.

Table 4 The average sensory quality of palm jaggery sorbet that has 3 different stabilizer volumes.

sensory quality	Stabilizer quantity (percentage)		
	0	15	30
Appearance	7.10 ± 1.43 ^b	7.06 ± 1.56 ^b	7.32 ± 0.87 ^a
Color	7.11 ± 1.35 ^b	6.91 ± 1.41 ^b	7.80 ± 0.82 ^a
Aroma	6.93 ± 1.46 ^b	6.76 ± 1.71 ^b	7.45 ± 1.11 ^a
Flavor	6.31 ± 2.03 ^b	6.56 ± 1.77 ^b	7.70 ± 0.98 ^a
Texture (smoothness)	6.87 ± 1.51 ^b	6.74 ± 1.73 ^b	7.81 ± 0.83 ^a
Satisfaction	7.10 ± 1.43 ^b	7.06 ± 1.56 ^b	7.32 ± 0.87 ^a

Remark : 1) a and b represent statistically significance at 95%Confidence level

2. Result of chemical quality of palm jaggery sorbet

The results revealed that one serving size of palm jaggery sorbet had energy 110 kcal, carbohydrate 27.6 grams, protein <1.25 grams, fat 0 gram, fiber 0.08 grams, moisture 72.0 grams, and ash 0.44 grams

Table 5 Chemical component of palm jaggery sorbet

Chemical component	servicing size (100 grams)
	palm jaggery sorbet
Energy (kcal)	110
Carbohydrate (grams)	27.6
Protein (grams)	<1.25
Fat (grams)	0
Fiber (grams)	0.08
Moisture (grams)	72.0
Ash (grams)	0.44

3. Result of the shelf-life quality of palm jaggery sorbet that is stored for 1 month

The sample was selected from 1.3 which had the most approval from participants. The sample was stored at -18 oC for a month and evaluated once a week every week. The sample tested quality in the criterias below.

3.1 Color

The product was measured by color measurement and the result was shown in Table 6

Table 6 The average of color in palm jaggery sorbet when is stored for a month.

Color	Week 1	Week 2	Week 3	week 4
L* ^{ns}	75.84±0.51	76.52±0.62	77.35±0.70	78.68±0.86
a* ^{ns}	-1.58±0.06	-1.61±0.22	-1.65±0.23	-1.71±0.22
b* ^{ns}	37.25±0.41	38.54±0.45	38.82±0.55	33.91±0.36

Remark : ns represents non–statistically significance at 95%Confidence level

3.2 Microorganism quantity of palm jaggery sorbet

The product amount of bacteria was counted (CFU/g) by Total Plate Count method. The result was shown in Table7.

Table 7 The average of bacteria (CFU/g) of palm jaggery sorbet when is stored for a month.

Microorganism	Time period			
	Week 1	Week 2	Week 3	week 4
Bacteria (CFU/g)	2x10 ³	4x10 ³	3x10 ²	2x10 ³

According to Table 6, the color value (L, a*, and b*) was non–statistically significance (p≥0.5). The result indicated that the color was slightly changing. According to Table 7, the bacteria wasn’t over the limit based on Notification of the Ministry of Public Health (No. 354) B.E. 2556. The result proved that the ice cream is stored at -18°C for a month had bacteria less than 6x10⁵ CFU/g) which is lower than the standard limit. Because freezing condition inhibits chemical reactions, it prevented color changing and bacteria growing. Freezing is one of the food preservation methods that change water molecules into ice. Although freezing doesn’t change all water molecules, frozen water has high concentration and low water activity. Moreover, the temperature was reduced in the freezing process to inhibit microorganism growth such as bacteria, yeast, and parasite. Microorganism causes spoiled food and food poisoning by inhibiting biochemical reaction in food, preventing enzyme and chemical reaction such as lipid oxidation process. (Pimpen &Nithiya, 2014)

4. Result of customers’ satisfaction of palm jaggery sorbet

Based on participants’ satisfaction, the results indicated that the average participants’ satisfaction of the sensory quality (appearance, color, aroma, flavor, texture, and satisfaction) were 4.42, 4.34, 4.08, 4.20, 4.38, and 4.42, respectively. The palm jaggery sorbet had yellow color, palm sugar aroma, sweet taste, and smooth texture. Therefore, the participants were satisfied and approved the product. The participants were 150 people and all participants accepted the product at about 100%. The results were presented in Table 8.

Table 8 Result of participants’ satisfaction in palm jaggery sorbet

Sensory quality	Average Score
Appearance	4.42±0.59
Color	4.34±0.64
Aroma	4.08±0.80
Flavor	4.20±0.72
Texture (flexibility)	4.38±0.64
Satisfaction	4.42±0.66

customer acceptance	Number of people	Percent
Accepted	150	100
Unaccepted	0	0.00

CONCLUSION

Based on all results, the study indicated that 100% of palm sugar in jaggery sorbet had the most approval in appearance, aroma, flavor, texture, and satisfaction. The average scores were 7.21, 6.67, 7.19, 7.40, and 7.20, respectively. The physical quality of 100% palm sugar in jaggery sorbet had yellow color, palm sugar aroma, strong sweetness, and smooth texture. The physical assessment of palm jaggery sorbet revealed that both coconut sorbet and palm jaggery sorbet had the sweetening 26 oBrix, the overrun rate of pasteurized palm jaggery sorbet was 24%. The normal range of overrun rate in ice cream is 20-150%. The melt down rate of ice cream was measured by pasteurization at 91.66-95oC. The melt down rate was slow in the beginning, then higher when the time passed. The chemical assessment demonstrated that one serving palm jaggery sorbet had energy 110 kcal, protein <1.25 grams, carbohydrate 27.6 grams, fiber 0.08 grams, and ash 0.44 grams. The microbiology test revealed that the palm jaggery sorbet that was stored for a month had Bacillus cereus <10 CFU/g by Total Plate Count 3500 (CFU/g). The sensory quality in appearance, color, aroma, flavor, texture, and satisfaction were evaluated. The average scores were 4.42, 4.34, 4.08, 4.20, 4.38, and 4.42, respectively. The result was calculated average and standard deviation. The result presented that 150 participants approved the palm jaggery sorbet at about 100%.

SUGGESTION

- 1 Study Glucose quantity impacts to sorbet texture.
2. Study variety of sorbet and develop new flavors

ACKNOWLEDGEMENT

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REFERENCE

- AOAC. (1993). *Official method of analysis*. Washington, DC, WA: The Association of Official Analytical Chemical.
- AOAC. (2012). *Official method of analysis*. Washington, DC, WA: The Association of Official Analytical Chemical.
- Chompreeda, P. (2006). Document operators estimate sensory. Faculty of Agriculture Kasetsart University.
- Foodtravel. (2013). Sorbet Coconut. Retrieved from www.foodtravel.tv/recipe.aspx?viewid=2397
- Muse, M. R., & Hartel, R.W. (2004). Ice cream structure element that affect melting rate and harness. *Journal of Dairy Science*, 87, 1-10.
- Nameless 2. (2013). Coconut sorbet recipes for healthy living. Retrieved from www.flexhk.com/cms/wp-content/uploads/2013/.../Coconut-Sorbet.pdf,
- Nameless 3. (2015). *Ice Cream 7 Flavor*. Retrieved from www.easycookimhmenu
- Pornchaloempong, P., & Rattanapanone, N., 2014. Glucose. Retrieved from <http://www.foodnetworksolution.com/wiki/word/1014/glucose>
- Ruengsin, S. (2009). *Conservation wisdom in making jaggery case study Ban Laem Wang Song Kra*. Master of Arts Thesis Bachelor of Arts Sukhothai Thammathirat Open University.
- Sinsomboonthong, S. (2003). *Experimental agricultural statistics*. King Mongkut's Institute of Technology Ladkrabang.
- Tangcharoenchai, W., & Kawila, W., (1988). *Milk and milk products*. Bangkok, Thailand: O.S. Printing House.
- Sinsomboonthong, S. (2003). *Experimental agricultural statistics*. King Mongkut's Institute of Technology Ladkrabang.
- Tangcharoenchai, W., & Kawila, W., (1988). *Milk and milk products*. Bangkok, Thailand: O.S. Printing House.

The Development of the Quality of Life of the Population into the Elderly Society of Thailand to be Happy in the Case of Nakhon Pathom Province.

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Abstract: The purpose of this research is (1) to study the problems that the elderly in Thailand (2) study the ways of development The quality of life of the elderly who are happy. The population is those aged 60 years and older in Nakhon Pathom province. By means of Accidental Sampling by qualitative and quantitative research. By interviewing and statistical methods for analysis such as frequency, percentage, average, standard deviation, including the introduction of quality variables such as personal factors such as gender, occupation, economic status, family status, health, participation in social activities and acceptance. To find relationships with the variables of happiness received when entering the aging society. Results of the study of the problems of the elderly in Thailand Psychological aspect, found that most of the elderly are good-humored people Use religion as an extension to pull the mind In the past, traditional life was the general way of life. In terms of income, the elderly still had a career. If they were farmers, they were still farmers. By helping family members do small things If being an elderly person who works regularly After retirement, often a small extra income for health, most of them have underlying disease. Including diseases related to movement Hearing loss High blood pressure, diabetes, heart disease. Acceptable aspects. Most elderly people want their family and society to accept Want to have a social gathering with friends and public welfare The study found that the government should have measures to prepare the elderly in access to public health such as medical rights and maintain your basic health services such as public transport and the government should have equal public welfare.

Keywords: Quality of life, Happiness, Elderly Society

INTRODUCTION

From the changing of the population structure into an aging society, it is a matter that many countries around the world are paying attention to. Because the decrease in the number of labor that may affect the economic growth due to the labor force is an inverted triangle That is, the labor force entering the labor market is less. While there are many elderly people The United Nations has divided the levels of entry into the aging society of each country into 3 levels, which are Level 1, the aging society (Aging society), which has a population aged 60 years or more, more than 10 percent of the population level 2 level Aged society is comprised of over 20% of the population aged 60 years and over at the level 3 of the elderly. Super aged society, consisting of over 20 percent of the population aged 65 years and over, of the entire country The world society is becoming a society of the elderly. The process of aging society occurs in different countries at different times. Depends on environmental factors such as education, economic prosperity Scientific and medical progress, sanitation, nutrition, etc., which all affect the health and longevity of the people.

The population structure of Thailand has become "Aged society" since 2005, with a proportion of the population aged 60 years and over as high as 10 percent and the population projections of the Office of the National Economic and Social Development Board in 2021, Thailand will enter "Complete aged society" when the population aged 60 years and over, accounting for up to 20 percent of the total population and in 2031 Thailand will enter "Super aged society" when the population aged 60 years and up accounts for up to 28 percent of the total population (Kulphonphat Chirapapai, Mr. Thanon Nittapet, 2019)

Table 1 Number and rate of the elderly from 2008-2018

year	number of population	Number of elderly	Elderly rate
2008	63,389,730	6,904,598	10.9
2009	63,525,062	7,176,819	11.3
2010	63,878,267	7,493,227	11.7
2011	64,076,033	7,811,450	12.2
2012	64,456,695	8,170,909	12.7
2013	64,785,909	8,734,101	13.5
2014	65,124,716	9,110,754	14
2015	65,729,098	9,455,777	14.4
2016	65,931,550	9,802,080	14.9
2017	66,188,503	10,225,322	15.4
2018	66,413,979	10,666,803	16.1

Source: Office of the National Economic and Social Development Board, (2019)

Table 2 Number and percentage of the elderly by gender, 2008 – 201

year	Male	Female	Total	Male(%)	Female(%)	Total
2008	3,066,435	3,838,163	6,904,598	44.41	55.59	100
2009	3,184,826	3,991,993	7,176,819	44.38	55.62	100
2010	3,326,052	4,167,175	7,493,227	44.39	55.61	100
2011	3,466,194	4,345,256	7,811,450	44.37	55.63	100
2012	3,625,513	4,545,396	8,170,909	44.37	55.63	100
2013	3,871,957	4,862,144	8,734,101	44.33	55.67	100
2014	4,036,987	5,073,767	9,110,754	44.31	55.69	100
2015	4,188,623	5,267,154	9,455,777	44.30	55.70	100
2016	4,340,137	5,461,943	9,802,080	44.28	55.72	100
2017	4,524,021	5,701,301	10,225,322	44.24	55.76	100
2018	4,715,598	5,951,205	10,666,803	44.21	55.79	100

Source: Office of the National Economic and Social Development Board, (2019)

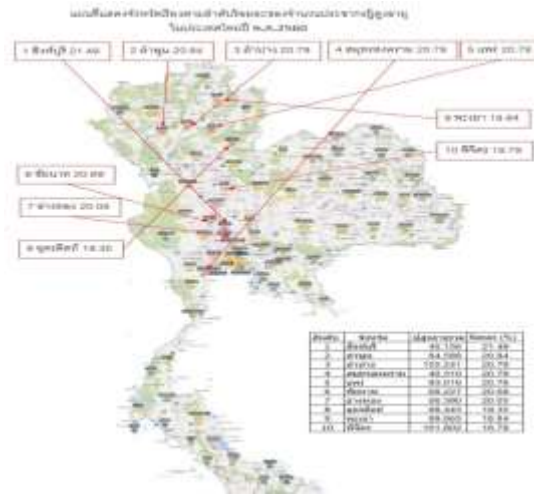
Department of Elderly Affairs Current situation of the Thai elderly The Thai elderly population still has health problems. In 2017, the elderly who were unable to help themselves. (Unable to perform basic activities, that is, eat by yourself, go to the bathroom by yourself) Can dress yourself up to 5 percent, especially the elderly who are unable to help themselves There are up to 19 percent of the elderly in the same age. In addition, data show that one-third of Thai seniors have income below the poverty line. This 2017 report shows that elderly people have reduced their primary income from children by 37% in 2014 to Only 35 per cent of the elderly have income from work, down from 35 per cent in 2011 to 31 per cent in 2017. Elderly have received a living allowance in 2017 at 8.2 million, which is more than the number of people receiving. Pawn None Cup in 2552, 1.5 times more than Thailand, the elderly alone. There is a trend to increase steadily from 6 percent in 2002 to 11 percent in 2017, the proportion of elderly who are alone with their spouses Has increased to 21 percent in 2017. These elderly people alone may be classified as However, Thai elderly in 2017 have problems with non-communicable diseases such as diabetes, high blood pressure, these diseases may be the result of behavior of Thais from before the elderly to the elderly. Such as eating Exercise, smoking, drinking alcohol (Department of Older Persons, 2017).Survey of the elderly in Thailand in all 77 provinces as of December 31, 2018, the population of the country 66.41 million, with the population of the elderly aged 60 years up 10.67 million people or 16.1 percent, divided into 5 regions, consisting of the central region North, South, Northeast And the eastern region And for Nakhon Pathom province, with details as follows.

Table 3 Number of population in Nakhon Pathom Province, 31 December 2018

Data characteristics	Male	Percent(%)	Female	Percent(%)	Total
Total population by gender	439,691	47.95	477,362	52.05	917,053
Elderly population by gender	64,617	42.50	87,413	57.50	152,030

Source: Department of Older Persons Ministry of Social Development And human security

From Table 3, it can be seen that the population in Nakhon Pathom province is 917,053 people and 152,030 elderly population or 16.58 percent, which is consistent with the population estimates of the Office of the National Economic and Social Development Board that in the year 2021 Thailand will enter "Complete aging society" when the population aged 60 years and over, accounting for up to 20 percent of the total population and in 2031 Thailand will enter "Super senior society" when the population aged 60 years and over, accounting for up to 28 percent of the total population.



Picture 1: Percentage of elderly in Thailand, 2017

Source: Office of National Statistics, (2019)

For the proportion of the elderly population in Nakhon Pathom in the year 2018, 135,299 people, or 17.2 percent (N = 788,450) is the Aged society, Aging society between 50-119.9) Overview of the Aging Index of Nakhon Pathom population 108.5, which the index Older adults over 100 indicate that the population structure has changed, namely the elderly population more than the child population.

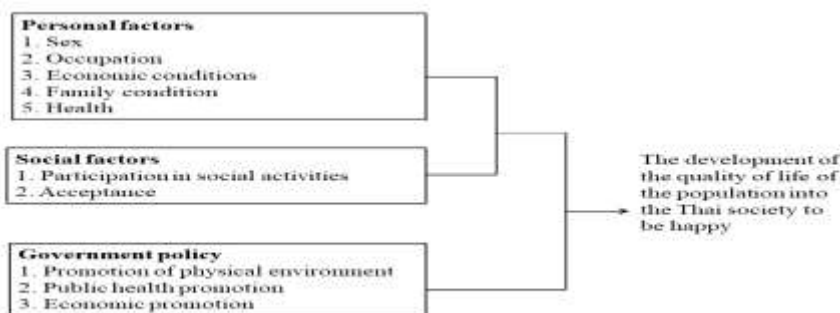
For this reason, the researcher sees the importance of preparation for entering Thai society in order to That will help the population prepare themselves And able to adjust to a happy life A better quality of life Both mentally and emotionally Economic and income, health, social and acceptance And government welfare Which will help reduce the burden of families and the government As well as various organizations That will have to bear the cost of taking care of the elderly in the future

Research objectives

1. To study the problems arising from entering the aging society of Thailand
2. To find ways to improve the quality of life of the elderly

Conceptual framework

From the study of relevant documents and research, the researcher has set the conceptual framework for improving the quality of life of the Thai population into a happy old society. In the case of Nakhon Pathom province Each conceptual framework consists of both quantitative and qualitative sections, adding a dimension of research covering all aspects of the study content, which are as follows:



Picture 2 Conceptual framework

Scope of the research project

In this study, the researcher divided the scope of the study into 3 areas as follows

1. Scope of content

Study the problems of the elderly aged 60 years and over in Nakhon Pathom province

2. Time boundary

The duration of the research project is from 1 October 2019 to 30 September 2020. Therefore, the data used in the analysis is information during that period.

3. Population and sample boundaries

Data collection from observation Elderly in-depth interview (60 years) to lead the quality of life management plan

Expected Benefits

1. Know to the problems that occur with the elderly people of Thailand.
2. Know to the ways to improve the quality of life of the elderly to be happy

Reviewing relevant literature

Uthumporn Wanitchak (2019) has studied preparation for aging society And comparing the readiness to enter the aging society of the people of Sai Mai, found that the people have readiness to enter the aging society in the overall level at a moderate level But when considering each aspect, it was found that the aspect with the highest average value was housing, followed by economy and society. And health, respectively. The hypothesis test found that people with different sex There is no difference in preparation for entering the aging society as a whole. Statistical significance at the level of 0.05 and people of different ages are preparing to enter the aging society. The overall difference is statistically significant at the level of 0.5.

Suphachai Rungrothwuttikul (2018) studied the preparation for the retirement of employees.

A government bank is located in Nonthaburi and Pathum Thani. Its purpose is to (1) to study the preparation for entering the retirement age of an employee of a state enterprise bank In Nonthaburi and Pathum Thani (2) to study the pattern of post-retirement activities as per the needs of an employee of a state bank In Nonthaburi and Pathum Thani Province (3) to compare the preparation for entering the retirement age of a government employee In Nonthaburi and Pathum Thani Classified by personal characteristics, and (4) to compare forms of post-retirement activities as per the needs of an employee of a state bank. In Nonthaburi and Pathum Thani The study indicated that The results showed that personal characteristics were different. It has an effect on preparation for entering the retirement age of employees of a state enterprise bank. In Nonthaburi and Pathum Thani That is no different And most of them are mentally preparing to enter the retirement age the most However, different genders Affect the different forms of retirement activities in the overall picture. With statistical significance at the level of 0.05, most of which have recreational activities At a high level No. 1 (Mean = 3.96) and when considered individually, found that Want to do tourism activities in places such as nature, temples and parks the most Netnapa Lalu (2013) studied the quality of life of the elderly. In the area of Phang Kwang Subdistrict Administrative Organization, Mueang District, Sakon Nakhon Province The study indicated that The research found that 1. Quality of life of the elderly In the area of Phang Kwang Subdistrict Administrative Organization, Mueang District, Sakon Nakhon Province The overall picture is in a high level. When considering each aspect, it was found that the aspect with the highest mean was the accommodation. In the high level, followed by the income in the high level The aspect that has the least mean is health. At a medium level The results of each area can be summarized as follows: 1) Overall health is at a medium level. Considering each item, it is found that the item with the highest mean is that you feel satisfied with your sleep, you can sleep normally. At a high level Regarding the least average, in the past 3 months, you have not been hospitalized. 2) The overall income is at a high level. Considering each item, it was found that the item with the highest average means that you are not concerned about your expenses. Is at a high level and the least average item is that you receive financial support from

family, relatives Is at the lowest level. 3) Accommodation The overall picture is in a high level. When considering each item, it was found that all items were in a high level, with the highest mean being you satisfied with the condition. Houses with the least average number Is when you are at home, you feel relaxed, relaxed, not stressed. 4) Recreation In general, it is at a moderate level. When considering each item, it is found that the item with the highest average value is that you participate in traditions, culture, or annual events. In villages and communities At a high level The most average item is that you have the opportunity to travel to various places. Is at the lowest level. 5) In terms of social and family security The overall picture is in a high level. When considering each item, it was found that the item with the highest mean is participation in important community activities. Is at a high level 2. The comparison of the quality of life of the elderly In the area of Phang Kwang Subdistrict Administrative Organization, Mueang District, Sakon Nakhon Province Classified by personal characteristics, it was found that 1) Classified by gender characteristics, it was found that the quality of life of the elderly, both in overall and in all aspects, was not different. 2) Classified by age characteristics, it was found that the quality of life of the elderly in overall No difference When considering each aspect, it is found that there are statistically significant differences at the level of .05 in 1 aspect, which is housing. 3) Classified by educational characteristics, it is found that the quality of life of the elderly in general is different. And with statistical significance at the level of .05 and when considering each aspect, it was found that there were 1 difference, which was health. 4) Classified by occupation characteristics, found that the quality of life of people The age, overall and all aspects, were significantly different at the .05 level. 5) Classified by marital status characteristics, it was found that the quality of life of the elderly in overall and in every aspect was not available. Individuality The highest mean was that he was a moderate group member in the community. Chompoonut Phromphak (2013) wrote in an article on the subject (Aging society in Thailand) with suggestions Policy that There should be measures to promote and support personal savings, including 1. Promoting work Continuing the aging of labor to be self-reliant. 2. Encourage the people to have more income. Create career opportunities for low-income groups and reduce expenditures for the people. 3. Promote saving awareness. Sutthiphong Bunphadung (2011) Study on improving the quality of life of the elderly in the local area by using the school as the base. According to the sufficiency economy principles (Phase 1), the objectives of the research are 1) to study the quality of life of the elderly 2) to analyze factors related to the quality of life of the elderly and 3) to determine the guidelines for the development of quality of life The elderly by using schools as the basis of the sufficiency economy principles of the elderly The results of the research found that 1) The overall quality of life of the elderly is at a high level. In terms of interpersonal relations first Followed by social integration In terms of good mood And the good physical condition respectively, while the good living conditions And the self - decision making has a moderate level of quality of life. 2) Factors related to quality of life Found that the emotional state is good There are related factors which include loneliness and loneliness and interpersonal factors. Family interaction factors Friends and neighbors Regarding social integration, there are related factors which are Dedication factors and community acceptance As for the good living conditions There are related factors which are Living factor And the factors of income and expenses Good quality of life in physical condition There are related factors which are Health care factor And good consumption factors And finally, self-determination There are related factors which are Independent factors of thought And the factors of choosing to do what is needed. 3) The guidelines for the development of the quality of life of the elderly by using schools as the basis of the sufficiency economy principles. Approved by a professional, which can be used for trial And study the results of using it with local elders in Phase 2 research.

Siwilai Chayangkun (2011) Preparation of households and communities for the progress of aging society Of Salaya Subdistrict Municipality The objective is to search for families and communities, to prepare for the transition to aging society, society, economy, health, housing care. Existence in the future And to search for problems in preparation and solutions The results showed that the community leaders agreed to prepare at a high level with an average of 3.8310 and the ability to manage the readiness of the community to move towards aging society with an average of 3.5165. In-depth interview methods At present, the community has elderly clubs doing activities on a monthly basis. The community has not yet prepared for the concrete step towards aging society. Therefore, the community should set up a working group and work in coordination between the community and government agencies in the community and the workers for the community must have true volunteer

Sopa Chanphaeng (2010) studied Application of Buddhism principles in daily life of the elderly in Ban Wa Subdistrict, Mueang District, Khon Kaen Province There are two objectives. 1. The problem of the elderly In Ban Wa Sub-district, Muang District, Khon Kaen Province. 2) Applying Buddhist principles in Buddhism to the daily lives of the elderly In Ban Wa Sub-district, Mueang District, Khon Kaen Province This research It is a qualitative research by using descriptive data analysis and field research. By interview method The result of the research shows that the

elderly are people who are aged according to the changing of age from healthy to weak etc. The mental state of intelligence has diminished. Reduced social conditions Older people tend to have reduced immunity. As well as brilliantness At present, the elderly club is set up in order to have various activities together. Meanwhile, the elderly in Ban Wa Subdistrict also experience the problems of the elderly, including physical problems. Family and social problems Psychological problems And problems in meditation practice The elderly have acted themselves in order to gain confidence in the family. Body and mind To solve problems in daily life, for example, the elderly practice themselves in order to access the truth or teachings that are the essence of Buddhism. Which will help them to live happily, that is to say, the elderly have applied the principles of Buddhism to their daily lives. With the following: (1) Trinity principles 3 impermanence Suffering And non-identity. (2) The Four Noble Truths: Knowing problems and knowing the causes of problems. Know how to solve problems and know the good results of problem solving. (3) Doctrine of merit / Karma is believed that merit can lead to peace, do evil and lead to death. Then hurry to practice oneself with alms, precepts and prayer (4) Brahmavihara Know how to be kind to family members and know how to put oneself appropriately. (5) Conduct oneself in the principles of Benjasil - Benchamat such as not harming people and other animals. Do not drink alcohol and have mercy in a profession honestly (6) vices 6 do not interfere with gambling such as not playing lottery and (7) Sangkhavadi 4 know how to help the elderly together Know how to say encouragement. Knowing about religious practices And know how to live sufficiently. In addition, the elderly practice themselves according to the 4 principles of consciousness, namely the consideration of the body, the mind and the Dhamma regularly. To solve problems in various fields such as family problems Physical or health problems And psychological problems. Therefore, your child should understand how to treat the elderly that what should and should not be given, such as to abstain from alcohol. To exercise lightly Dumb Giving your love and respect to you is both physical and mental.

Woranuch Sipiyaraksa (2009) studied psychosocial factors related to self-reliance behavior in the elderly. Objective is to study that the mental characteristics and situations It is relevant and has a direct and indirect influence on self-reliance behavior. And how satisfied they are with the lives of the elderly Among each of the elderly and why? And to identify a group of elderly people who have these behaviors and have little satisfaction in life. Including protect factors The conceptual framework of the research is based on the pattern of interaction theory as well as important theories and principles of psychology both in Thailand such as the theory of ethics. And abroad such as the concept of social support The concept of social comparison is among 441 elderly people, consisting of 110 elderly men (24.9%) and elderly people. 330 women (74.8%) have an average age of 63 years, from Bangkok and its surrounding provinces, which are derived from the quota method. The variables in this research consist of 1) 3 groups of self-reliance behaviors, namely health self-reliance behavior Social self-reliance behavior And behavior of economic self-reliance. 2) Psychological characteristics according to the situation with 3 variables, namely soil perception of goodness Social comparison And feelings of loss. 3) Formerly 4 characteristics of behavioral and psychological groups, including future self-control characteristics Achievement Motivation Buddhism beliefs And the Buddhist practice. 4) The 3 situation variable groups are social support from family. Government support And lost experience; and 5) Biological variable group Social backgrounds Most of the forms of measurement are the type of measurement, the evaluation scale, the total value. There is a confidence value between .68 to .92. The 5 important research findings are, firstly, the predecessor of the same mental characteristics and behaviors and situations. A total of 7 variables can be predicted 1) 44.5% of the land's merit perception in the group, with an important predictor being the Buddhist practice. Achievement Motivation Aspects of the future, self-control The Buddhist belief and highest prediction among the elderly without a spouse is 56.2%. 2) Social comparison of the total group can be predicted 40.5% have predictions. The important thing is the achievement motivation. Social support from the family Lost experience Aspects of the future, self-control And predicted a maximum of 49.2% in 2 sub-groups, namely the elderly group and the elderly group without regular income and 3) feelings. Losses in the collective group can be predicted by 9.9%, with a key predictor being the loss experience. And predict the highest among the elderly who do not have a fixed income of 21.1%. Secondly, their original psychological characteristics and behavior and the situation together with the group prime minister According to the situation, a total of 10 variables can be predicted 1) Health self-reliance behavior Among the predictions, 27.3% of the group predicted that they had significant predictions in the future. Social comparison Recognition of the good qualities of the soil Government support And social support from the family And predicted the highest among the elderly working at 42.4%. 2) Social self-reliance behavior Among the predictions, 30.5% can predict. The important predictor is the recognition of the goodness of the soil. Social support from the family. Aspects of self-control. Social comparison, government support And predicted the highest among the male elderly 46.7%. 3) Economic self-reliance behavior in the group that can be predicted 37.3%. There is an important prediction is the comparison of social Achievement Motivation Government support And predicted the highest 46.0%

in 2 sub-groups, namely the elderly in the metropolitan area and the elderly with a few sons. Third, the original mental characteristics and behavior According to the situation with 13 behavioral variables, prediction of life satisfaction in the collective group was 55.7%. The important predictor was self-reliance behavior. Economy Social comparison Lost feeling Recognition of the good qualities of the soil And social support from the family And predicted the highest among the elderly working 71.3%. Fourth, the results of the linear influence analysis showed that Satisfaction in life Directly influenced by causal variables The following are the order of 1: health self-reliance behavior, 2) Buddhist practices and 3) Social comparison. The causal variables in the model are able to explain 46% of the variance in life satisfaction. Elderly people who are at high risk group who should develop are People with self-reliance behaviors, such as those with a minimum of 3 years, are elderly people with a career without a regular salary. And the elderly who have little education These risk groups should be addressed. Development of achievement motivation Recognition of good soil And social comparison Future research should Add other variables Which may be related to the self-reliance of the elderly such as the sufficiency of mind according to the philosophy of sufficiency economy and the variables from the theory of Erikson etc.

Research Methodology

Research to improve the quality of life of the Thai population into a happy old society In the case of Nakhon Pathom province. There are

1. The researcher chooses to use quantitative research methods. And qualitative

Quantitative research By accidental sampling (Accidental Sampling) by collecting questionnaires (Questionnaire) from the elderly By specifying the characteristics of the questions as closed-end questions and open-ended questions as well, specify criteria and choose to answer the questions at 5 levels according to the rating scale (Mostly agree, agree, moderate, agree slightly and agree least

Qualitative research Is an in-depth interview

When the researcher created a questionnaire And distributed questionnaires to sample groups And collecting data successfully The data was processed from the computer. By using the software package (Kanlaya Vanichbancha, 2016) to assist in data analysis

2. Study of relevant data and research documents

The researcher has studied the research data from documents And related research to bring various information Used to create research tools And developed for discussion

Take the data collected from the questionnaire To be a guideline for creating questionnaires

Data analysis By using descriptive statistic as follows

Percentage for analyzing data from questionnaires Demographic characteristics

Find the Mean () for analyzing the data from the questionnaire about improving the quality of life of the Thai population into a happy old society. In the case of Nakhon Pathom province find the standard deviation (S.D.) for analyzing satisfaction data And opinions of the elderly

Research result

From the study, the development of the quality of life of the Thai population into a happy old society In the case of Nakhon Pathom province By studying in 5 aspects, summarized the research results as follows.

In terms of psychology, it was found that most of the elderly were mentally happy, averaging 4.00, with the elderly having good mental health, most of them using religion as an anchor. Participate in religious activities. In terms of income, the elderly still have the highest level of occupations, averaging 4.8. If being a farmer, it is still a farmer. By helping family members do small things Selling vegetables If being an elderly person who has worked regularly After retiring, they tend to find a little extra income. Such as the sale of government lotteries.Regarding health, the elderly have health problems such as High blood pressure The lowest level of hearing impairment is averaging 3.88.

Acceptance side Found that the elderly have the problem of not accepting from the family members in the high level, average 3.5. Government welfare Older people suggest that government should have more public welfare now To be comparable with developed countries By suggesting that the state should have measures on access to public health such as medical rights and monitoring your basic health services such as public transport Increasing allowances for the elderly To be able to live In the highest level, average 4.75

DISCUSSION

From the study, the development of the quality of life of the Thai population into a happy old society In the case of Nakhon Pathom province, the findings can be summarized as follows The results can be discussed as follows

Objective of research 1: Problems arising from entering the aging society of Thailand Found that the problems of the elderly have the most health problems Followed by the most by members. And the least is psychological. The findings are consistent with the research of Uthumporn Vanichkham, studying the preparation for aging society. And comparing the readiness to enter the aging society of the people of Sai Mai, found that the people have readiness to enter the aging society in the overall level at a moderate level But when considering each aspect, it was found that the aspect with the highest average value was housing, followed by economy and society. And health, respectively. The hypothesis test found that people with different sex There is no difference in preparation for entering the aging society as a whole. Statistical significance at the level of 0.05 and people of different ages are preparing to enter the aging society. The overall difference is statistically significant at the level of 0.5. Research objectives no. 2, Guidelines for the development of the quality of life of the elderly Found that the majority of the elderly Still want to work Earn a living But lacking investment funds And have health problems Therefore, the government needs funding And public welfare The research results are in line with the recommendations of the Office of the National Economic and Social Development Board. Which has a policy suggestion that There should be measures to promote and support personal savings, including

1. Promoting the continuous work of older workers to be self-reliant
2. Encourage increased income for the people Create career opportunities for low-income groups. And reduce expenses for the public
3. Promote saving awareness
4. Increase efficiency of financial mechanisms In the form of saving promotion measures which are different according to target groups
5. Developing public pension systems, such as tax deduction policies Support the increasing role of specialized financial institutions of the state, etc.
6. Strengthening social protection networks To help groups that cannot save or have low savings By encouraging community organizations to provide welfare to cover the said population instead of saving

SUGGESTION

From the study, the development of the quality of life of the Thai population into a happy old society In the case of Nakhon Pathom province From each aspect of the study, it was found that the highest aspect was revenue. And government welfare, the researcher has recommendations in the future as follows

1. The relevant departments should have appropriate training for the elderly. Including supplying the market for distribution
2. The government should provide government benefits that are suitable for living.

REFERENCE OF RESEARCH PROJECT

- Bancha, K. V. (2016). *Using SPSS for Windows for data analysis*. Bangkok, Thailand: Sam Lada Printing House.
- Bunphadung, S. (2011). A study on the development of quality of life of the elderly in the local area by using schools as the base. According to Sufficiency Economy Principles (Phase 1), Research Report at Suan Sunandha Rajabhat University, Bangkok.
- Chanphaeng, S. (2010). Application of Buddhist principles in daily life of the elderly in Ban Wa Subdistrict, Mueang District, Khonkaen Province (Master thesis). Mahachulalongkornrajavidyalaya University, Phra Nakhon Si Ayutthaya.
- Chayangkun. S. (2011) *Preparation of households and communities for the progress of aging society of Salaya Subdistrict Municipality* (Research Report), Suan Sunandha Rajabhat University, Bangkok
- Chirapapai, K., & Petch, T. N. (2019). *Public relations news, national statistical office*. National Statistical Office, Bangkok, Thailand.
- Lalu, N. (2013). *Quality of life of the elderly In the Phang Khiao Subdistrict Administrative Organization District, Mueang District, Sakon Nakhon Province* (Master thesis). Master of Public Administration Sakon Nakhon Rajabhat University, Sakon Nakhon
- Phromphak, C. (2013). *Entering the elderly society of Thailand*. Office of Academic Affairs Secretariat of the Senate, Bangkok.
- Rungrothwuttikul, S., & Rungrotwutkul, S. (2019). *Preparation of retirement age of employees of a state enterprise bank in Nonthaburi and Pathum Thani Province, Independent study* (Master thesis). Master of Business Administration, Ramkhamhaeng University. Bangkok.
- Sipiyakaraksa, W. (2009). *Psychosocial factors related to self-reliance behavior in the elderly* (Master thesis). Faculty of Social and Environmental Development, National Institute of Development Administration, Bangkok.
- Wanitchakam, U. (2019). *Preparation for aging society and compare the preparation to enter the aging society of the people of Sai Mai*, (Master thesis). Faculty of Business Administration North Bangkok University, Bangkok, Thailand.

Grain Milk Made from Five Color-based Types of Beans as a Replacement to Dairy Milk in Tofu Pudding Products

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Abstract: This research aims: 1) to study the right proportion of grain milk made from 5 types of beans to replace dairy milk in a tofu pudding product of 4 different levels: 25, 50, 75 and 100 percent, and 2) to study the appropriate amount of agar-agar powder in the tofu pudding products which affect the quality of the product, and 3) to study the consumers' acceptance of the products. The research was conducted by planning random experiments in randomized complete block design (RCBD) at confidence level 0.05 and assessing the color sensory quality assessment of color, flavor, texture and overall preference using the 40 tasters with 9-Point tasting methods (9-Point Hedonic Scale) and comparing the difference of average using the Duncan's New Multiple Range Test (DMRT). The analysis was carried out with a statistical program and the results were reported with descriptive statistics, i.e. percentage. Research results revealed that the right proportion of grain milk made from 5 types of beans to replace dairy milk in tofu pudding products is 75 percent. The appropriate amount of agar-agar powder in the product of tofu pudding is 0.2 percent. The surface appeared to be smooth, soft and of silky texture. There is a moderate stability on the physical characteristics of the product of the tofu pudding with a value of $T_a * b *$ equal to 69.32, 2.66, and 10.23 respectively, which has a visibility value, light yellow color, producing moderate smelling of grains, and fairly sweet. The chemical characteristics were found that the product has 70.7 kcal, 13.4 g of carbohydrate, 0.08 g of fat, 2.47 g of protein, 83.0 g of moisture, 0.44 g of dietary fiber and 0.32 g of ash. The results of consumer acceptance found that the product of grain milk made from 5 types of beans texture and overall have the average at 3.99, 3.71, 3.99, 3.64, 3.82 and 3.82 respectively. As for the consumers' acceptance of the product, it was found that the consumers gave a moderate level of preference to tofu pudding product with the alternative grain-based milk. The reasons were that it was beneficial to the physical health and the suitable cost of the product was 25 baht per 160 g-size cup.

Keywords: Milk Tofu Pudding, Cereal Grain Milk Made From Five Color-Based Types Of Beans

INTRODUCTION

Pudding is the soft tofu with juicy. It is commonly had with hot ginger drink or called "Ginger Pudding". Currently, it has been developed by using cow's milk instead of soy to enhance the flavor as well as the aroma. This consistent with the study of Khunthachai, W. (2013) that claims that no one had ever known "Tofu Pudding", but it is only known as "Fruit Salad Pudding" in Chinese restaurants that looks similarly. However, the appearance presently has been modernized by changing the name that looks more valuable, repackaging with the top lid cup, decorating with fruit salad topped with fresh milk. And making the tofu pudding by fresh milk. Tofu Milk Pudding can be both refreshment and desserts. It is convenient to eat and owns a smooth texture that makes it easy to digest and be suitable for all ages. Beans are the grains that can be commonly found. Each type of bean owns different value of food nutrients. Distinguishing Siriwanarangsana, P. (2017) mentions that Five Color-based Types of Beans can help body balance for example red bean is good to heart, black bean is benefit to kidneys while green bean enhance livers, and white bean is great for lungs. It can also reduce flour and sugar level in body which advantageous to diet people. Moreover, Soybeans can take care of neuro system. This statement consistent with Piyawan-on (2014) that agrees that green beans provide high nutrients level with protein, carbohydrates, low fat, and full of mineral and vitamins as vitamin K, C, A, B complex, folate, and iron. Green beans are also high in fiber which effects full food consumption as well as be quick to absorb fats and sugar. Green beans are low in sugar; therefore, it is suitable for people who want to lose weight. Soybeans contain isoflavones that plays important role like estrogen in the body. It is useful for women especially with menopause condition since estrogen hormone is the main hormone that regulates the body's bones construction and enhancement as well as helps to maintain elastin and body moisture. Meanwhile, red bean contains nutrients, protein, carbohydrates, calcium, phosphorus, iron, vitamin A, B, C. It provides that very much more high dietary fiber compared with fruits and vegetables. Black beans contain anthocyanin which is the same important antioxidant that in blueberry grapes. This substance helps to reduce the occurrence of cardiovascular disease and cancer in the digestive system. White beans contain Phaseolamin that owns the property to neutralize the amylase enzyme and resulted in the unchanged starch or carbohydrates from powder to sugar up to 50-66 percent.

At the present, people are paying attention on their health with the preference to take care of themselves with healthy food as main meal, refreshment, snack or dessert. Milk pudding can now be both a refreshment and a dessert but may not own various nutritional values. Hence, the development of tofu milk pudding with more nutritional value is important because it can give more alternatives for consumers, especially those who are interested in healthy food and people at all ages. As mentioned above, the researcher then developed the conceptual thinking to employ five color-based types of beans as soy beans, green beans, red beans, black beans and white beans as a replacement to dairy milk in tofu pudding products to be more nutritious. It is also a new alternative product for consumers who want to have useful refreshment. As well, it is an economic value creation that help create jobs and help promote the grain bean products of Thai farmers.

OBJECTIVE

- 1) to study the right proportion of grain milk made from 5 types of beans to replace dairy milk in a tofu pudding product of 4 different levels: 25, 50, 75 and 100 percent.
- 2) to study the appropriate amount of agar-agar powder in the tofu pudding products which affect the quality of the product
- 3) to study the consumers' acceptance of the products.

METHODOLOGY

1. Preparation of experiment formula following original formula

1.1 Preparation of original formula from Five Color-based Types of Bean

The original formula of grain milk made from Five Color-based Types of Beans is adapted from the Distinguish Professor Dr. Siriwanarangsana P's formula of milk made from Five Color-based Types of Beans of (2017). The ingredients comprised of soybeans, white beans, red beans, green beans, and black beans in ratio of 0.5 : 0.5 : 1 : 1 : 1 respectively.

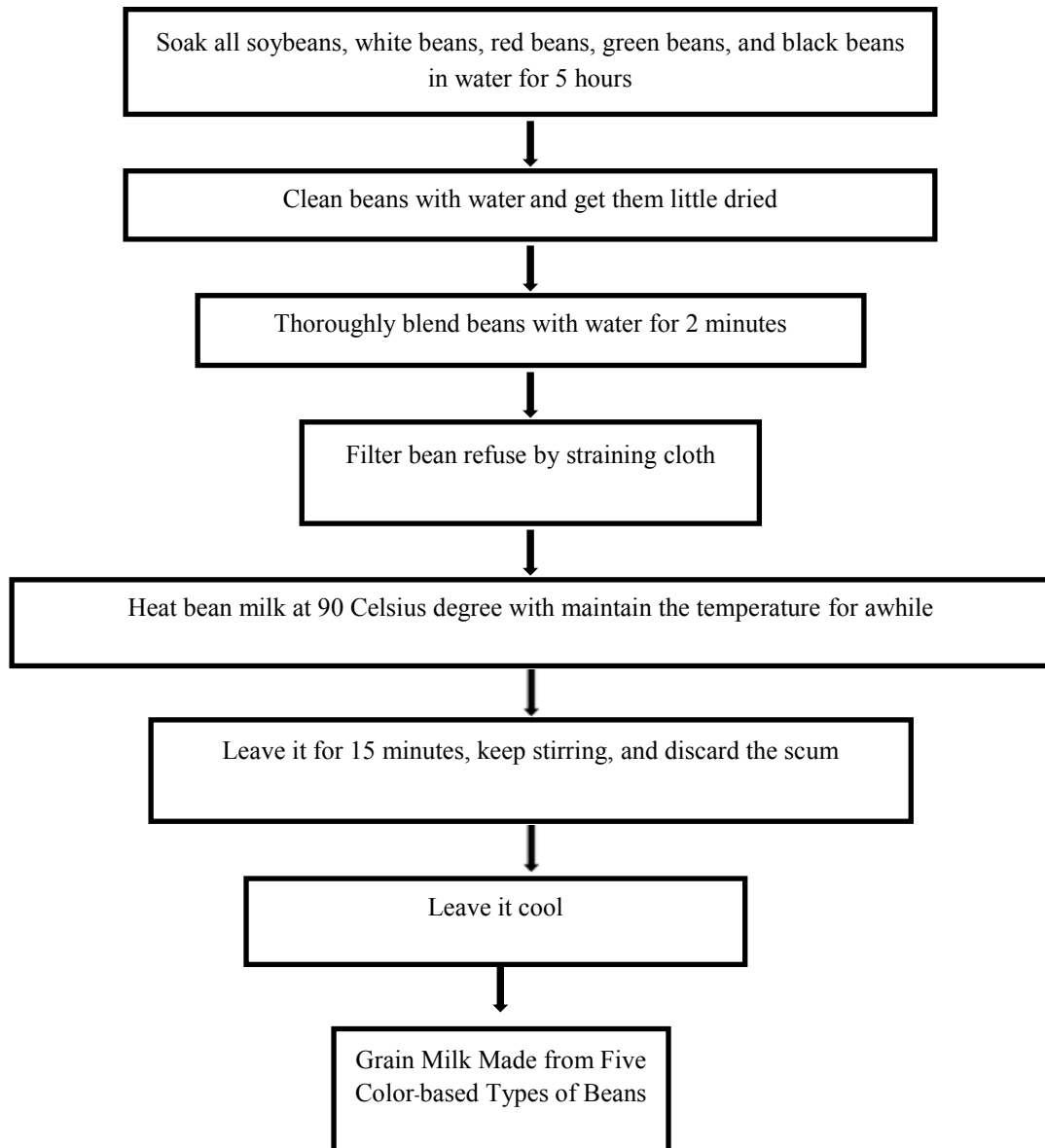


Chart 1 Procedures of Grain Milk Made from Five Color-based Types of Beans

1.2 Preparation of basic formula for Dairy Milk in Tofu Pudding

The basic formula of Tofu Pudding was adapted from the content in the book titled Fruit Salad Tofu Pudding of Sirisak, A. (2010)

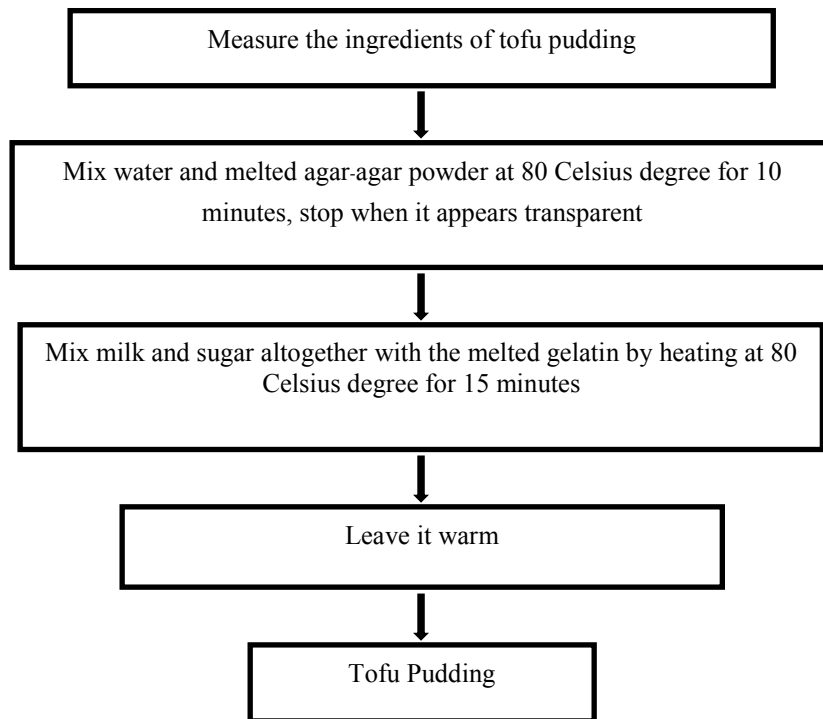


Chart 2 Procedures of Tofu Pudding Making

2. The study of the number of grain milk made from five color-based types of beans as a replacement to dairy milk

The original formula was studied by different amount of grain milk made from five color-based types of beans as a replacement to dairy milk at various portions as 25, 50, 75, and 100 percent. The number was then processed in sensory evaluation in terms of Appearance, sound, smell, Flavor, and touch (softness and smoothness) as well as the overall likeliness. The 40 Flavor testers consisted lecturers and undergraduate students majored in Food Science Technology and Home Economics, Rajamangala University of Technology Phra Nakhon. Their likeliness on the Flavor was evaluated by rating with total 9 levels (9 – Point Hedonic Scale) (Chompreed, P. 2006) and the compared the differences of mean values by Duncan's New Multiple Range Test (DMRT) by statistic application software.

3. The study of the proper agar-agar powder for tofu pudding made of grain milk made from five color-based types of beans

The experiment was conducted by adding gelatin powder at the amount of 0.1, 0.2, and 0.3 percent with the formula which was accepted in according with the sensory evaluation of the amount of grain milk made from five color-based types of beans as a replacement to dairy milk. This was hence examined by sensory evaluation in terms of Appearance and touch (softness and smoothness) as well as the overall likeliness. The 40 lecturers and undergraduate students majored in Food Science Technology and Home Economics, Rajamangala University of Technology Phra Nakhon were the Flavor testers. To examined their likeliness, rating with total 9 levels (9 – Point Hedonic Scale) (Chompreed, P. (2006) was used to evaluate the Flavor. Also, Duncan's New Multiple Range Test (DMRT) with the statistic application software was applied to investigate the differences of mean values.

4. The study of the quality of tofu pudding made of grain milk made from five color-based types of beans

The quality of the accepted formula with gelatin powder amount level in tofu pudding made of grain milk made from five color-based types of beans was examined as the following.

4.1 Examined the physical properties tofu pudding product made of grain milk made from five color-based types of beans.

1) Color measurement of tofu pudding product made of grain milk made from five color-based types of beans was made by KONICA MINOLTA , model SPECTROPHOTOMETER CM-3500d.

4.2 Examined the chemical properties tofu pudding product made of grain milk made from five color-based types of beans

- 1) Analyzed calorie (kcal, %) based on Method of Analysis for Nutrients Labeling (1993).
- 2) Analyzed total carbohydrate amount (total carbohydrate, %) based on AOAC (2012)
- 3) Analyzed protein amount (protein, %) by Formal titration based on AOAC (2012).
- 4) Analyzed fat amount (fat, %) based on AOAC (2012)
- 5) Analyzed fiber amount (fiber, %) based on based on AOAC (2012).
- 6) Analyzed moisture (moisture, %) based on AOAC (2012).
- 7) Analyzed ash amount (ash, %) based on AOAC (2012).

5. The Study the consumer acceptance toward tofu pudding product made of grain milk made from five color-based types of beans

The consumer test was made to examine tofu pudding product made of grain milk made from five color-based types of beans by the accepted tofu pudding product based on sensory evaluation and adapted dressing sauce based. The Hedonic five-point scale for acceptance test (Chompreed P, 2006) was employed to evaluated the sensory register as Appearance, sound, smell, Flavor, and touch (softness and smoothness) as well as the overall likeliness. Accidental Sampling (Srisarad B, 2006). was planned and used with Consumer Test for those 100 subjects. They were lecturers and students majored in Food Science Technology major, Rajamangala University of Technology Phra Nakhon. Also, factors of buying tofu pudding product made of grain milk made from five color-based types of beans was examined in the experiment.

Results analysis

The data was analyzed by Randomized Complete Block Design, RCBD, Sensory Evaluation with Confidence Level at 0.05 and then compared the difference of mean value by Duncan's New Multiple Range Test (DMRT) by statistic application software. The data was then interpreted in Descriptive Statistics and Percentage.

RESULTS AND DISCUSSION

1. Results of the study of grain milk made from five color-based types of beans as a replacement to dairy milk

Table 1 4 Difference Levels of Grain Milk Made from Five Color-Based Types of Beans as Replacement to Dairy Milk

Ingredients	weight (%)			
	25	50	75	100
water	14.2	14.2	14.2	14.2
Agar-Agar Power	0.3	0.3	0.3	0.3
sugar	8.1	8.1	8.1	8.1
fresh milk	58.0	38.7	19.4	0
Grain Milk Made from Five Color-based Types of Beans	19.4	38.7	58.0	77.4

Table 2 4 Difference Levels of Mean Value of the Sensory Quality towards Grain Milk Made from Five Color-Based Types of Beans as a Replacement to Dairy Milk

Sensory Quality	Average and overall liking			
	25%	50%	75%	100%
Appearance ^{ns}	6.97±0.97 ^b	7.70±0.64^a	6.92±0.61 ^b	5.92±0.82 ^c
Color	6.67±1.14 ^b	7.75±0.66^a	6.25±0.74 ^c	5.95±0.74 ^c
Smell	5.85±0.92 ^c	6.57±0.98 ^b	7.87±0.60^a	5.75±0.74 ^c
Flavor	6.67±1.14 ^b	6.65±1.60 ^b	7.62±0.77^a	5.80±0.93 ^c
Texture	7.72±0.59^a	7.47±1.15 ^a	6.87±0.79 ^b	5.90±0.90 ^c
Overall	6.87±1.22 ^b	7.02±1.31 ^b	7.87±0.68^a	5.77±0.69 ^c

Remarks: 1) a - c different horizontal number means statistical significance difference at 0.05
 2) ns means non-statistical significance difference at 0.05

Regarding to Table 1-2, the Flavor tester mostly accepted the Flavor of 75% of grain milk made from five color-based types of beans as a replacement to dairy milk in tofu pudding product in terms of smell, Flavor, and overall likeliness at the mean value at 7.87, 7.62, and 7.87 respectively. The moderation result was then found by the Flavor tester in areas of colors, smell, Flavor, and overall likeliness. The Variance and Statistical Significance were then examined which found the statistical significance difference at 0.05 in terms of colors, smell, Flavor, and overall likeliness.

Table 3 Physical properties of tofu pudding product made of grain milk made from five color-based types of beans as a replacement to dairy milk

Sensory Quality	25%	50%	75%	100%
Colors	Creamy white	White with slight creamy	Slight creamy	Dark creamy
Smell	Milk smell	Milk smell and slight grain milk smell	Moderate grain milk smell	Strong grain milk smell
Flavor	Creamy Flavor with milk	Slight creamy Flavor	Moderate creamy Flavor	Creamy Flavor with grain milk
Touch (Softness and smoothness)	Very soft and smooth with slight stability	Moderate soft and smooth with stability	Moderate soft and smooth with stability	Slightly soft and smooth with strong stability

Regarding to Table 3 the result of the study of the comparison of 4 levels of grain milk made of five color-based types of beans in tofu pudding was found the statistical significance difference at 0.05 in physical properties as color, smell, and texture. 75% of Flavor tester mostly accepted the following: Slight creamy, Moderate grain milk smell, Moderate creamy Flavor, and Moderate soft and smooth with stability. According to this formula, the grain milk made of five color-based types of beans and milk in ratio of 75: 25 strengthen the product smell as same as 100% of grain milk.

2. The result is a good study of agar-agar power content per tofu pudding product of Grain Milk Made from Five Color-based Types of Beans.

Table 4 3 Different Levels of Proper of Agar-Agar Powder in Tofu Pudding Made of Grain Milk Made from Five Color-Based Types of Beans

Ingredients	Weight (%)		
	0.1%	0.2%	0.3%
water	14.2	14.2	14.2
agar-agar power	0.1	0.2	0.3
sugar	8.1	8.1	8.1
fresh milk	19.4	19.4	19.4
Grain Milk Made from Five Color-based Types of Beans	58.0	58.0	58.0

Table 5 Mean Value of Sensory Quality of 3 Different Levels of Proper of agar-agar powder in Tofu Pudding Made of Grain Milk Made from Five Color-Based Types of Beans

Sensory Quality	Average and overall liking		
	0.1%	0.2%	0.3%
Appearance	6.30 ± 0.99 ^b	7.75 ± 0.89 ^a	6.37 ± 0.89 ^b

Texture	6.15 ± 0.86 ^b	7.67 ± 0.65^a	6.25 ± 0.70 ^b
Overall preferences	6.02 ± 0.97 ^b	7.47 ± 0.96^a	6.02 ± 0.94 ^b

Remarks : 1) a - b different horizontal number means statistical significance difference at 0.05
 2) ns means non-statistical significance difference at 0.05

As mentioned in Table 4-5, the Flavor tester accepted that 0.2% of agar-agar powder was the proper amount of tofu pudding made of grain milk made from five color-based types of beans. The aspects that were most accepted were Appearance, Texture, and Overall likeliness with the mean value were 7.75, 7.67, and 7.47 respectively. On the other hand, they accepted Appearance, Texture, and Overall likeliness in the moderate level which the Variation and Statistical Significance Difference were then analyzed and found statistical significance difference at 0.05.

Table 6 Physical properties of 3 Different Levels of Proper of Gelatin Powder in Tofu Pudding Made of Grain Milk Made from Five Color-Based Types of Beans

Sensory Quality	0.1%	0.2%	0.3%
Appearance	Smooth surface	Smooth surface	Smooth surface
Texture (Softness and smoothness)	Soft and smooth with slight stability	Soft and smooth with moderate stability	Soft and smooth with strong stability as jelly

Regarding to Table 6, the study of physical properties of 3 different levels of proper of agar-agar powder in tofu pudding made of grain milk made from five color-based types of beans was found the difference physical properties due to the different agar-agar powder amount level. Moreover, based on the mean value of sensory quality and physical properties of 3 different levels of proper of agar-agar powder in the tofu pudding, it represented that the tester most accepted the agar-agar powder level at 0.2 percent. Rattanapanone, N (2006) Agar is the best gelling agent because of its ability to absorb water. The gel is made from heat resistant agar based on the process that the temperature causes the gel and the great distance of melting level. It is commonly used as a stabilizer for food products such as pies, pudding, pudding, pies and meringue. The concentration of 0.2-0.5 percent is consistent with Somme.K, Jomvichean.S and Vonghirundacha (2008), which has studied the amount of gelatin powder in corn pudding production. It was revealed that the 0.4% of gelatin powder was accepted to be the most preference.

3. Tofu Pudding Product quality education of Grain Milk Made from Five Color-based Types of Beans.

Table 7 physical characteristic of grain milk made from five color-based types of beans as a replacement to dairy milk

Physical characteristic	Color value		
	L*	a*	b*
Grain milk pudding product from five colored bean	69.32	2.66	10.23

From table 7, it was found that five colored bean grain milk pudding has the value of L* equals to 69.32 which is the brightness value that the product can be seen. Value a* equals to 2.66 and it means the color have the direction to red. Value b* equals to 10.23 and is the color that direct to the yellow. Since grain milk from five colored bean is the mixture of soy, white bean, green bean, red bean, and black bean. In black bean, there is antocyanin which is the substance that gives red and purple color, and the brightness value is from the white color of the milk. The reflecting of colloid particles of fat milk and the grain milk from five colored bean occurs, so that makes the product look light yellow. In accordance with the standard of community product 528/2547 Office of Industrial Product Standards., 2004) sets the physical characteristic in the color of milk pudding that the color must have good color of natural ingredients used.

Table 8 Chemical Element of The Grain Milk Pudding Product from Five Colored Bean

Chemical element	Grain milk pudding product from five colored bean
------------------	---------------------------------------------------

Energy (kilocalories)	70.7
Carbohydrates (grams)	13.4
Protein (grams)	2.47
Fats (grams)	0.80
Fiber (grams)	0.44
Moisture (grams)	83.0
Ash (grams)	0.32

From the table above, the results represent that the grain milk pudding product from five colored bean has 70.7 kilocalories of energy, 13.4 grams of carbohydrate, 2.47 grams of protein, 0.80 grams of fat, 0.44 grams of fiber, 83.0 grams of moisture, and 0.32 grams of ash.

4. The study of acceptance of the consumer to the product

Table 9 The results of consumer's acceptance towards Grain Milk Made from Five Color-based Types of Beans as a Replacement to Dairy Milk in Tofu Pudding Products

Sensory quality	Average
Appearance	3.99 ± 0.68
Color	3.71 ± 0.76
Smell	3.99 ± 0.61
Flavor	3.64 ± 0.67
Texture	3.82 ± 0.65
Overall	3.82 ± 0.65

Acceptance of consumer products	Number of Participants	%
Yes	100	100.00
No	0	0.00
Total	100	100.00

From Table 9 Grain Milk Made from Five Color-based Types of Beans as a Replacement to Dairy Milk in Tofu Pudding Products was tested and the average scores of the consumers' acceptance on its appearance color, smell, taste, texture and overall preference are at 3.99, 3.71, 3.99, 3.64, 3.82 and 3.82 respectively. Overall liking and acceptance are as high as 100.00 percent.

CONCLUSIONS AND RECOMMENDATIONS

From the study of grain milk made from five color-based types of beans as a replacement to dairy milk product, it was found that the quantity of grain milk from the five colored bean compensates fresh milk in producing milk pudding at about 75. This is the factor that slightly appears on the yellow side with medium grain flavor, it has medium sweet and creamy flavor, also the smoothness. The appropriate quantity of agar powder in the grain milk made from five color-based types of beans as a replacement to dairy milk is about 20%. For its quality when analyzing the physical characteristic, the value of L* equals to 69.32, the value of a* equals to 2.66, and the value of b* equals to 10.23. From

analyzing the chemical element, we found that the grain milk pudding product from five colored bean has 70.7 kilocalories of energy, 13.4 grams of carbohydrate, 2.47 grams of protein, 0.08 grams of fat, 0.44 grams of fiber, 83.0 grams of moisture, and 0.32 grams of ash.

Tasting the sample of this product shows that the consumers accept in the characteristic, color, scent, flavor, and the texture. Overall, the average scores are 3.99, 3.71, 3.99, 3.64, 3.82 and 3.82 respectively. They also accept the product for about 100%. Reasoning that it is healthy for their body for about 49%. About 54% of consumer prefer that the reasonable price of this product is 25 Baht.

SUGGESTION

Should study the shelf life of tofu pudding made of grain milk from five color-based types of beans as a replacement to dairy milk or the storing in different conditions.

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REFERENCES

- AOAC. 2012. *Official method of Analysis*. The Association of Official Analytical Chemical. Washington D.C. U.S.A.
- Chompreed, P. (2006). *Educational Material for Evaluating Quality of Senses*. Kasetsart University, Bangkok, Thailand
- Khunthachai, W. (2013) *Product Development of Tao hual (Milk Pudding) and Ice Cream from broken Rice*. Faculty of Agricultural Technology and Agro-Industry, Rajamangala University of Technology Suvarnabhumi Huntra.
- Office of Industrial Product Standards. (2004). *Soybean milk curdle community product standards 528/2004*. Bangkok.
- Piyawan-on. (2014). *Healthy with beans*. Retrieved from <https://www.thaihealth.or.th/Content/24781.html>.
- Rattanapanone, N. (2006). *Food chemistry*. 2nd edition. Odeon Store. Bangkok, Thailand.
- Sirisak, Anchalee. (2010). *Tofu pudding fresh milk fruit salad*. Phetkarat publisher. Bangkok.
- Sirivanarungsun, P. (2017). *5 color bean juice*. Retrieved from <http://program.thaipbs.or.th/watch/AftMkS?fbclid=IwAR3pmpbTv269XbuVgS1PUCftI4IXt-eeigsfgeVXSRlvmaTRhoLuYer21U>.
- Somme,K, Jomvichean.S and Vonghirundacha.N (2008) *Development of Tahuay from corn milk mixed with scale of corn*. Food Science and Teachnology Program, Faculty of Agicultural Technology, Songkha Rajabhat University.
- Srisarad, B. (2006). *Basic research*. 7th edition. Bangkok book. Bangkok, Thailand.

A Study of Stevia Substitute Sugar Replacer in Ready-to-Drink Pineapple Jelly Products

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Abstract: The purpose of this paper is to study the quantity of carrageenan that impacts the texture of ready to drink pineapple jelly products and the amount of stevia that is needed to substitute for sugar in a ready to drink pineapple jelly product. This experiment was conducted with 30 participants to taste the products and evaluate their satisfaction using a 9-Point Hedonic Scale by using Randomized Complete Block Design (RCBD). The results were analyzed using statistical software called DMRT (Duncan's New Multiple Range Test) to compare differences of the average confidence level of 95 percent. The study indicated that the participants were most satisfied with 93.46 percent of pineapple juice, 0.56 percent of carrageenan and 0.66 percent of stevia because of the smooth texture that was firm and flexible. Also, the product had a dark yellow, pineapple aroma, and a sweet and sour flavor. The study demonstrated the physical quality of ready to drink pineapple jelly using sugar substitute stevia had color value (L*), a*, b* equals 57.23, 2.76, 48.99, respectively. The sweetening of the pineapple jelly mix with stevia is 11 brix, the pH is 3.2, and the compression force is 0.1 Newton. Additionally, the nutrition of pineapple jelly mixed with 100 grams stevia contained 71.90 kcal energy, 16.94 grams of Carbohydrate, 0.72 grams of Protein, 0.14 grams of Fat, 0.16 grams of Fiber, 81.79 grams of Moisture, and 0.41 grams of Ash. Moreover, the study revealed the satisfaction of participants who tried the new product and it showed that 99% of participants accepted the new product.

Keywords: Ready to Drink, Pineapple jelly, Stevia

INTRODUCTION

Today, people are more concerned about economic development especially in food and energy production that are important to local farming. The excellent performance and potential of local agriculture can establish stable careers, increase income and improve quality of life. One of the most effective ways is to invent new products from already produced crops to increase value, improve quality, and benefit customers which is well known as "OTOP" (One Tumbon One Product). Pineapple is a commercial crop that grows well in topical areas. In general, pineapple can't be grown in low or freezing temperatures. The appropriate area for pineapple growing is near beaches because these areas don't fluctuate in temperature and humidity. Also, there is no extreme weather (Bartholomew and Kadzimin, 1977). The most famous breed is Batavia pineapple which can be consumed as fresh fruit or used as raw material in a processing factory (Bartholomew and Criley, 1983). Pineapple has many nutrients containing lots of minerals and vitamins such as Carbohydrates, Vitamin C, Vitamin B2, Vitamin B3, Vitamin B5, Vitamin B6, Folic acid, Calcium, Potassium, Magnesium, Manganese, Phosphorus, Ion, and Zinc etc. All minerals and vitamins are beneficial to the human body and people's health. In addition, pineapple can treat some diseases such as dysentery, gallstones, heal wounds, and act as a diuretic, etc. Therefore, researchers are interested in studying ready to drink pineapple jelly products. Jelly is one of the favorite desserts from childhood through adulthood because it's convenient to eat, easy to buy, and has excellent flavor. It comes in a variety of shapes and colors, too. Jelly has unique characteristics of translucent gel and smooth touch. The gel is a compound of Gelatin, Carrageenan, Pectin, and Agar mixed with a sweetener. Then, artificial colors and aromas are added. The main ingredient of jelly is fruit juice, particularly sweet fruit or sour fruit such as orange, lime, pineapple, lychee, and grape, etc. Stevia is native to Brazil and northeast Paraguay in South America. In Thailand, there are some trial fields that grow stevia in Maesai, Chiang Rai and a few more provinces in the north. Stevia has hard circle stem, serrated leaves, and white petal. The leaves contain a number of sweet-tasting chemicals known as steviol glycosides which can be 10-15 times sweeter than Sucrose. Importantly, it has low or zero calories. Stevia is becoming a great choice for food and beverage manufacturing, medical usage, and herbal medicine. There are many benefits for diabetic or obesity patients, and those on a diet. Since producing ready to drink jelly requires sugar for sweetness, researchers realize that this might lead to some health problems in people. Thus, researchers substituted stevia for sugar in ready to drink jelly. Based on the above information, the researchers focused on developing local fruits that are easily grown and low cost to produce ready to drink jelly. The pineapple was chosen because its use in jelly production provides increased value to the agriculturists over selling it as fresh fruit. Also, it can increase income for agriculturists and people who are interested in making extra-income. Furthermore, a sugar replacement product is another option for people who care about their health. The researchers anticipated that a high quality product would be accepted in the market.

Objective

- 1 To develop a standard recipe of ready to drink pineapple jelly by substituting stevia in place of sugar
- 2 To study the quality of ready to drink pineapple jelly by substituting stevia in place of sugar
- 3 To evaluate participants' satisfaction of the product

Method

1. Study of carrageenan quantity in ready to drink pineapple jelly

According to a chosen standard recipe from 3.2.2 which was approved by participants, there were 3 volumes of carrageenan: 0.31%, 0.44%, and 0.56% of total weight. This study used Randomized Complete Block Design (RCBD) to analyze the quality results in appearance, color, aroma, flavor, texture (flexibility), and satisfaction. The experiment was performed with 30 participants who are professors and undergraduate students of the Home Economics Technology Faculty in Rajamangala University of Technology Phra Nakhon. The products were tasted and evaluated. The satisfaction results were separated into 9 scales (9-Points Hedonic Scale) and compared the difference of average by DMRT (Duncan’s New Multiple Range Test) software.

Table 1 Three different volumes of carrageenan in ready to drink pineapple jelly

Ingredient	Volume (percent)		
	1 st recipe	2 nd recipe	3 rd recipe
Pineapple juice	93.46	93.34	93.23
Sugar	6.23	6.22	6.21
Carrageenan	0.31	0.44	0.56

2. Study of stevia quantity in ready to drink pineapple jelly

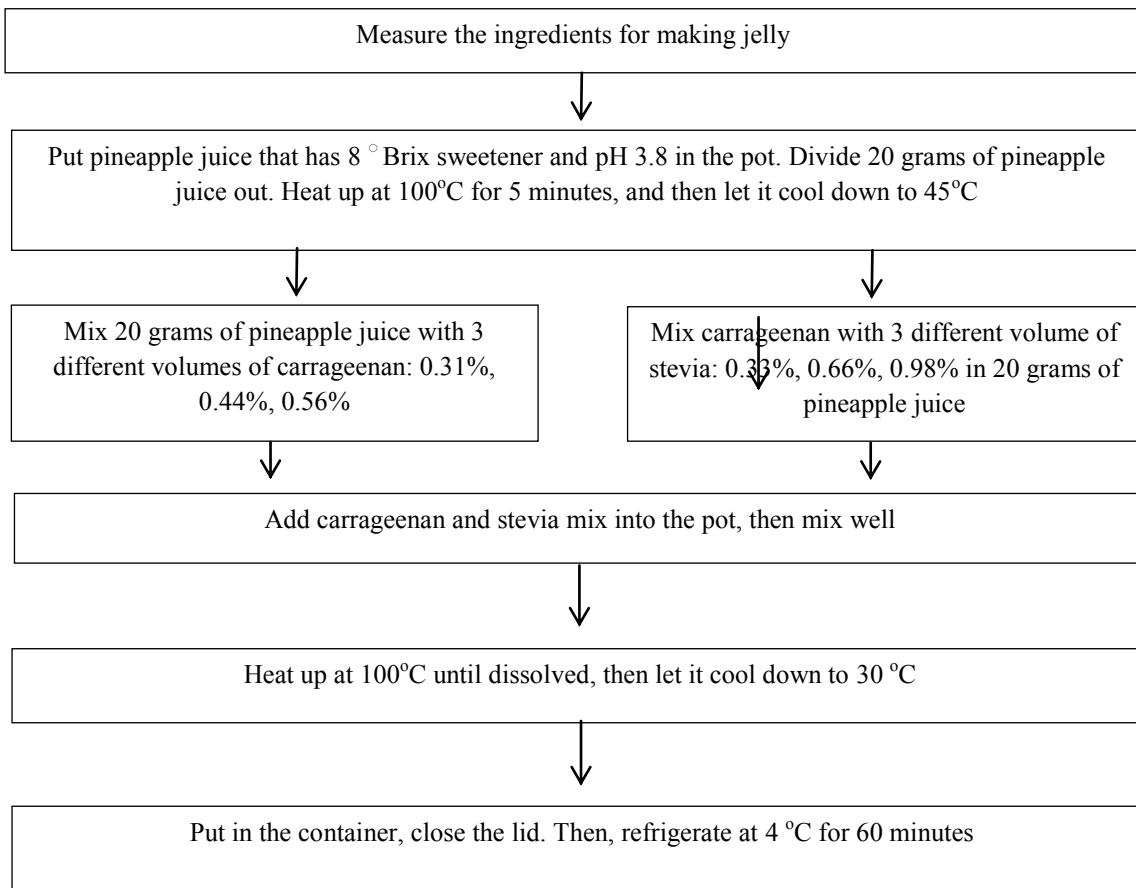
There were 3 different volumes of stevia in ready to drink pineapple jelly: 0.33%, 0.66%, and 0.98% of total weight. This study used Randomized Complete Block Design (RCBD) to analyze the quality results in appearance, color, aroma, flavor, texture (flexibility), and satisfaction. The experiment was performed with 30 participants who are professors and undergraduate students of the Home Economics Technology Faculty in Rajamangala University of Technology Phra Nakhon. The products were tasted and evaluated. The satisfaction results were separated into 9 scales (9-Points Hedonic Scale) and compared the difference of average by DMRT (Duncan’s New Multiple Range Test) software.

Table 2 Three different volumes of stevia in ready to drink pineapple jelly

Ingredient	Volume (percent)		
	1 st recipe	2 nd recipe	3 rd recipe
Pineapple juice	99.08	98.75	98.43
Stevia	0.33	0.66	0.98
Carrageenan	0.59	0.59	0.59

Remark : 100 grams of sugar = 10 grams of stevia

Source : Green Foods Asia Co.,Ltd



Flow chart 1 Study sugar substitute stevia quantity in ready to drink pineapple jelly

3. Study of product quality of ready to drink pineapple jelly with sugar replaced by stevia

This experiment studied physical and chemical quality of ready to drink pineapple jelly with sugar replaced by stevia.

3.1 Physical assessment of ready to drink pineapple jelly

3.1.1 Measure color by KONICA MINOLTA Specter Maguc NX

3.1.2 pH meter

3.1.3 Brix Refractomet

3.1.4 Compression force by Universal Testing Machine, Bourne, 2000

3.2 Chemical assessment of ready to drink pineapple jelly

3.2.1 Ash measurement (gram) by AOAC (2016) 920.153

3.2.2 Energy intake (Calories, Kcal) by In-house method TE-CH-169 based on Compendium of Methods for Food Analysis Thailand, 1st Edition, 2003

3.2.3 Fatty energy (Calories from Fat, Kcal) by In-house method TE-CH-169 based on Compendium of Methods for Food Analysis Thailand, 1st Edition, 2003

3.2.4 Carbohydrate (gram) by In-house method TE-CH-169 based on Compendium of Methods for Food Analysis Thailand, 1st Edition, 2003

3.2.5 Fat (gram) by AOAC (2016) 922.06

3.2.6 Moisture (gram) by AOAC (2016) 925.45

3.2.7 Protein (%Nx6.25), gram) by In-house method TE-CH-042 based on AOAC (2016) 981.10

3.2.8 Dietary Fiber (gram) by In-house method TE-CH-076 based on AOAC (2016) 985.29

3.2.9 pH meter

3.2.10 Brix Refractometer

4. Study of participants' satisfaction in ready to drink pineapple jelly sugar substitute stevia

This experiment studied participants' satisfaction in ready to drink pineapple jelly that is sugar replaced by stevia. The product was tasted and scored indicating satisfaction into 5 levels (5-Points Hedonic Scale). The first score is strongly disagree, the fifth score is strongly agree. The participants responded to the sense of appearance, color, aroma, flavor, texture (flexibility), and satisfaction. The study was a random sampling or accidental sampling (บุญชู, 2549). The study was a Consumer Test performed with 100 subjects who are professors and undergraduate students of the Home Economics Technology Faculty in Rajamangala University of Technology Phra Nakhon.

ANALYSIS

The experiment was Randomized Complete Block Design (RCBD) (สวทท, 2546) which has P value =0.05 by 9-Point Hedonic Scale (พงษ์ขวัญ, 2549). Also, it compared differences of the average by Duncan's New Multiple Range Test (DMRT). The result was analyzed by computer software and reported as descriptive statistics in percentage.

CONCLUSION

1. The results of carrageenan quantity in ready to drink pineapple jelly

This experiment studied quantity of carrageenan that impacts the texture in a chosen standard recipe of pineapple jelly. There were 3 different volumes of carrageenan which was 0.31%, 0.44%, and 0.56% of total weight. The result was presented in Table 3.

Table 3 The average of satisfaction of 3 different carrageenan quantity in ready to drink pineapple jelly

Sensory quality	Average of satisfaction		
	0.31%	0.44%	0.56%
Appearance	6.93±1.26 ^b	6.40±1.61 ^b	8.37±0.81^a
Color	7.00±1.20 ^b	7.07±1.36 ^b	7.97±0.81^a
Aroma	6.67±1.37 ^b	6.40±1.40 ^b	7.53±1.14^a
Flavor	6.70±1.51 ^b	6.10±1.47 ^b	7.83±0.91^a
Texture (flexibility)	5.53±2.15 ^b	5.67±2.54 ^b	7.93±0.94^a
Satisfaction	5.87±1.93 ^b	5.73±2.16 ^b	7.87±1.01^a

Remark : 1) a and b represent statistically significance P-Value =0.05

2) ns represents non-statistically significance P-Value = 0.05



Recipe 1



Recipe 2



Recipe 3

Picture 1 The three difference of ready to drink pineapple jelly product that used different carrageenan volume

According to Table 3, the study indicated that the third recipe had the highest score in all of the criterias of appearance, color, aroma, flavor, texture, and satisfaction : 8.37 7.97 7.53 7.83 7.93, and 7.87, respectively. The result was calculated using Variance value and analyzed statistical difference. All sensory quality (appearance, color, aroma, flavor, texture, and satisfaction) was statistically significance (P-Value =0.05). Therefore, the researchers selected the third recipe to design the quantity of carrageenan in ready to drink pineapple jelly.

2. The results of stevia quantity in ready to drink pineapple jelly

This experiment used a standard recipe for pineapple jelly. There were 3 different volumes of stevia in pineapple jelly: 0.33%, 0.66%, and 0.98% of total weight, as Table4 shows.

Table 4 The average of satisfaction of 3 different stevia volumes in ready to drink pineapple jelly

Sensory quality	Average of satisfaction		
	0.33%	0.66%	0.98%
Appearance	6.60±1.50 ^b	7.80±1.42^a	6.43±1.28 ^b
Color	6.43±1.30 ^b	7.53±1.31^a	6.67±1.06 ^b
Aroma	6.13±1.63 ^b	7.03±1.69^a	6.23±1.19 ^b
Flavor	5.97±1.73 ^b	7.37±1.65^a	6.00±1.74 ^b
Texture (flexibility)	5.93±1.96 ^b	7.07±2.10^a	5.83±1.51 ^b
Satisfaction	6.10±1.73 ^b	7.30±1.70^a	5.97±1.50 ^b

Remark : 1) a and b represent statistically significance P-Value =0.05

2) ns represents non–statistically significance P-Value = 0.05



Recipe 1



Recipe 2



Recipe 3

Picture 2 The three different ready to drink pineapple jelly products that used different stevia volume

According to Table4 , the study indicated that the second recipe had the highest score in all of the criterias of appearance, color, aroma, flavor, texture, and satisfaction : 7.80 7.53 7.03 7.37 7.07 , and 7.30, respectively. The result was calculated using Variance value and analyzed statistical difference. All sensory quality (appearance, color, aroma, flavor, texture, and satisfaction) was statistically significance (P-Value =0.05). Therefore, the researchers selected the second recipe to determine the stevia amount to replace sugar in ready to drink pineapple jelly.

3. The results of product quality of ready to drink pineapple jelly

The physical and chemical quality of ready to drink pineapple jelly sugar substitute stevia was tested

2.1 Physical assessment of ready to drink pineapple jelly

Table 5 Physical quality (color, pH, sweetener, and compression force) of ready to drink pineapple jelly

Physical quality	color			pH (pH meter)	Sweetener °Brix	Compression force N
	L*	a*	b*			
ready to drink pineapple jelly which is sugar replaced by stevia	57.23	2.76	48.99	3.2	11	0.12

Remark : L* is brightness in the range of 0 to 100.; a* is red and green color (+ is red, - is green) ; b* is yellow and blue (+ is yellow, - is blue)

According to Table 5, the result showed that the brightness (L*) value of ready to drink pineapple jelly sugar substitute stevia is 57.23. Furthermore, (a*) the value is 2.76 that indicate the redness of the product and (b*) the value is 48.99 that indicate yellowness of the product. Therefore, the physical appearance of ready to drink pineapple jelly tended to be a darker yellow from pineapple juice. In addition, local product standards of fluid jelly (Liquid Jelly TCPS. 518/2547) determines that the fluid jelly should have the natural color of component fruit and the color should be steady.

Moreover, the results demonstrated the pH of ready to drink pineapple jelly is 3.2 that complies to Chutamat et al (2554). They determined the normal pH of jelly should be 2.8 – 3.5. However, the most appropriate pH is 3.2, the sweetener is 11 Brix, and the Compression Force is 0.12 Newton to produce good physical quality of ready to drink pineapple jelly sugar substitute stevia especially the flexibility texture, sweet and sour taste from pineapple juice and stevia.

2.2 Chemical assessment of ready to drink pineapple jelly

Table 6 Chemical quality of ready to drink pineapple jelly (serving size 100 grams)

Chemical quality	ready to drink pineapple jelly sugar substitute stevia
Energy (kcal)	71.90
Carbohydrate (gram)	16.94
Protein (gram)	0.72
Fat (gram)	0.14
Fiber (gram)	0.16
Moisture (gram)	81.79
Ash (gram)	0.41

Table 6 shows that the ready to drink pineapple jelly using 100 grams of sugar substitute stevia contains energy 71.90 kcal, Carbohydrate 16.94 grams, Protein 0.72 grams, Fat 0.14 grams, Fiber 0.16 grams, Moisture 81.79 grams, and Ash 0.41 grams.

4. The result of participants' satisfaction

Table 7 The result of participants' satisfaction in ready to drink pineapple jelly sugar substitute stevia (N=100)

Sensory quality	Average Score
Appearance	4.27±0.67
Color	4.45±0.54
Aroma	4.28±0.70
Flavor	4.42±0.64
Texture (flexibility)	4.43±0.64
Satisfaction	4.34±0.73

customer acceptance	Number of people	Percent
Accepted	99	99.00
Unaccepted	1	1.00

According to Table 7 , it showed that the participants accepted the appearance, color, aroma, flavor, texture, and satisfaction of the ready to drink pineapple jelly substitute sugar by stevia at an average score 4.27 4.45 4.28 4.42 4.43, and 4.34 respectively. The ready to drink pineapple jelly sugar substitute stevia was dark yellow, sweet and sour , and firm-flexible texture. Therefore, most participants liked the product because it tasted great and was easy to eat. 99% of participants were satisfied with this product. However, there was one participant who was unsatisfied with this product, which indicates 1% dissatisfaction.

DISCUSSION

Study of stevia quantity in ready to drink pineapple jelly

Based on this study, there were 3 different carrageenan volumes in ready to drink pineapple jelly: 0.31%, 0.44%, and 0.56% of total weight. The results indicated that recipe 3 was the most acceptable. There were 3 different stevia volumes in ready to drink pineapple jelly: 0.33%, 0.66%, and 0.98% of total weight. The results indicated that recipe 2 was the most acceptable in appearance, color, aroma, flavor, texture, and satisfaction. The average scores were 7.80, 7.53, 7.03, 7.37, 7.07, and 7.30, respectively. Recipe 2 of ready to drink pineapple jelly was dark yellow and low water. The texture was flexible and firm. It had pineapple aroma and a sweet and sour taste. To compare the difference of sensory quality (appearance, color, aroma, flavor, texture, and satisfaction), there was statistical significance (P-Value=0.05) between recipe 2 and recipe 3. Therefore, recipe 2 was selected to be the standard recipe.

Study of physical quality of ready to drink pineapple jelly sugar substitute stevia

Based on physical assessment (color, pH, and sweetener) of ready to drink pineapple jelly sugar substitute stevia , it proved that recipe 2 had L* value equals 57.23, a* value equals 2.76, and b* value equals 48.99. Also, the pH of ready to drink pineapple jelly is 3.2, the sweetener is 11 brix, and the compression force is 0.12 Newton.

Study of chemical quality of ready to drink pineapple jelly sugar substitute stevia

Based on chemical assessment of 100 grams ready to drink pineapple jelly sugar substitute stevia, the components were represented as energy 71.90 kcal, Carbohydrate 16.94 grams, Protein 0.72 grams, Fat 0.14 grams, Fiber 0.16 grams, Moisture 81.79 grams, and Ash 0.41 grams.

Study of participants' satisfaction in ready to drink pineapple jelly sugar substitute stevia

Based on participants' satisfaction, the results indicated that the average participants' satisfaction of the sensory quality (appearance, color, aroma, flavor, texture, and satisfaction) of ready to drink pineapple jelly sugar substitute stevia were 4.27, 4.45, 4.28, 4.42, 4.43, and 4.34, respectively. The ready to drink pineapple jelly sugar substitute stevia were dark yellow. The texture was firm and flexible. It contained pineapple aroma and sweet and sour taste from proper quantity of pineapple juice and stevia. Therefore, most participants liked the product and 99% of participants were satisfied with this product. On the other hand, there was one participant who was unsatisfied with this product, that is about 1%.

Further study

1. This study should be expanded to determine microorganism contamination and the shelf life of the product in the future.

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REFERENCE

- Bartholmew, D.P. and R.A. Criley, 1983. Tropical fruit and beverage crop. pp. 1-34 in Nickell, L.G. (ed) Plant Growth Regulating Chemical Vol.2 CRC Press, Inc, Florida.
- Bartholomew and Kadzimin. 1977. **The Pineapple: Botany, Production, and Uses.** University of Hawaii at Manoa Honolulu, USA.
- Piculell, L. 1995. Gelling carrageenans. In: Stephen, A.M., ed. **Food Polysaccharides And Their Applications.** Marcel Dekker, Inc. New York. 205-244 p.

Guidelines for Buildings the Working-age Customer Loyalty to Purchase Organic Products in Bangkok.

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Abstract This research aims to investigate guidelines for buildings the working-age customer loyalty to purchase organic products in Bangkok. The research was conducted quantitatively by studying a sample group consisting of 400 customers aged between 22-55 years of age that purchased organic agricultural products in Bangkok more than two times within a period of six months. The data were collected using questionnaires and statistically analyzed for the frequency, percentage, mean, standard deviation, Confirmatory Factor Analysis (CFA), and Structural Equation Model (SEM). The results showed that the customer sampling aged between 22-25 years, who earned a bachelor's degree with the average income between 20,000 – 35,000 THB per month. Their majority occupation was owning the business and selecting rice as their organic products, which the products are from supermarkets. The amounts that they spent on products were amount between 101 – 300 THB per time. The frequency of purchasing organic products was once a week. The duration is not consistent. The factor that affected their intention to bur organic product is their family members. Beside this, most of them are choosing organic products because of the wellness. The results show that factors that affect the loyalty of the working-age customer for organic agricultural products in Bangkok are service marketing strategy, perceived service quality, and customer satisfaction. These three factors have the greatest influence on the customers' positive attitude. The customer loyalty building method corresponds to the empirical data at a very good level (Statistical values are Chi square/df=0.98, P-value=0.40272, RMSEA=0.001, GFI=0.98, and AGFI=0.97).

Keywords: Loyalty of Customers, Service Marketing Strategy, Perception of Service Quality, Organic Products in Bangkok.

INTRODUCTION

According to the concept of long-term development plan under the 12th National Economic and Social Development (2017 - 2021) that still adheres to “the philosophy of sufficiency economy, which lead to the sufficiency with food security and safety, reduce expenses and solve poverty problems of households and communities. As a result, farmers adopted the philosophy of sufficient economy application in many areas, from commercial agriculture to organic agriculture. In order to support sustainable agriculture and environmentally friendly, the government sector has set a guideline for farmers to produce organic and safe agriculture, and trying to the rising Thai people to be happy including promoting consumer behavior that gives importance to the quality of life and health conditions of consumers. As well as pushing Thailand to be the center of organic products in the ASEAN region by focusing on the development of basic infrastructure for organic products in the country and creating a network for organic cooperation in ASEAN (Office of the National Economic and Social Development Board, 2016, pages 87-96).

In order to formulate the 12th National Organic Agriculture Development Strategy Plan (2016 - 2021) together with the Ministry of Commerce, Ministry of Public Health, and Ministry of Industry, the Ministry of Agriculture and Cooperatives is therefore the main unit to promote the production of organic products and in charge of the appointment of the National Organic Development Board. The objective of this plan is to enhance the quality of life and better health for farmers to produce safe food and consumer chemicals, and increase the competitiveness of Thailand's organic products, in order to build Thailand to be the center of production and trade and the consumption of organic products at the ASEAN level. The development strategy consists of 4 strategies which are (1) knowledge management and innovation (2) development of organic production throughout the supply chain (3) strengthening the marketing and Thai organic standards, and (4) Integration for driving Thai organic agriculture (Office of Agricultural Economics, 2560). As a result, at the end of the 1st organic agricultural production strategy (2008-2011), it was found that Thai organic production has increased in 2010 and there is capacity building for commercial organic agriculture by continuing to certify organic standards (Office of Agricultural Economics, 2013). In addition, Thailand has formulated a strategy "Thai Kitchen to the World Kitchen" to accelerate the development of raw materials that are agricultural products, in order to meet the standards throughout the system. Especially, focusing on the production system and the key is the water source. Not only that, the organic agriculture system is also a standard to support safe production of agricultural products and has quality that meets the needs of consumers both in the domestic and foreign markets (Department of Agricultural Extension, 2013)

As mentioned above, in order to expand the market, both public and private sectors had promoted and supported the network of organic products and support the campaign for Thailand to increase the area for planting organic vegetables and fruits, including retail businesses and organic agriculture services (Ministry of Commerce, 2014). The direction of the growth of human resources in the future of Thailand by forecasting the year 2022 found that the increase of the Thai population will continue to increase in the future, including the current population, especially working-age groups which focus more on health care. Therefore, products that related to the health-loving trend can be the product group that can grow in the future. Although, this kind of product has a high price, but consumers are willing to pay, in order to get quality products (Olarankitanan, 2013, p. 42-85). There is a consumer's demand of organic products from a lifestyle and consumer behavior that focuses on health and the environment, therefore, it leads to an increased demand for organic products, and the number of certified organic farms increasing from 9,961 farms in 2014 to 13,154 farms in 2015. Many businesses have changed to selling agricultural products. Therefore, these factors have led to an increase in Thai organic agricultural entrepreneurs. In 2014, there were 1,500 organic products sold in Thailand and there were many food processing entrepreneurs who are interested to start doing organic food. Some of these entrepreneurs have their own organic farming areas or allowing other farmers to produce organic product. The expansion of organic processing entrepreneurs that increased, it causes the organic agriculture market in Thailand to continue to grow continuously (Greenet, 2016)

Bangkok is a major city of the country which have many retail stores. Nowadays, consumers in Bangkok have turned to pay more attention to health issues, such as clean food, fresh vegetables, organic vegetables, and also pay attention to health and exercise. The business of selling organic products is therefore a specialty store which focus on organic products, products for health and the environment. It allows Entrepreneurs to have various forms of business such as health and environmental products store, an organic supermarket, organic agricultural products shop, which is a specialized market and has expanded branches to all districts in Bangkok. Examples of stores selling organic products such as Navilit stores, Lemon Farm stores, Tai Sabai stores and Doi Kham stores. In order to increase the potential of competition, Entrepreneurs must focus on marketing strategies to build customer loyalty in the long run, especially service marketing strategy, service quality awareness that affects customer satisfaction and loyalty of consumers of organic products. However, the business of selling organic products has a wide variety of organic products to meet the needs of customers and the average price of organic products is much higher than general products, this causes the market to be restricted to only those who have high incomes. In addition, the effects of the economic downturn may affect purchasing power and causing some groups of organic agricultural consumers to reduce their consumption (Organic Agriculture Innovation Network, 2014).

From the reasons mentioned above, the researcher is interested to develop guidelines for Buildings the Working-age customer loyalty to purchase organic products in Bangkok. Due to the trend of health care and promoting the marketing of organic products from both the public and private sectors, it may result in consumers pay more attention to the purchase of organic products. From the study of concepts and theories related to consumer behavior models that influence customer loyalty, mostly focus on the marketing strategy of the organic store business which are currently studying the marketing mix. There is still no education for the study of marketing strategy which integrated with the perception of service quality of consumers, as well as in-depth studies on loyalty among working-age customers who buy organic products in Bangkok. The research results will be planned to develop guidelines for Buildings the Working-age customer loyalty to purchase organic products in Bangkok and to provide information for entrepreneurs, in order to promote the production of organic products, as well as to provide marketing information to those interested in selling organic products in the future.

THEORETICAL BACKGROUNDS AND HYPOTHESIS DEVELOPMENT

2.1 Theoretical Backgrounds

In this study, the researchers studied the theory and other research which related to variables in the research's framework.

1. Variables that influence customer satisfaction and loyalty, the concepts used in this study consist of (1) service marketing strategies of Lovelock and Wirtz (2011, pp. 44-48) which describes the marketing tools to reach consumers' needs and gain competitive advantage in the service market, and also known as 7 P's, namely products, prices, places and times, promotion and education for customers, personnel, processes and physical environment (2) The concept of service quality perception of Parasuraman, Zeithaml and Berry (1985, p. 44) which sees service quality based on 5 factors: convenience received, service personnel, service quality received, duration of operations and information received from the service (3) Oliver's customer satisfaction concepts (1997) addresses five customer satisfaction, namely the convenience received, service personnel, quality of service received, duration of operations and information received from the service, and (4) Oliver's customer loyalty concept (1999)proposes a variable for customer loyalty, including a positive attitude, re-purchase, and referrals.

2. Other research from Li and Green (2011, p. 1), Arokiasamy (2012, p. 1), Muala (2012, p. 1), and Suthar, Lathangi and Pradhan (2014, p. 619) found that customer loyalty, it is a result of effective marketing strategies. Service marketing strategy will create more value for consumers by and it also leads to a positive influence on customer loyalty. While Rahman, Haque and Jalil (2014, pp. 304-316) searched for a relationship between variables with structural equations and found that product quality and the price strategy have a direct positive influence on customer satisfaction and has a positive indirect effect on customer loyalty. In addition, there is other research which related to the recognition of service quality affects customer loyalty include Bell, Auh and Smalley (2005, pp. 169-183), Lai (2014, pp. 118-138) and Al-Otaibi (2014, p. 79) and so on. In addition, research by Spiller, Bolten and Kennerknecht. (2006, p. 1) found that the perception of product and service quality has a direct positive influence on customer satisfaction and also leads to customer loyalty. Binsar Kristian and Panjaitan (2014, p. 142) analyzed the impact of customer satisfaction on customer loyalty and found that customer satisfaction has a direct positive influence on customer loyalty which corresponds to Lai (2014, p. 118) who confirms that customer satisfaction has a direct influence on customer loyalty as well.

2.2 The variable elements studied

Exogenous Latent Variables consists of Service Marketing Strategy, including Production, Price, Place and Time, Promotion and Education, People, Process, and Physical Environment. Factors of Perception of Service Quality, including Tangible, Reliability, Responsiveness, Assurance, and Empathy.

Endogenous Latent Variables consist of Customer Satisfaction, including Convenience Gained, Officer Services, Quality of Services, Duration of Operation, and Information received. Factor of Customer loyalty, including Positive attitude, Repeated Service, and Word of Mouth.

2.3 Hypothesis Development

Hypothesis 1: service marketing strategy factors and customer satisfaction factors have a direct and indirect influence on working-age customer loyalty to purchase organic products in Bangkok (H1)

Hypothesis 2: service quality awareness and customer satisfaction factors have direct and indirect influence on working-age customer loyalty to purchase organic products in Bangkok (H2)

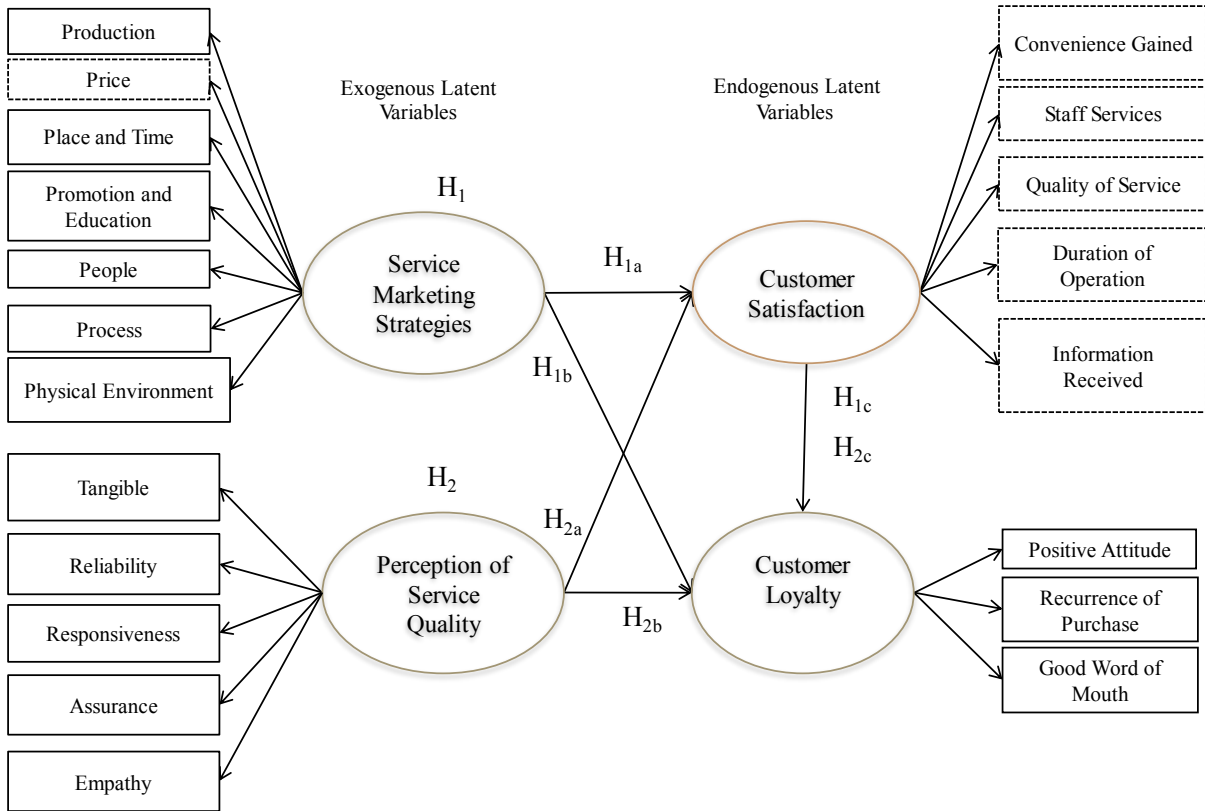


Figure 1: conceptual Framework

MATERIALS AND METHODS

3.1 Study Area and Sample Size

The target area for the study will be the area in Bangkok because Bangkok is a major city of the country with a population of 5,676,648 people (only for Thai citizens and have a name in the House Registration) (Department of Provincial, 2018). The population of working-age (22-55 years) is 2,862,676 people. The researcher does not know the target population who uses the service of selling organic products in Bangkok as listed in Thailand Organic Mapping, 59 stores (Office of the Permanent Secretary Ministry of Commerce, 2011, Page 1-38), so the sample size is 400 samples which calculated by using the formula of Cochran (1953) with a 95% confidence level.

3.2 Data Collection

This is quantitative Research, aims to find ways to promote loyalty among working-age customers buying organic products in Bangkok, and study of the personal characteristics of working-age customers of organic products stores customer opinions on service marketing strategies, recognition of service quality, customer satisfaction, loyalty of working group customers who buy organic products in Bangkok.

The instrument used in this study was a questionnaire. In order to determine the quality of the questionnaire, we used validity by delivering the questionnaire to 5 experts and experts who has knowledge and understanding in specific areas by used Item Objective Congruence (IOC) and each question have more than 0.60. To test for reliability and in order to check the Alpha Coefficient - α coefficient, the questionnaire had been Try-out with a group of 30 peoples that is similar to a sample. The calculated confidence coefficient greater than 0.8 shows that the query tool is reliable (Cronbach, 1990).

The researcher collected data from working group aged between 25-59 years who have bought more than 2 times in 6 months at the organic agricultural stores in Bangkok such as Lemon Farm Chaengwattana, Lemon Farm Future Park Rangsit, Khlong Toei Fresh Market, Organic delight, Green World Foundation, and Phutthamonthon fresh market. The samples were purposive sampling by using a sampling method until the total number of samples was 400 persons.

3.3 Data Analysis

Analysis of data and statistics used in research consists of descriptive statistics such as frequency, percentage, mean and standard deviation. Inferential Statistics including Confirmatory Factor Analysis (CFA) and Structural equation model (SEM)

RESULTS

Part 1: The results of the analysis of the influence of the factors that affect working-age customer loyalty to purchase organic products in Bangkok

Table 1 Coefficient analysis results

Output variable	Strategic Marketing Services (SMS)			Perception of Service Quality (PER)			Customer Satisfaction (SAT)		
	TE	IE	DE	TE	IE	DE	TE	IE	DE
Satisfaction	0.44**	-	0.44**	0.28**	-	0.28**	-	-	-
Customers (SAT)	(0.10)	-	(0.10)	(0.09)	-	(0.09)	-	-	-
Customer Loyalty	0.58**	0.26**	0.29**	0.22**	0.11**	0.18**	0.64**	-	0.64**
(LOY)	(0.14)	(0.10)	(0.14)	(0.12)	(0.08)	(0.12)	(0.07)	-	(0.07)
Variable Reliability (R2)	SAT 0.78	LOY 0.69							
Independent variable Reliability (R2)	PROD 0.40	PRIC 0.45	PLAC 0.52	PROM 0.46	PEOP 0.51	PROC 0.52	PHYS 0.62	TANG 0.60	RELI 0.58
Independent variable Reliability (R2)	RESP 0.64	ASSU 0.68	EMPA 0.52						
Output variable Reliability (R2)	CONV 0.68	OFFI 0.58	QUAL 0.60	DURA 0.59	INFO 0.72	ATTI 0.69	REPE 0.64	MOUT 0.72	
Correlation Matrix of ETA and KSI									
latent variables	SAT	LOY	SMS	PER					
SAT	1.00								
LOY	0.86	1.00							
SMS	0.84	0.76	1.00						
PER	0.78	0.80	0.88	1.00					

note: In parentheses indicate standard error. DE = direct effect IE = indirect influence TE = sum influence PROD = Production, PRIC = Price, PLAC = Place and Time, PROM = Promotion and Education, PEOP = People, PROC = Process, PHYS = Physical Evidence, REWA = Tangible, CONT = Reliability, VALU = Responsiveness, EDUC = Assurance, EMPA. = Empathy, CONV = Convenience Gained, oFFI = Officer Services, QUAL = Quality of Services, DURA = Duration of Operation, INFO = Information Received, ATTI = Attitude, REPE = Repeated Service, MOUT = Word of Mouth.

Part 2: Results of structural equation model.

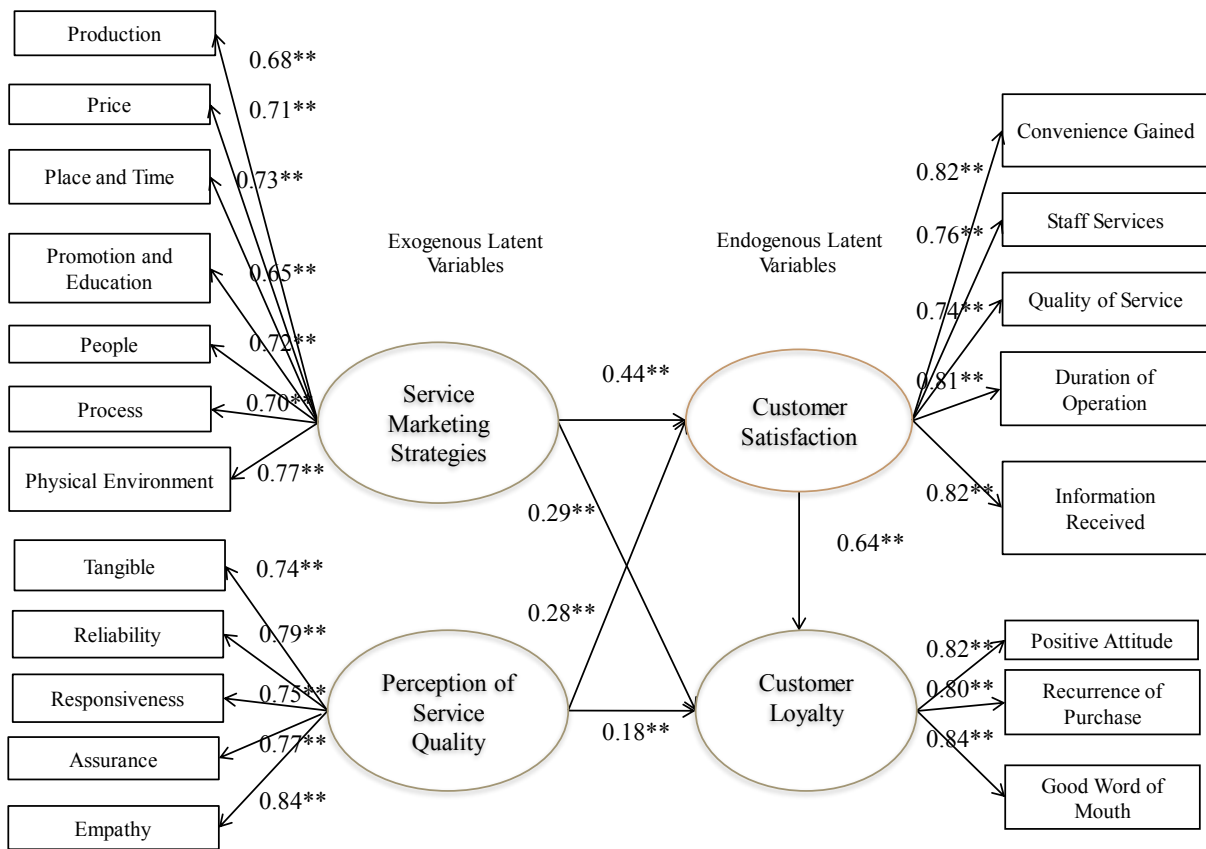
Consistency testing of structural equation models of factor variables affecting the loyalty of working group customers who buy organic products in Bangkok. Overall, based on assumptions and empirical data and considering the statistical evaluation of the harmonization of the model and the empirical data, it is found that

The model is consistent with the empirical data of working-age customers by evaluating the consistency with the value of χ^2/df 0.98 (119.82 / 122 = 0.98) which according to the criteria specified, it should be less than or equal to 2. In addition, the result of GFI and AGFI analysis is equal to 0.98 and 0.97, respectively which has a value of approaching one and also pass the specified

criteria that should be greater than 0.90 and 0.85 at the confidence level 95. Moreover, the RMSEA of 0.001 is equal to zero which passed the criteria that should be less than 0.05. The research model developed was consistent with the empirical data, that is, the service marketing strategy has a positive direct influence on customer satisfaction and has a direct and indirect positive influence on customer loyalty. The perception of service quality has a positive direct influence on customer satisfaction and has a direct and indirect positive influence on customer loyalty. As shown in Figure 2

The results of the model to promote the loyalty of the working group of customers buying organic products in Bangkok found that (1) Service Marketing Strategy Factors (Path Coefficient = 0.44) and Perception of Service Quality (Path Coefficient = 0.28) is a factor that influences customer satisfaction (2) Service Marketing Strategy Factors (Path Coefficient = 0.29), Perception of Service Quality (Path Coefficient = 0.18, and Customer Satisfaction (Path Coefficient = 0.64) is a factor that influences customer loyalty

When considering the relationship between the component of the observed variables, it is found that observable variables have a positive attitude affect the loyalty of working group customers buying organic products in Bangkok, it causes re-purchase and referrals. The variable with the highest standard weight (B) was data received from services (0.72), followed by knowledge, skills of service and convenience received (0.68) and willingness to help and provide services and immediate service (0.64) respectively. In which all variables have the proportion of variance explained by the composition (R²), marketing strategies that affect the loyalty of working-age customers of organic stores in Bangkok, 69%



$\chi^2 = 119.82$ df = 122, P-value = 0.40272, RMSEA = 0.0.01, GFI = 0.98 AGFI = 0.9.7* P < .05, ** p < .01.

Figure 2: Model of Approaches to promote working-age customer loyalty to purchase organic products in Bangkok

Part 3: Hypothesis testing

The results of the hypothesis testing of variable analysis in the model to promote the loyalty of working group customers who buy organic products in Bangkok found that the service marketing strategy and service quality perception influence the satisfaction of customers and the loyalty of customers of the organic agricultural shop in Bangkok, as shown in Table 2.

Table 2 Summary of the analysis of the influence of the causal influence of variables based on the hypothesis of the model to promote the loyalty of working group customers who buy organic products in Bangkok

Hypotheses	Accept	Refuse
H₁ : service marketing strategy factors and customer satisfaction factors have a direct and indirect influence on working-age customer loyalty to purchase organic products in Bangkok (H1)		
H _{1a} : service marketing strategy factors have a direct influence on customer satisfaction among working people who buy organic products in Bangkok.	✓	
H _{1b} : service marketing strategy factors have a direct influence on customer loyalty among working people who buy organic products in Bangkok.	✓	
H _{1c} : service marketing strategy factors have an indirect influence on customer loyalty among working people who buy organic products in Bangkok.	✓	
H₂ : service quality awareness and customer satisfaction factors have direct and indirect influence on working-age customer loyalty to purchase organic products in Bangkok (H2)		
H _{2a} : service quality awareness has a direct influence on customer satisfaction among working people who buy organic products in Bangkok.	✓	
H _{2b} : service quality awareness has a direct influence on customer loyalty among working people who buy organic products in Bangkok.	✓	
H _{2c} : service quality awareness has an indirect influence on customer loyalty by delivering customer satisfaction among working people who buy organic products in Bangkok.	✓	

SUMMARY AND DISCUSSION

The service marketing strategy has a direct and indirect influence on the loyalty of the working group customers who buy organic products in Bangkok by passing on customer satisfaction. It is found that the service marketing strategy has a positive direct influence on loyalty of working group customers buying organic products in Bangkok which consistent with a concept of Lovelock and Wirtz (2011, pp. 44-48) that says integrated marketing management using service marketing strategies is an important factor which makes us aware of consumer demand and competitive advantage in the service marketing business. As it is the factor that determines service satisfaction and service quality, it will affect the decision to use the service. Therefore, in order to meet the needs of target consumers and customer loyalty in the long run, we must use the service marketing strategy to control the direction of the organic store selling business in Bangkok. It is consistent with the research of Arokiasamy (2012, p. 1), it discovered that the market strategy in term of price, distribution and promotion has a positive influence on customer loyalty. In addition, Muala (2012, p. 1) analyzed the relationship between variables, found that service marketing strategies in term of product and distribution channels have a positive direct influence on customer loyalty, it is consistent with Suthar, Lathangi and Pradhan (2014, p. 619) which found that brand loyalty has a positive relationship with marketing strategies in terms of products, prices, distribution channels and marketing promotion.

In addition, the service marketing strategy has a positive indirect influence on the loyalty of the customers of organic agricultural stores in Bangkok through customer satisfaction which is consistent with the concept of service marketing strategies (Lovelock and Wirtz, 2011, pp. 44-48) and customer loyalty and satisfaction (Oliver, 1999, pp. 34-39) and the ideas of Russell-Bennett, Mc Coll-Kenned and Coote (2007, pp. 1254-1259) which state that loyalty in both behavior and attitude has a direct relationship with customer satisfaction. For factors that give a competitive advantage to Entrepreneurs, it is necessary to create customer satisfaction, which is an issue that allows Entrepreneurs to identify a right customers' needs. As well as, be able to analyze the limitations of consumer purchases (Nasser and Ismail, 2014, p. 1). Therefore, this study is a review of existing documents to study the evolution of marketing mix concepts that are an important basis for the study of consumer buying behaviors such as post-purchase behavior which consists of a repeat purchase or referrals (Schiffman and Kanuk, 2010, p. 359). The pattern of consumer buying behavior will be handled by marketing experts and this concept will determine the model for the relationship between consumer buying habits and marketing mixes by creating customer satisfaction (Nasser and Ismail, 2014, p. 1). Research by Rahman, Haque and Jalil (2014, pp. 304-316) found that marketing strategies that affect retail satisfaction include customer loyalty. When finding the relationship between variables in the structural equation, it is found that the product quality and price strategy have a direct positive influence on customer satisfaction and indirect positive effect on the loyalty of customers of retailers in department stores in Malaysia Therefore, customer loyalty is the result of effective marketing strategies. In order to create more value for consumers, causing customers to return to buy repeatedly or have referrals (Li and Green, 2011, p. 1)

Because of customer satisfaction, the perception of service quality has a direct and indirect influence on the loyalty of the working group customers who buy organic products in Bangkok. It is found that the perception of service quality has a positive direct influence on loyalty of working-age customers buying organic products in Bangkok. This is consistent with the concepts of Bell, Auh and Smalley (2005, pp. 169-183) which show that perception of service quality has a direct positive influence on customer loyalty and it is also consistent with Lai (2014, pp. 118-138), which found that perceiving service quality has a direct

positive influence on customer loyalty as well. Due to the needs and mental characteristics of customers, regarding service quality which there is a high expectation for a high service and support services. In addition, perceived service quality has a positive indirect influence on the loyalty of working-age customers buying organic products in Bangkok through the satisfaction of working-age customers which consistent with the research by Rahman, Haque and Jalil (2014, pp. 304-316) and the result mention that service quality has a positive indirect effect on customer loyalty through customer satisfaction. In addition, Spiller, Bolten and Kennerknecht (2006, p. 1) conducted a study of satisfaction and loyalty which were the success factors of organic retailers. The study indicated that the perception of product and service quality has a direct positive influence on customer satisfaction and leads to customer loyalty. Therefore, the quality of service provided by the store selling organic products will create an impression of excellent service for customers who use the service. When good services are created and satisfied for customers, it will create better relationships and encouraging these customers to come back to buy products or use services continuously. As well as, it will provide customers with long-term relationships And create loyalty with our products or services forever

SUGGESTION

Policy's suggestions

1. The private sector or the entrepreneurs of the organic products store in Bangkok can apply the guidelines for promoting the loyalty of the working group of customers who buy the organic products in Bangkok to serve the customers. As well as a guideline for improvement or revise the operating result to be consistent and appropriate. This can create satisfaction for working-age customers who buy organic products, make customers to have a confidence in the products and services. This will lead to the improvement of the band's image, and also inevitably affects to the loyalty of working-age customers who buy organic products.

2. Government agencies, especially the Ministry of Agriculture and Cooperatives should promote farmer groups that produce organic products to become certified organic standards by organizing training seminars, in order to transfer knowledge and principles of production in organic agriculture. As well as, to inform farmers about ways to promote loyalty among working-age customers who buy organic products in Bangkok. In addition, it must have a cooperation between agencies, including the Ministry of Public Health, Ministry of Commerce, Ministry of Tourism, and the Ministry of Technology and Communication, in order to campaign for people to turn to consume organic products by emphasizing the importance of safety to health, and it will expand the market of organic agricultural consumption in Bangkok to be more open

Operation's suggestions

1. A shop selling organic products in Bangkok can use the model to promote the loyalty of working group customers who buy organic products in Bangkok that can be applied to serve customers, in order to create satisfaction for customers and make customers have confidence in the products and services they receive. This will lead to a better band's image and also affects the loyalty of customers. Moreover, the shop should focus on the service marketing strategy because it is an important element in marketing operations, especially products that are safe for health, have organic standards, providing equipment and location services in a systematic and modern way. As well as publicizing and educating customers thoroughly, including stores selling organic products must be many ways to give advice on the process of using the product, so customers will not switch to use other products. For this reason, the Service Marketing Strategy tool is to check customer satisfaction after a customer has purchased a product or service, increasing confidence and trust in service, and also create a good impression and loyalty to the product in the end.

2. A shop selling organic products have to adapt and improve service quality, especially focusing on the enthusiasm of the employees, make sure they are ready for service that will lead to customer needs because the purchasing behavior of healthy products of working age groups tend to focus on convenience and speed. In addition, when customers buy products or use services, customers need to be confident and trust that the service quality is of a good standard and suitable for the price that the customer receives. Therefore, entrepreneurs should consider the value that customers recognize from the service, whether the importance of cleanliness and orderliness of the place, employee dress, knowledge and ability to communicate with customers. These are all things that a store owner of organic products needs to develop continuously, then customers are satisfied and confident to use the service.

REFERENCES

- Al Muala, A., & Al Qurneh, M. (2012). Assessing the relationship between marketing mix and loyalty through tourists satisfaction in Jordan curative tourism. *American academic & scholarly research journal*, 4(2), 1.
- Al Otaibi, N. M., & Yasmeen, K. (2014). An overview of customer loyalty, perceived service quality and customer satisfaction: Brief on Saudi grocery stores. *Journal of Entrepreneurship and Business Innovation*, 1(1), 79-122.
- Arokiasamy, A. R. A. (2012). The effect of marketing mix and customer perception on brand loyalty. *Journal of business and management*, 4(2), 1-11.
- Bell, S. J., Auh, S., & Smalley, K. (2005). Customer relationship dynamics: service quality and customer loyalty in the context of varying levels of customer expertise and switching costs. *Journal of the Academy of Marketing Science*, 33(2), 169-183.
- Binsar Kristian, P. (2014). Analysis of Customer Loyalty through Total Quality Service, Customer Relationship Management and Customer Satisfaction. *International journal of evaluation and research in education*, 3(3), 142-151.
- Cochran, W. G. (1953). *Sampling techniques*. John Wiley & Sons.
- Department of Agriculture Extension. (2013). *Strategic Plan 2556-2559 of the Department of Agriculture*. Division of the Department of Agriculture.
- Department of Provincial. (2018). *Population and households statistics*. Bangkok, Thailand : Department of the Interior. Retrieved from: <https://bit.ly/2uIwyaH>
- Greenet. (2016). *Overview of Agriculture in 2559*. Retrieved from: <https://bit.ly/2t3InrL> .
- Ismail, M. A., & Nasser, J. S. (2014). Relationship marketing mix and consumer behavior. *International Journal of Scientific Research*, 6(2), 1-9.
- Lai, I. K. (2015). The roles of value, satisfaction, and commitment in the effect of service quality on customer loyalty in Hong Kong-style tea restaurants. *Cornell Hospitality Quarterly*, 56(1), 118-138.
- Li, M. L., & Green, R. D. (2011). A mediating influence on customer loyalty: The role of perceived value. *Journal of Management and Marketing research*, 7, 1.
- Lovelock, C., & Wirtz, J. (2011). *Services marketing: people, technology, strategy*. (7th ed.). New Jersey: NY Pearson Prentice Hall.
- Martínez-Ruiz, M. P., Jiménez-Zarco, A. I., & Izquierdo-Yusta, A. DOCFRADIS.
- Ministry of Commerce. (2014). *Market Information of Organic Products*. Retrieved from: <http://www.organic.moc.go.th>.
- Office of Agricultural Economics (2013). OAE aggressive strategy of organic farming. Farmers have revealed the full benefit. Pressure capacity increased competition. *Public Relations News*, News no. 57/2556 dated March 22, 2556.
- Office of Agricultural Economics (2017). *National Organic Development Strategy (2560-2564 BC)*. Bangkok, Thailand : Ministry of Agriculture and Cooperatives.
- Office of the National Economic and Social Development. (2017). *The Twelfth National Economic and Social Development Plan (2017-2021)*. Reterived From: <https://bit.ly/2O4pDiS>
- Office of the Permanent Secretary Ministry of Commerce (2011). *Thailand Organic Mapping*. *Organic Line Ministry of Commerce*. Bangkok, Thailand : Ministry of Agriculture and Cooperatives.
- Olarnkitanan, N. (2013). *Guide to the Human Central in 2020*. Bangkok, Thailand: Narin imposing countless companies.
- Oliver, R. L. (1999). Whence consumer loyalty?. *Journal of marketing*, 63(4_suppl1), 33-44.
- Oliver, RL (1997). *Satisfaction: a behavioral perspective on the consumer*. New York: Irvin / McGraw-Hill.
- Organic Agriculture Innovation Network. (2014). *Opportunities and barriers to expanding a production and marketing of organic products*. Retrieved from: <https://bit.ly/3111PSD>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of marketing*, 49(4), 41-50.
- Rahman, M. K., Haque, A., & Jalil, M. A. (2014). Factors affecting customer loyalty through satisfaction towards retail marketing strategy: an exploratory investigation on Malaysian hypermarkets. *Australian Journal of Basic and Applied Sciences*, 8(7), 304-322.
- Russell-Bennett, R., McColl-Kennedy, J. R., & Coote, L. V. (2007). Involvement, satisfaction, and brand loyalty in a small business services setting. *Journal of Business Research*, 60(12), 1253-1260.
- Suthar, B. K., Lathangi, R., & Pradhan, S. (2014). Impacts of marketing mix and customer perception on brand loyalty. *Global journal of finance and management*, 6(7), 619-636.
- Wararatchai, P. (2017). *Marketing Strategy Development for Civil State Shops in Nakhon Pathom Province, Thailand*. College of Logistics and Supply Chain. Bangkok: Suan Sunandha Rajabhat University.

The Ecological Tourism Behavior in Nakhon Pathom.

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Abstract This study aims to (1) study the behavior of ecotourism destinations in Nakhon Pathom (2) to study the factors that influence the behavior of ecotourism destinations in Nakhon Pathom (3) to guide for ecotourism development in Nakhon Pathom. The population of tourists traveling to Thailand in Nakhon Pathom. The quantitative research was primarily due to random chance. The instrument was a questionnaire and in-depth interviews, semi-structured. The statistics used in the analysis were frequent, percentage, mean, standard deviation. Found that doing this research meets the objectives set. The results of the research can be used to guide the development of tourism to increase efficiency. Which brings benefits to the relevant authorities and other parties. The successor to the Conclusions of the objectives below. The behavior of tourists, mostly males than females aged 21-30 years, single, bachelor's degree. Career civil servants / state enterprise employees earning 10,001-20,000 Baht per month, most tourists never came, or for the first time purposes Tourism is a shopping / purchasing. Members who join the Friends used a private vehicle travel. The visit is a weekend. Those who took part in his decision to travel is their time to travel is a one hour tour costs approximately 500-1000 Baht resources to come to the media. A number of members traveling with 2 people. The study showed that the behavior of the tourists was mostly visited by 2 – 3 times in October-December, using a private car to travel. It takes 1 – 2 days to travel and comes to most families. Most visitors understand the nature of ecotourism but are not exhaustive by understanding that eco-tourism is a tourist, and the stakeholders are responsible for the exploitation of the areas of tourism together. A study of the satisfaction of tourists visiting tourism has found that the management factors have a direct impact on the overall service factor. Sequential impact is an experience and the performance factor, a factor of stakeholders and resource factors and the potential of the enterprise. The service has a direct impact on the The overall level of satisfaction of tourists has found that local food and crafts have the most impact on the overall eco-tourism satisfaction. The secondary sequence comes down as a residential side.

Keywords: Behavior, Ecotourism, Tourist

INTRODUCTION

Nowadays, tourism is considered to be an important role in the economic development of the country. The tour produces a foreign currency income. Help to balance payments and create economic strength In addition, local tourism promotion also contributes to the distribution of tourists to various areas, leading to employment and building professionals in both direct tourism sectors and more relevant sectors. Revenue distribution to the local community, in which the overview leads to the growth and economic stability of the country [1] The information of the tourism department found that in the year 2558 Thailand has a number of foreign tourists reaching 29.88 million people. 1.44 million Baht for tourism revenue increase from 2557 years to 2.7 million Baht. Domestic Travel Section Found that Thai people travel to 138.8 million countries. Revenue 7.9 million Baht, resulting in the Thailand has a tourism income of 2.23 million Baht. Higher than the target. [2]

However, natural resources and environmental degradation have an impact on the tourism industry. This is because the loss of balance on one subject affects other matters. It is inevitable that the days of the day will multiply gradually, thereby causing a stream of emphasis on tourism to conserve the environment, in accordance with the changes and the possibility of the world. In determining the environmental and cultural issues associated with tourism development, it is known as the name of Ecotourism.

An eco-tourism is one of the most common forms of travel related to natural sources and cultural sources responsibly. It does not cause interference or damage to natural and environmental resources, but is intended to be an aim to admire, learn, and enjoy the views, plants and wildlife, as well as cultural characteristics that appear in that natural source. It also helps to create economic opportunities that result in the conservation of natural resources and the environment[3]. It can be said that eco-tourism is a new tour to coordinate the benefits and needs of conservation of natural and cultural environment with tourism development to meet the economic needs. It is an important tool to develop sustainable tourism [4] This framework in the development of eco-tourism in sustainable direction is an important tool for the development of the tourism industry to balance both the economic, social, cultural and environmental.

Thailand is a nation with high overall tourism potential. It has a famous tourist resource. It is beautiful and diverse, especially natural tourism resources and cultural tourism resources, which are uniquely unique to the tourist attractions of the National Park, with plenty of natural resources and unique aesthetics in each area. The attraction is also scattered in all regions of Thailand. It is a tourist attraction that can meet the eco-tourism patterns as well. These are the key factors that attract tourists to continuing travel

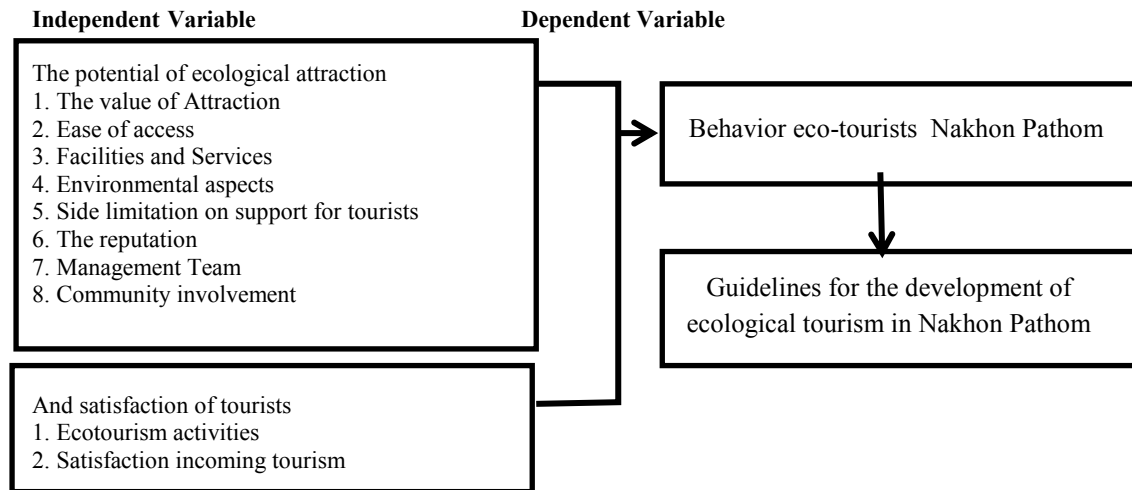
The study ecological tourism behavior in Nakhon Pathom to meet the needs of the changing tourists, it is necessary to study, analyze the potential and travel patterns in Nakhon Pathom attractions to develop an eco-tourism destination in Nakhon Pathom. Manage the attractions effectively and provide the experience of tourism according to the needs of each group of tourists, coupled with the defining method or form of development and management of tourist areas in the province to be responsive. The needs of eco-tourism are efficient and repeat travel, as well as to create value-added tourism and promote the cooperation between the community, focus on development and conservation of learning resources. Exchange between tourists or visitors with local communities and related agencies in Nakhon Pathom to benefit and create a collaborative learning pattern with all the relevant parties for sustainable tourism.

OBJECTIVE

- 1) To study the behavior of eco-tourism destinations in Nakhon Pathom
- 2) To study the factors that influence the behavior of eco-tourism destinations in Nakhon Pathom
- 3) To guide the development of ecotourism in Nakhon Pathom

CONCEPTUAL FRAMEWORK

The study documents and related research, the researchers have determined the conceptual framework for the study of behavioral research on eco-tourism destinations. Nakhon Pathom The framing concept research into the second one, namely the level of involvement of the local community and the tourists' attitude towards ecotourism. Nakhon Pathom Each concept has both a quantitative and qualitative dimension of research that covers all aspects of the study are summarized below.



The hypothesis of the research

1. The potential of eco-tourism in the attitude of the golden tourists should develop the most environmental dimension
2. Activities and travelers ' satisfaction This affects tourism behavior of the golden tourists.
3. Gender, age, occupation, education, academic level, the defining behavior and attitude of the ecotourism of the tourist.

THE LITERATURE REVIEW

Rungratree Ungjarean and Chawalee Na Thalang (2017) [5] study 'The Potential Factors of Eco-tourism in Samutsakhon' aims to explore and survey eco-tourism in Samutsakhon and to study the potential factors of ecotourism in Samutsakhon. This study found that 1) The most tourists who travel in Eco-tourism attractions are female 58.50 percentages and male 41.50 percentages. The total average of potential factors was high level, which they were the environment, the value of tourism, the physical background of the area, the convenient access, the tourism facilities, and the good reputation. 2) The tourists had opinions on the ecotourism activities and the satisfaction of ecotourism in high level 3) The Potential factors of ecotourism in Samutsakhon for government, staff, stakeholders, and private community are female 56.70 percentages and male 43.30 percentages. The total average of potential factors was middle level, which they were the environment, the value of tourism, the management, the convenience access, the tourism facilities, the good reputation, the community participation, and the limitations of tourism sector. The results of Hypothesis Testing found that 1) The different of age, occupation, and regular income of tourists effected with the potential factors in 0.05 significance level 2) The potential factors which are the convenience access, the environment, and the physical background of the area effected with the eco-tourism activities 3) The potential factors which are the value of tourism, the convenience access, the environment, the good reputation, and the physical background of the area effected with the satisfaction eco-tourism.

Priyaporn Ratanapong (2013) [6] Study the guidelines for the development of tourism, community and places surrounding the Khlong lad Mayom floating market. The sample used in this study was divided into samples that answered the questionnaire: Thai tourists visiting the community around Khlong lad Mayom floating market. 400 people take the data to analyze the average percentage of the standard deviation. Test statistics, one-way analysis and analysis for the Pearson correlation coefficient Interview samples The total of 6 people brought the data that was analyzed and concluded by the results of the research, which was supposed to develop a tourist attraction to accommodate more visitors, such as adding a parking lot and the bathroom should be promoting more marketing, such as PR advertising. Provide information for visitors to the service. Manage the environment for beautiful community tourism Provide activities that allow tourists to participate in the daily activities of people in the community. It is better to cultivate awareness of people in the community to conserve community and canal environments. People involved in community tourism should be planning a policy to develop serious tourism in short and long term. To develop tourism as a way of life to the people of the community. *Kittisak Klinmuenwai (2011)* [7] Research on tourism development guidelines by the community of Lampang Province To focus on the opinion of tourists and people to the development of Community tourism, as well as the tourism management policy of government agencies and community leaders ' comments in Lampang to be used as a guide to the development of Lampang Community tourism. The results of the research showed that most of the respondents had the need for tourism elements of the community. This is the ability to access the facilities. Travel programs Tourism activities and supplementary services at a very level, and the majority of respondents are critical to the tourism development approach by the Lampang community at a very level and have the need to participate in planning. Tourism

management, community and tourism conditions in the community area are very common. In addition, most interviews have seen that the development of Community tourism management should be planned. *Chatchai In-Thasung, Dussadee Theamtes and Boonma Soongsong.(2011)* [8] To study the research, information and tourism behaviors of tourists. Tourism of Thailand The Nakhon Ratchasima Office aims 1) to study the level of data recognition 2) to study travel habits and 3) to study the relationship between personal factors and the level of awareness, information and tourism behaviors of tourists. By using samples that are tourists arriving in Nakhon Ratchasima and Chaiyaphum Province, 400 people have a summary of research results. As follows: 1) the level of awareness of the tourist information was found to recognize the message from the first-person media. 2) Tourism behaviour found to travel in winter with a period of 1-3 days by car, the hotel is charged 1,000-2000 baht. To buy food and drink as a souvenir and a friend affects the decision. 3) The results of the comparison of the information recognition level on each side are classified according to different personal factors. found that personal, professional, and family income for different travelers have different levels of awareness. Different sexual and educational paths.

The degree of recognition is not statistically significant, at level 0.05 4). The study of the relationship between personal factors and tourism behaviour found that personal sexual factors have no relation to travel habits. Age section Education Career and income are related to statistical significant tourism behaviour at level 0.05. *Kevin Wongleedee, Sakul Jariyachamsit and O-pol Pongpanich Suraraksa. (2011)* [9] Research on customer satisfaction and market factors. Provides American tourists Decided to return Come to Thailand again The study finds American tourists, mainly in working age. The age range of 26-60 years and there are very few tourists, elderly Americans, only 6 percent of spending on tourism in Canada less than five. 000 USD per one time of the tour. And popular tour takes in about 1-3 weeks, most often travel in small groups. Most American tourists who come to Thailand and 96 percent want to come back to Thailand again and 97 percent would like to tell your friends and relatives to visit Thailand. Overall satisfaction with the marketing of the four product areas: the price of goods. The tourist and travel information. All levels of customer satisfaction. Thailand's image in the eyes of American tourists is the third largest food, culture and beach, and what has influenced the decision to Thailand's most advice from friends and relatives suggested one.

Point of sale marketing in public relations for the American tourists should focus on the food, culture and beach, where tourists most Americans are satisfied because it was high. A group of American tourists get information from (Word of Mouth) and how it has influenced the decision to promote tourism marketing should be used to tell stories using American tourists to visit Thailand fellow Americans. 2. There should be training for tour operators to learn English to communicate with foreign visitors in-depth information, such as English on the product. The mix of products and price should also have a map of attractions and a calendar of tourism in the English language is clear and easy to understand, should provide Call Center that provides information and assistance to foreign languages. England 3. Food Thailand American tourists were satisfied with the taste and variety. But there should be cleanliness standards for food distribution. Including cooking and service personnel should wear gloves and hats like to cook. The enclosed space for washing and hygiene. Training services are standard. The reward for the store or operator standards and the promotion of English tourists to know. In order to make use of the service. *Busara Kerdkaew.(2007)* [10] Study about the behaviour and satisfaction of visitors to the sights in Suphan Buri. The results of the research have shown that visitors know the sights from the radio/television news. The cause of tourism comes from recreational needs. The average travel frequency is 8 times or more per year, usually on Saturdays and Sundays. Travel with a private car Miscellaneous spend There is a cost of between 1001-5000 baht travelling with friends. Attention to the landscape and attraction of each attraction The tourism promotion of Suphan Buri Province, which is held to attract the attention of a group of visitors, is the establishment of Don Chedi Memorial, with the knowledge of radio and television events in the overall traveler's overview of the tourist attraction. The facilities and services are very high and compared to the level of satisfaction of the visitors in Suphan Buri province by personal factors. We find that visitors with different educational levels have varying levels of satisfaction with different facilities and careers, the level of satisfaction of sightseeing. Facilities and services are statistically significant difference at 0.05 when comparing the level of satisfaction of the tourists in Suphan Buri. Classified by behavior Find out that visitors who have different travel habits have a level of satisfaction. Facilities, facilities and services vary, and the number of different travel expenses, the level of satisfaction on the facilities and service side vary statistically significantly. 0.05

METHODOLOGY

Population and sample groups

The population in the study of the behavior of ecotourism destinations. Nakhon Pathom Focus on the collection of qualitative data. The quantitative data were collected from questionnaires tourists from Thailand as tourists travel in Nakhon Pathom. The sample groups in this research are Thai tourists who are tourists travelling in Nakhon Pathom. Selecting a sample because of the exact population is determined, thus calculating the size of the sample using the formula of Taro [11] set the confidence level of 95%, and the tolerance is not more than 5%. Calculation formula The population used in this research is Thai tourists who travel to Nakhon Pathom, a total of 2,667,345 people, and then randomly sampled by sampling method of randomly sampling (Accidental Sampling). By collecting the survey information from Thai tourists who travel to Nakhon Pathom, 400 people when the researchers have created a questionnaire and then distributed the questionnaire to the sample and collected the data successfully. The data is processed by the computer using the SPSS for Windows-ready program to analyze data for statistics used to analyze data, including the frequency and percentage values, to analyze the demographic characteristics and the behavior of the services of Thai tourists, which are tourists and tourists travelling in Nakhon Pathom. Use the average and standard deviation to describe the satisfaction of the service and, as well as analyzing problems and barriers to using the service of the user, using the standard deviation is applied in tandem with the average to show the distribution characteristics of the data. Use t-test statistics to analyze the one-way analysis of Variances) and the 95% confidence level.

The instrument used to research

The instrument used to collect information this time is a questionnaire related to satisfaction. Behavior, consumption, and trends in the service Creating a research instrument This data collection is a query that includes the following sequence of creation

tools. 1. Study the documents of various research papers related to satisfaction, behavior, consumption and trend of service behavior to guide the creation of the survey. 2. Remove the information gathered from the survey to guide the creation of the questionnaire, divided into 3 phases: Part 1, Part 1 A personal query of respondents: gender, age, occupation, marital status, monthly income, and education level, which is a closed-end type query (Close-end response questions). Part 2 Inquiries about the behavior of ecotourism in the Nakhon Pathom province, with a query as a way of scoring the total (Rating scale method: Likert scale questions) use a data-tier interval type measurement level (Interval scale) divided into 5, part 3, information about comments on ecotourism activities and the satisfaction of ecotourism in Episode 4 Suggestions and additional reviews of eco-tourism tourists. Nakhon Pathom the query is an open-ended question (Open-ended Question). Use the measurement level.

The statistics used for data analysis

The statistics used for data analysis, descriptive statistics: -Percentage for analyzing data from query Part 1 Demographic characteristics-Find the average (Mean) for analyzing data from a query. Part 2 information about behavioral tourists visiting Nakhon Pathom. Part 3 Information about the opinions on ecotourism activities and the satisfaction of ecotourism. Find the standard deviation (S.D.) for analyzing data from a query. Part 2 Information about behavior tourists visiting Nakhon Pathom. Part 3 Information about the opinions on eco-tourism activities and the satisfaction of eco-tourism.

CONCLUSION AND FUTURE WORK

The personal information.

The research Study ecotourism destinations. Nakhon Pathom For the purposes of doing research was conducted to collect data. Using questionnaires, 400 population by targeting tourists who visit Thailand in Nakhon Pathom. The results show the three main parts: a tourist. The target group of tourists in Nakhon Pathom. Most are male between the ages of 21-30 years of undergraduate education. A group of students, mostly income of less than 10,000 Baht per month, mostly domiciled in Bangkok or surrounding provinces.

The level data analysis

The tourist behavior of the tourist has been most visited for about 2 – 4 times, traveling during July – September, using a private car to travel. It takes about 1-2 days to travel and comes with the most families. The number of visitors to each group is around 1-10 people. Average Cost (per 1 person) for travel Meals are served at 201 – 400 Baht for accommodation less than or equal to 200 Baht, the vehicle is at 201 – 400 Baht and other charges such as souvenir fee, entrance fee. There is a charge of 201 – 300 Baht for the reason for the decision to travel in ecological tourism, most of the reason is that the tourist attraction is characterized by its identity. The famous and convenient speed of travel, respectively, and in the future, most tourists will definitely come back to ecological tourism. Exploring knowledge and understanding of the meaning of ecological tourism of tourists visiting. Find out that most of the tourists who have knowledge and understanding of the meaning of ecological tourism will choose the question: Eco tourism is a tourism tourist and the stakeholders are responsible for their use. The benefits in the area of tourism in relation to the ecosystem and choosing whether eco-tourism is a tourist model that aims to maintain a sustainable ecosystem. Another question that most tourists do not choose, such as maintaining cleanliness in the tourist area is the duty of the staff only, and the eco-tourism should focus on meeting the needs of the tourists in particular.

he study finds that satisfaction levels of visitors to the variables experience and performance with the average level in the whole x without issues officials are reluctant to provide services to tourists the average first x followed by the issues the authorities are capable of providing accurate information to travelers. Issues with officials Responsibility for security for travelers throughout the course of the coming tourism issues authorities are capable of attracting tourists to cooperate in activities that are environmentally friendly, and issues a limited number of visitors and the number of vehicles on the go. Traveling to reduce environmental pollution, with the value of x is equal to 3.62, 3.61, 3.42 and 3.21, respectively.

The study finds that satisfaction levels of visitors to the variables. Resources and potential of the organization with the average level in the whole (x without issues the ability to maintain a constant ambient condition the average first x 3.71), followed by the issues of preparation. The location and the facilities available. To provide services to tourists Issues and prepare the site. Personnel assigned to the convenience of the tourists issues and implementation of information technology systems used for the provision of information and looking in advance is x and respectively

The study finds that satisfaction levels of visitors to the variables enterprise features with the average level in the whole x by the issue can be seen photo organization of tourism from front-office charts ecotourism the average first x 3.43), followed by the issues of cooperation in the conservation of natural resources from private businesses and surrounding communities and providing services and information to tourists is valid convenience and value with x and respectively.

The study finds that satisfaction levels of visitors to the variables the data have been used to benefit the average is moderate overall x by the issue of a system for informing a warning to travelers with an average first x was a minor issue with the map displayed how available to travelers efficiently issues with providing information to travelers to communicate effectively and issues a system to receive comments and suggestions from the visitors with x and 3.26, respectively.

The study finds that satisfaction levels of visitors to the variables involvement of stakeholders the average is moderate overall x by issues there the rules and how to behave during the tourist to travel in eco-tourism the average first x 3.74), followed by the issues of accommodation and travel coordinator. Information directly for eco-tourism. Issues to provide opportunities for the local community. To learn natural Resources And the environment all the time The issues involved in generating income for the local people. And business issues surrounding the private residence of a network of ecotourism, with the value of x are equal to 3.37, 3.31, 3.23 and 3.20, respectively.

he study finds that satisfaction levels of visitors to the variables values and corporate culture the average is moderate overall x without issues capable of preserving nature the average first x was a minor issue with the preparation

of certification activities by focusing on tourists not to break. And disturbing nature and wildlife Issues open to people who live in tourist areas to serve food and drinks to tourists. And issues of youth training in the area to act as tour guides, tourist services, the value x and respectively

he study found that the level of satisfaction of tourists traveling to the varia les ith the average level in the whole x respectively in the state route ourist arrivals he average first x), followed by the issue of tourist attractions can be reached easily. The issue has to do the signs say. To facilitate the tourists. The system issues a variety of hiking trails. To appreciate nature And the point is to educate about the guidelines to travelers prior to departure. Travel and tourist areas, with a value of x are equal to 3.84, 3.84, 3.80 and 3.52, respectively.

The study finds that satisfaction levels of visitors to the variables. Venues & Events With the average level in the whole (x y the issue of space for parking for tourists properly he average first x followed y the issues featured identity. And is interested in attracting tourists to travel to the issue of waste management issues. And maintaining cleanliness in the area. Ecotourism properly Issues with security measures provided. Travelers efficiently Issues with the management of the infrastructure. Based eco-tourism area that is appropriate and sufficiently for the tourists. A special issue of the environment of the tourist destination. And issues authorities are involved in activities for tourists to act as tour guides effectively with the x 3.69, 3.68, 3.65, 3.44 and 3.36, respectively.

he study finds that satisfaction levels of visitors to the varia les shelter with the average level in the whole x by the issue of managing the facilities to provide adequate. Want The average first x followed y the issue of waste management problems and to maintain cleanliness in the area appropriately issues, costs and fees. The price of accommodation for eco-tourism. Are appropriate for the services received. The management of the infrastructure of the property and appropriate enough for tourists. The officials have the ability to. Providing accommodation to tourists more effectively. Issues with staff education. On guidelines for travelers before occupancy. And issues a network of accommodation for business travelers to the private sector for x and respectively

he study finds that satisfaction levels of visitors to the varia les food and local crafts h e average is moderate overall x without issues he area dedicated to food service efreshments and souvenirs for tourists he average first x 3.52), followed by the issues of food and beverages in eco-tourism. Clean and hygienic. Issues with serving food and drinks sufficiently. The price of food and drink in the area of eco-tourism are reasona le for the quality ssues and opportunities in the community into a unique souvenir of the community is x and respectively

The study finds that satisfaction levels of visitors to the variables. Values and corporate culture h e average is moderate overall x without issues apa le of preserving nature he average first x was a minor issue with the preparation of certification activities by focusing on tourists not to break. And disturbing nature and wildlife ssues open to people who live in tourist areas to serve food and drinks to tourists nd issues of youth training in the area to act as tour guides tourist services the v a l u e x a n d r e s p e c t i v e l y The study found that the level of satisfaction of tourists traveling to the varia les ith the average level in the whole x respectively in the state route ourist arrivals he average first x followed y the issue of tourist attractions can be reached easily. The issue has to do the signs say. To facilitate the tourists. The system issues a variety of hiking trails. To appreciate nature And the point is to educate about the guidelines to travelers prior to departure. Travel and tourist areas, with a value of x are equal to 3.84, 3.84, 3.80 and 3.52, respectively.

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RESULTS

The study ecotourism destinations. Nakhon Pathom Has set the objective to study tourism. The understanding about the ecotourism in the research sample of the target population is a group of tourists who travel to Thailand. Nakhon Pathom 400 samples using sampling relies on probability (Probability Sampling) method of sampling Simple (Simple Random Sampling),

which will provide each tourist has a chance of being selected as an example as well as by questionnaire. are Tools for data collection The data collected from the questionnaires were analyzed using descriptive analysis. The frequency The percentage The mean and standard deviation. The results are summarized below.

To study the behavior and knowledge about tourism. Tourists visiting the house of Nakhon Pathom. Analysis of the data found General information about tourists in Nakhon Pathom. In the same way, However, there are many different and interesting to study whether there is any reason to make a difference, such as the age, occupation, income tourists as they travel habits. Different in some such. Been many times Time travel. The number of passengers The cost, including meals, accommodation, transportation costs of the memorial. Entrance fee, which these differences can be studied if the reason clearly. It may be useful for developing Traveling to suit different groups of tourists more.

Recommendations

Study of ecological tourism behaviour in Nakhon Pathom The key findings can be summarized as follows:

1. The results showed that the average age of tourists visiting is the group of tourists between the ages of 21 – 30 years, with a bachelor's degree and less than or equal to 10,000 Baht, which correspond to research that has researched the research on eco-tourism in Thailand. The majority of tourists will be between 18 and 30 years of age in Thailand. The advantages of eco-tourism with a very high price. The target audience is capable of paying for travel, so it is important to pay attention to the target audience based on their age range and income and to meet the demands of this group of targets. The relevant authorities should be focused on activities that are appropriate to the target audience. Such as adventure travel and educational excursions to encourage domestic eco-tourism to grow, it is a great opportunity to cultivate the youth to have knowledge and responsibility to maintain the environment in accordance with management. Natural resources and environment to maintain ecological equilibrium based on community involvement in care To maintain and utilize the importance of preservation, rehabilitation and security of natural resources and environment. Develop natural resources and environment Management system for efficiency
2. Research has found that most of the tourists ' behaviors have come to travel from 2 to 3 times during October-December, using private cars to travel. Take the time to visit 1-2 days and come to the family, so the eco-tourism service should give you the importance of managing the facilities and providing the opportunity for villagers living in a tourist area, providing food and drink services to tourists. Increasing the choice and quality of local food and crafts and maintaining the ability to preserve the nature of the area, which will lead to the competitive advantage and decision to return to the tourist attractions to create more revenue for the tourist attraction.

Recommendations for further research.

1. The study was conducted over a group of tourists. Due to the final consumer, it is very important to the tourism industry. This limits the time to do research. It is impossible to collect data from stakeholders, including ecotourism operators in the area. So the next time. Data should be collected and analyzed by stakeholders such. To provide an overview of management research was complete.
2. The study was done only among tourists Ecotourism in Nakhon Pathom. Although the findings are based on findings obtained. Summing it all in the same direction. Can answer any questions that the research hypothesis is clearly visible. If you dive into the details of the findings more. It was found that although eco-tourism. The same also has the distinction of individual elements in the perspective of the tourists. In this study, the following information should be collected and used. Analysis of ecotourism in the area. To compare Relationships and impacts that occur each area of research is consistent or different. In order to bring the tourism development of eco-tourism.

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REFERENCES

- Busara Kerdkaw.(2007). The behaviour and satisfaction of visitors to the tourist attraction in Suphan Buri province. Thesis degree of business Administration, Phra Nakhon Si Ayutthaya Rajabhat University.
- Chatchai In-Thasung, Dussadee Theamtes and Boonma Soongsong The perception of information. News and travel habits of tourists. Tourism Authority of Thailand Nakhon Ratchasima office. The Faculty of Business Administration in Marketing. Rajamangala University of Technology Isan Nakhon Ratchasima.
- Kevin Wongleedee, Sakul Jariyachamsit and O-pol Pongpanich Suraraksa. (2011). Satisfaction with the market factors that make American tourists decide to come back to Thailand again. Rajabhat University Suan Sunandha. Bangkok.
- Klinmuenwai.K,(2011). Guidelines for developing tourism by the community. Lampang. Thesis science Master of Arts, Chulalongkorn University. Bangkok, Thailand
- Ratanapong P,(2013). Guidelines for tourism development community around Mayom Floating Market Khlong Lat Phrao, Bangkok. Dissertation, Master of Science, Chulalongkorn University. Bangkok, Thailand.
- Santichai Eua-Chongprasit. (2007). Tourism and Economic Development, Thailand. Academic Journal Electronic. The Tourism Authority of Thailand. Search on August 20, 2019, Retrieved from: <http://www.etatjournal.com>.
- Thansettakij Online. (2016). Travel Thailand 58 years pitchfork record revenue exceeded 2.23 trillion. Retrieved on September 10, 2019 , Retrieved from: <http://www.thansettakij.com>.
- The Tourism Authority of Thailand. (2005). National Action Plan for ecotourism. Bangkok, Thailand: Alsace.
- Ungjarean, R., & Thalang, C. N. การ ศึกษา ศักยภาพ การท่องเที่ยวเชิงนิเวศของจังหวัดสมุทรสาคร Potential Factors of Eco-Tourism in Samutsakhon.
- Wongvornish.W, (1996). Geography of Tourism. Bangkok, Thailand: Srinakharinwirot University.
- Yamane, Taro. (1967). Statistics, An Introductory Analysis, 2nd Ed., New York: NY Harper and Row.

Administration and Protection of Customers' Secrets in Parcels Shipping within Thailand.

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Abstract This article aims to 1) provide knowledge about the postal delivery system of the Thai Postal Company, 2) maintain the parcel for customers without damage, and 3) deliver the parcel within the time specified. The content of this article has analyzed the administration and protection of customers' secrets in parcels shipping within Thailand. For the benefit of effective organization administration, including efficient service concepts to increase the number of customers, strategic operations of the organization, human resource management, team building and development of service culture to the excellence of the Thai Postal Company..

Keywords: Administration, Protection, Customers' Secrets, Parcels Shipping

INTRODUCTION

Currently, Thailand Post has many service areas for customers who need to deliver parcels, delivering parcels to customers for a long time, with the Thai Post Company being the first to provide convenience to customers. The beginning of communication in the olden days caused by the creation of communication and trade routes by communicating easily both via merchants using fast horses until the establishment of fast people in important cities It is considered another way to easily send news and it has continued until the early Rattanakosin period (Thai Postal Company Limited (Thailand) 2017). To be flexible in the management system In order to provide efficient service Until a significant change in the history of the Telegraph Department When the Communications Act of Thailand was enacted in 1976 to separate the operation level And established as a state enterprise It has been the beginning of being a state enterprise since then. Nowadays, parcel delivery has developed rapidly and has increased competitors. Therefore, the development of the Thai Post Company Limited has been effective in maintaining customer packages, keeping confidentiality. The customer delivers the parcel to the customer without damage. Therefore, the Thai Post Company Limited should have the principles of improving the efficiency of protecting the confidentiality of customers, keeping the packages to the customers without damage, delivering the packages on time as specified in order to solve the problems of increasing the quality and efficiency. In the production process, strategic organization management, build people, create a team, create a strong culture to achieve excellence. Since these concepts have been applied to the package transportation (Thailand Post ,2019)

RESEARCH OBJECTIVE

1. In order to maintain the customer's parcel condition completely without any marks. Damage And unpacking the items in the parcel
2. To deliver the package to the customer according to the specified period
3. For customers to be satisfied with the transportation.

LITERATURE REVIEW

Currently, Thailand Post has many service areas for customers who need to deliver parcels, delivering parcels to customers for a long time, with the Thai Post Company being the first to provide convenience to customers. The beginning of communication in the olden days Caused by the construction of communication and trade routes by contacting easy news both through the use of speed horses and the establishment of fast people in important cities It is considered another way to easily send news and it has continued until the early Rattanakosin period (Thai Postal Company Limited (Thailand) 2017). To be flexible In the management system To provide a service that Efficiency until changing the important history of the Telegraph Department When there was a promulgation of the Communications Act of Thailand BE 2019.

Work out in the work level and established as a state enterprise It has been the beginning of being a state enterprise since then. Nowadays, parcel delivery has developed rapidly and has increased competitors. Therefore, the development of the Thai Post Company Limited has been effective in maintaining customer packages, keeping confidentiality. The customer delivers the parcel to the customer without damage

Therefore, the Thai Post Company Limited should have the principles of improving the efficiency of protecting the confidentiality of customers, keeping the packages to the customers without damage, delivering the packages on time as specified in order to solve the problems of increasing the quality and efficiency. In the production process, strategic organization management, build people, create a team, create a strong culture to achieve excellence. Since these concepts have been applied to the package transportation

The postal delivery system of the Thai Post Company delivers goods to the recipient, known as postal delivery. Regarded as an important work in the service of the company Thai Post Company Limited Since it is the thing that has been deposited through the postal service To deliver to the recipient Or those who receive proxy from the recipient Or the representative of the recipient With various methods as Thai Post Company Limited (Ratna Puttaraksa: 2017). The delivery of parcels of the Thai Post Company Limited will have a time frame for delivering parcels according to the delivery service chosen by the depositor. In which

the package must be in perfect condition Will not be damaged or have any characteristics that are similar to being opened for viewing or viewing before being delivered to the recipient. At present, the Thai Post Company has many forms of parcel storage services. To meet the needs of current users

The Thai Post is divided into 3 types of public information according to the scope that the researchers want to study, taking into account the purpose of delivery, mail, postcards and publications. Whether in the form of letters, postcards or publications If sending for the purpose of business benefits, namely use a public relations media for marketing or Is sent for use as a marketing activity It is considered to be public information in the direct mail service and can be divided into 2 types which have different benefits according to the purpose of use, which is a addressed form and a non-addressed form. Most users who use postal delivery services tend to Is a government organization, business organization, including companies and stores As mentioned above that In the event that users are interested in using the service but do not have any database at all, the post office will have staff to advise and advise at every step to provide more convenience for users. The details are as follows: Users must know roughly or have information boadly come first, who wants to send to which group of people, which zone, and then contact the staff to tell their needs In order to know that the post office has a database of customers This group or not If the user needs a database of new customers or who has never come to the post office, the postal service also provides a database survey. By calculating the service fee Depends on Difficult to explore and find information (Sahaphat Sahaphat. Chon Buri. 2019)

There are 3 types of postal delivery, classified as follows

1. EMS delivery is an express delivery by EMS. After delivery by post, the tracking number will be given Check the status (Online) at <http://track.thailandpost.com>. Products will reach customers within 2 business days. The shop will deliver free. In case of ordering products with normal price over 1500 baht

2. Registered delivery The Thai postal service stipulates that Is the delivery used with mail Or items weighing less than 2 kilograms only After delivery by post, a tracking number will be provided which can be used to check online at <http://track.thailandpost.co.th>. Products will arrive in your hands for 3-4 days. MakeTable 1: Shipping rates of EMS packages

3. Normal package delivery Is a weightless delivery After delivery by post, the tracking number will be given, but cannot be verified online or on the website can only be checked at the post office. The product will reach you within 5 working days. For products that participate in promotions in the hot promotion category, the shop will ship as Parcel only (Thai Post Company Limited (Thailand) 2017)

Table 1: Shipping rates of EMS packages

THAILAND POST EMS				
Package weight				Service fee (Baht)
Not more than	20 gm.			32
Not more than	20 gm.	But not over	100 gm.	37
Not more than	100 gm.	But not over	250 gm.	42
Not more than	250 gm.	But not over	500 gm.	52
Not more than	500 gm.	But not over	1000 gm.	67
Not more than	1000 gm.	But not over	1500 gm.	82
Not more than	1500 gm.	But not over	2000 gm.	97
Not more than	2000 gm.	But not over	2500 gm.	122
Not more than	2500 gm.	But not over	3000 gm.	137
Not more than	3000 gm.	But not over	3500 gm.	157
Not more than	3500 gm.	But not over	4000 gm.	177
Not more than	4000 gm.	But not over	4500 gm.	197
Not more than	4500 gm.	But not over	5000 gm.	217
Not more than	5000 gm.	But not over	5500 gm.	242
Not more than	5500 gm.	But not over	6000 gm.	267

Not more than	6000 gm.	But not over	6500 gm.	292
Not more than	6500 gm.	But not over	7000 gm.	317
Not more than	7000 gm.	But not over	7500 gm.	342
Not more than	7500 gm.	But not over	8000 gm.	367
Not more than	8000 gm.	But not over	8500 gm.	397
Not more than	8500 gm.	But not over	9000 gm.	427
Not more than	9000 gm.	But not over	9500 gm.	457
Not more than	9500 gm.	But not over	10000gm.	487

Table 2: Shipping rates of registered parcels

Normal parcel delivery rate				
Package weight				Service fee (Baht)
Not more than	1 gm.			20
Not more than	1 gm.	But not over	2 gm.	35
Not more than	2 gm.	But not over	3 gm.	50
Not more than	3 gm.	But not over	4 gm.	65
Not more than	4 gm.	But not over	5 gm.	80
Not more than	5 gm.	But not over	6 gm.	95
Not more than	6 gm.	But not over	7 gm.	110
Not more than	7 gm.	But not over	8 gm.	125
Not more than	8 gm.	But not over	9 gm.	140
Not more than	9 gm.	But not over	10 gm.	155
Not more than	10 gm.	But not over	11 gm.	170
** In case of weight greater than in the table (every 1 kg. Will be charged 15 baht)				

Table 3: Normal shipping rates for parcels

Registered package delivery rates				
Package weight				Service fee (Baht)
Not more than	100 gm.	But not over		18
Not more than	100 gm.	But not over	250 gm.	22
Not more than	250 gm.	But not over	500 gm.	28
Not more than	500 gm.	But not over	1000 gm.	38
Not more than	1000 gm.	But not over	2000 gm.	58

** If the weight is more than 2000 gm. Cannot register.

(Thailand Post (Thailand) 2019)

Service fees for depositing parcels will vary according to various factors. Whether it is weight, distance, type of service chosen Maintaining parcels to customers without damage every parcel, whether small or large, has different weights, customers or users are wrapped in boxes or envelopes of different items. Customers called Parcels Keeping parcels without causing damage before they reach the destination receiver must maintain the parcels within the area With the right temperature Should not be near the area of water or fire, as it may cause irreparable damage In which items must not be sent for protection Preliminary damages include live animals, drugs, pornography Or things with wording, marks, coarse patterns, explosives, strong explosive devices And there is no explosion Casings or the like, flammable materials, sharp objects without an protective covering for filth or poisonous things Can cause harm to officials, bank notes, counterfeit or counterfeit goods, etc. Piracy is a matter of customer satisfaction or beyond expectations when receiving services, something that is truly important to business success today. Is the customer satisfaction of the National Productivity Institute (2000, p. 12).

Table 4: The period of the postal parcel delivery

	Weight not over 20 kg.	Weight not over 20 kg.	Weight not over 2 kg.	Weight not over 20 kg.	Weight not over 20 kg.	Weight not over 20 kg.	Weight 20 kg or more
	EMS super speed	EMS Poste Express	Registered	Insured	Parcel post	Logispost	Logispost plus
Payment period	24h	1-2 days	2-4 days	2-4 days	3-5 days	5-7 days	2-3 days
Track tracking	✓	✓	✓ Can only be checked at the destination	× Can check with the office	× Can check with the office	✓	✓
Reimbursement rate	Indemnity, not exceeding 2,000 baht	Indemnity, not exceeding 2,000 baht	Indemnity, not exceeding 300 baht	Purchase insurance not over than 5,000 baht.	Indemnity, not exceeding 1,000 baht	Indemnity, not exceeding 3,000 baht	Indemnity, not exceeding 3,000 baht
Additional insurance purchase	✓ Not more than 50,000 baht	✓ Not more than 50,000 baht	×		✓ Not more than 5,000 baht	✓	✓

(Thailand Post Company Limited (Thailand) 2019)

If these officers are found to be sent the wrongdoers, the relevant departments will be prosecuted in accordance with the law.

If the product has a problem Compensation claims, mainly classified into 3 cases

- Damage (compensation as appropriate but not more than 3,000 baht)
- Lost (can not find compensation, the actual value but not more than 3,000 baht)
- Delay (compensate only the shipping cost)

If there is an urgent need Should refer to the carrier that provides guarantee for the duration of the shipment (However, depending on the urgency) compensation for damages Depends on service

- Registered mail Responsible for no more than 300 baht
- Postal parcel responsible for not more than 1,000 baht
- EMS responsible for not more than 2,000 baht
- Logispost is responsible for no more than 3,000 baht.
- Normal post office receives the condition

If the product is worth more than 2,000 baht, afraid of missing, can increase the insurance. EMS can insure the product up to 50,000 baht with 1% service charge (of the product value) + 15 baht fee. If it is a Logistic Post, the insurance can be up to 200,000 baht

Electronic Communication Equipment Group If there is a lost valuables, if the insurance is lost, then 2,000 baht. If there is a problem, not worth not blaming anyone but yourself, getting more insurance, more comfortable than having a problem, can claim to buy more insurance. Not a postal service, guarantee tracking status. The sender or receiver can track the status. By using the 13-digit parcel number obtained delivery-time as a reference, whether tracking via Web Tracking or 1545 Call Center, the sender's duty is to track the recipient when delivering the goods. The recipient's duty is to track the package status. If the parcel has a delay, lost, contact to 1545 is the most convenient. The officer will send EMAIL

Request details for the investigation as follows

1. Name-address of depositor as according to address and phone number
2. Name - address of recipient according to address and phone number
3. Details of packaging and value
4. Weight and delivery fee
5. Please scan the receipt. And attached files
6. Name and telephone number of the person making the inquiry
(If there is no Email or inconvenient, have to go to the post office)

The duration of the investigation is not more than 15 working days. * Want to be sensitive, diligent as can help. But should not follow frequently until the staff do not work (* Working day Excluding Saturday-Sunday / public holidays. Parcel postage box, damaged, wet

- Refuse to receive the best and send the sender immediately (if taking pictures for reference, would be good So that there won't be a problem with the sender)
 - If picking up the form Can request to open the box in front of the official (take VDO as well as evidence) or refuse to accept and send the sender as well
 - If someone has already accepted (the house, security guard, staff, etc.) found the box is damaged, take the VDO before the box, as evidence and mail within 24 hours. To be honest, it's harder. Because the post office may argue that the product may be damaged after delivering the product (Should tell the person who received the item that If the parcel has a problem Do not sign for absolutely)
 - Do not sign for delivery Before checking the package in good condition This one is memorized. Check the condition of the name-box that is correct before signing.
- If signed, the delivery is considered successful. You received the item in perfect condition. Claims will be immediately more difficult

Complaint about damage Compensation recipient

The shipper has the right to take compensation if transferring the rights to the "Recipient" must be done at the post office to transfer the rights to the recipient. (In this case, it is better for the sender to handle the money transfer.) More recommendations for consignees

- Must print the product properly Supports splitting during transportation especially products that are easily damaged and should choose a carrier that is suitable for the type of product. (<https://www.watertimerreview.com>) Product delivery within the deadline and the damage rate, damage value of the selection of the carrier, summary of the results that have been corrected The price, the shipping rate, is the money available. The distribution of the products of the samples was followed by the quality factor, namely the rate of damage, loss of products, the ability to deliver the products within the deadline and the period of time used to deliver the products respectively. (Journal of Transportation and Logistics, 2019)

Fast package delivery that is on time The rapid delivery of parcels to customers' needs according to the specified time period must take into account many factors such as weather, transportation methods, locations, distances, etc. However, the parcels must be delivered within the specified time limit as Specified for each type of deposit according to the specified period To meet the needs of the carrier, select the type of transportation from the Accident Research Center of Thailand Given that human factors Has the most effect on accidents In addition, this research is interested to compare the enforcement of transportation measures of small and large operators. In which the researcher conducted Collect and summarize information The measures for the damage of the selection of the transportation service, the summary of the resolved results, the price, the delivery rate, the money that has Products of the highest sample, followed by quality factors, namely the rate of damage, loss of products, the ability to deliver products within the deadline and the time it takes to deliver the products respectively (Journal of Transport and Logistics, 2019)

Transportation measures

Theories about transportation and Transportation efficiency The meaning of the word transportation. Mr Metaphysics Sakul (2008: 20) states that transportation must consist of the following characteristics: Is an activity that requires Move person Animals or things From somewhere Still somewhere The movement must be done as well. Tools or equipment in The transportation must follow Needs and create utility according to objectives Carrier Wrote Buddhawithi (2010: 71) said that the Logistics Performance Measurement system, operational measurement The work can be divided into 3 groups.

1. Efficiency (Efficiency) is the measurement of time in the production process. (ProcessingTime) resource utilization rates (Resource Utilization) and lead time (Lead Time) such as production lead time, order lead time Delivery lead time
2. Effectiveness (measure of reduction Delivery time, accuracy of data, reduction results Transport costs and reliability
3. Flexibility is the ability to adjust or resonate with the needs of various customers. Many current and future indicators such as adjustment time Set up machinery, the ability to accept small orders.

Transport The Thai Post Company Limited (PO) has always strived to develop the organization in order to meet the needs of users to be satisfied. Highest satisfaction But still have problems to be developed In order to be effective in many other important problems that need to be speeded up, improved, developed For efficiency, namely the problem of transportation delay express Mail (EMS), which the researcher has Explore express mail transportation, fast, timely and in time to meet the needs of customers when customers receive the product. Products must maintain freshness and quality, be economical in transportation costs and Save on service fees By providing transportation costs Will be able to do during transportation Safe in products and services as well as safety. Of materials and equipment used in transportation with the company Thai Post Co., Ltd. will be responsible for loss or loss. Lost everything that happens to the products and services, customers must be comfortable in the transportation of goods and services. The transportation must have complete facilities and Complete and reliable, reliable, on time, with transportation routing Determine the time that cars transport from the origin Time spent in transportation for each route, number of trips made, transportation time determined by the transport vehicle to reach the central office. The way or destination, as the case may be, must maintain time As defined, that means efficiency in Transport of Thailand Post Company Limited

CONCLUSION

Even though how long the time has passed The Thai Post Company is still an important part of the economy, communication, trade, but just change the form of service and improve the quality of service. To support the needs of current users, such as the current online product sales is becoming very popular and Prevalent among people of all ages Because online shopping is convenient do not waste time going to various locations. It is also cheap. When compared to buying from the store because it is usually a direct purchase from the manufacturer No need to pass through the middle man In addition, selling products online has many competitors. Therefore giving buyers the option with comparison price when as follows Parcel delivery service of the Thai Post Company it is something that is inevitably relevant to today's daily life. Therefore interested in researching about the Thai Postal Company By focusing on the issues that most users of the Thai postal company are interested in is the postal delivery system of the Thai Post Company Take care of the parcel to the customer without damage Fast package delivery that is on time. For the benefit of those who have read this research and also a guideline for system development of the Thai Postal Company At present, there are many competitors in providing parcel delivery services.

REFERENCES

- Aphichaiyanant.J, (2005). *Logistics Management of Thai Postal Company Limited*. Bangkok, Thailand: Faculty of Commerce and Accountancy, Chulalongkorn University.
- Boonchom Si Sa-at. (1992). Preliminary research: Suthee Wiriyasan
- Chaoprasert.C, (2004) Marketing Service Bangkok, Thailand: SE-Education
- Choothong.C, (2008) *Guidelines for Developing the Postal Retail Store Case Study of Songkhla Post Retail Store, Thai Postal Company Limited, Master of Business Administration*, Songkhla: Prince of Songkla University
- Khajitkanadej (2006) *User Satisfaction on Services in Laksi Post Office*. Master of Business Administration Thesis Bangkok, Thailand :Kasetsart University
- Opasanon.S, (2009). *Revive the Thai Post. With the logistic design (Online)*. Retrieved from: <http://www.nidambell.net>
- Poj.S, (2010). *Scheduling of vehicles to reduce delays in transportation and increase capacity*. Profitability. Information center and library.
- Puodorod. (2009). Application of AHP in selecting transport companies: a case study of commercial banks. Master of Science in Integrated Supply Chain Management, Graduate School of Dhurakijpundit University.
- Suthiphong.S, (2006). *Public relations strategy and image of Thai Post Company Limited in the eyes of the people in Bangkok*. Master of Arts Thesis, Faculty of Communication Arts, Chulalongkorn University, Bangkok, Thailand
- Suthiphong.S, (2006). *Public relations strategy and image of Thai Post Company Limited in the eyes of the people in Bangkok*. Master of Arts Thesis, Faculty of Communication Arts, Chulalongkorn University.
- Thailand Post Company Human Resources Department. (2010). Postal Supervision. Bangkok, Thailand. Thai Post Printing Company Limited
- Thailand Post Company Limited (online) can be accessed from <https://www.thailandpost.co.th>
- Thailand Post Company, Marketing Press Department. (2003). Thai Post Journal (Inaugural Directory). Bangkok. Printing Company Rung Sin Printing (1977).
- The Buddhist way. (2010). Logistics management The power of modern business. Bangkok: Water Pacific.
- The words metaphysics (2008). Transportation Management. Nonthaburi: Vision Prepress Limited.
- Wong-ina.T, (2002). *Factors Affecting Carrier Blood Picking*. Master Degree Thesis Chulalongkorn University.

Management of Public Cold Storage Business Organizations to a Sustainable Competitive Advantage.

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Abstract This article presents of study reports, concepts, theories and researches from review literatures. Important independent variables to create advantage and sustain of public cold storage organization that related with food industries in Thailand are resources, management capability, process innovation and service quality. This study will be useful for management team and public cold storage entrepreneurs to apply for create advantage and sustain administration in their business. This study will be useful for government sector and private sector to promote and support in public cold storage organization, academic society to next related study as well.

Keywords: Public Cold Storage, Sustainable, Competitive Advantage.

INTRODUCTION

Cold storage is a warehouse that has cooling equipment that can control the temperature to the desired level. This type of warehouse is used to store perishable goods such as vegetables, fruits, meat, and medicines. Or finished goods to reserve for the right time Is part of the distribution system and distribute goods which is related to the system of production and transportation. The cold room warehouse will have temperature control to make the raw materials or finished good quality products that are fresh and prevent spoilage of raw materials or finished goods (Fatek, 2017)

Cold storage is extremely important for the food industry's supply chain system to store raw materials for processing and finished goods to be sufficient to meet the market demand in the food industry Which is an industry that plays an important role in thai economy increasing value added to agricultural products, data from the Food Institute, February 2019, Thai food exports in 2018 is worth 1,031,956 million baht, an increase of 1.6 percent, or 32,190 million baht from the institute's Annual Report 2017. Food Thai food exports in 2017 totaled 33.34 million tons, worth 1,015,816 million baht, increasing at the rate of 7.8% and 6.9% respectively, and data from Food Industry outlook 2018 of the Food Institute reported the proportion of food industry's GDP compared With the industrial GDP equal to 21.8%, 21.9%, 21.9% 21.6%, and the projected 21.7% and the proportion of the food industry's GDP compared to the total GDP is 6.1%, 6.1%, 6.1%, 5.9% and 5.8% in 2015. 2012 to 2016 respectively.

However, cold storage have been a key supporting factor due to the increased demand in the world market. After the economy of the major trading partners began to recover especially United States The European Union, Japan, and China, while the economy and trade in the Middle East and Africa have improved, resulting in increased demand for food products, especially in rice, seafood and canned vegetables.

Economic Research Center Business and economic foundations The Government Savings Bank has reported risk factors for the food and beverage industry in 2019, including the impact of the Thai fishery regulation in accordance with international standards in order to solve the IUU Fishing problem, including the labor shortage in the fishing industry and the impact Due to strict enforcement of foreign labor laws The protracted trade war between the United States and China Which affect the economic growth in both the United States and China. Risk from excess production of white shrimp in the world market Risk from amending Thai law to import pork and intestines that contain Racophores from US Directly affecting the public cold storage warehouse business in the Thai food industry

From the said situation Causing the demand trend of the food industry to rise affecting the cold storage business organization, there must be urgent adjustment in resource management. Organization capability Process and service quality management to meet the needs of customers and maintain competitive stability may cause sustainable competitive advantage issues

Therefore, the researcher sees the importance of the issues of sustainable competitive advantage. Stability of competition in public cold storage business Therefore bringing the said issues going into the research process to find solutions to the problems

RESEARCH OBJECTIVE

1. To study the importance level of factors affecting competitive advantage
2. To study resources factors , Management competency factors and service quality factors That affects the sustainable competitive advantage

LITERATURE REVIEW

Content in this chapter The researcher presents ideas, theories and research from textbooks, books, articles, publications, and online media both domestically and internationally. Related to the cold storage industry management issues summary of literature review defining variables used in the research, research framework, hypothesis and defining action definitions to be used in the study are as follows

1. Resources

1.1 Robert J. Galavan (August 2015) states that resources in this context are tangible and intangible assets under the effective control of the organization. Is the unit that the organization created and used to achieve results In which resources are divided into

- Physical resources: Buildings, equipment, tools, weapons, etc.
- Financial resources: cash, budget commitments or other instruments with liquidity
- Technology resources: computers, software, networks, databases, communications systems, satellites, etc.
- Human Resources: Body, Intelligence and Emotions
- Social resources: relationships, networks, trust, norms, friendships and reputation
- Organization resources: system information (formal and informal), organizational structure, knowledge of management, culture, relationships of the organization (Such as partners) etc.

1.2 Supakorn Limkhunthammo , Prasopchai Phasunon (2015) has organized the concept of resources in this research into 5 types which are human resources. Physical resources Financial resources Marketing resources And intellectual property resources Which has the following meanings

1. Human resources. From the research, it is found that knowledge and experience of executives are important to business success (Borch & Forsman, 2004: 65; Grant, 1996: 120-121).
2. Personnel will be a sustainable organization (Morin & Audebrand, 2003). That means that human resources are a factor affecting the organization's competitive advantage.
3. Physical resources mean having physical characteristics that are advantageous in production, such as having a factory location that saves transportation costs The use of technology, machinery, tools and production equipment that enable us to produce products with quality as required by customers. In which the location, technology, machinery, tools and equipment that are shocked in production Is an important factor in Drive good business results (Coates & McDermott, 2002: 435).
4. Financial resources Funding is a necessary factor in implementing a strategy. Especially driving marketing strategies (Morgan et al., 2004: 90-108). According to Kaleka's study (2002: 273-283), financial resources have a positive effect on achieving advantage in competition
5. Marketing resources are evident from previous research of Day (1994: 37-52) that marketing resources are valuable to the organization, difficult to imitate Have a positive impact on both the marketing and financial performance, that is, when the organization has good marketing resources Will make the organization have good performance It is also a factor that makes the organization able to create a sustainable competitive advantage.
6. Intellectual property resources In this research (Schroeder et al., 2002: 105), the definition of intellectual property resources is the possession of trade secret information. Including information about formulas, ingredients, techniques, production methods, or quality control that the organization uses for business benefits. Including formulated trade secrets Or production techniques of a particular organization That has been developed to suit the organization

2. Administration

2.1 Gulick and Urwick (1937) , The management process consists of planning, organization, staffing, directing, reporting, and budgeting, which are popularly called POSDCoRB.(Organization, Public administration, Public administration)

- Planning is project planning and action plans, including work procedures in advance To achieve job objectives
- Organizing defining the structure of authority, division of work and line of work In order to achieve the objectives
- Staffing is personnel management, including manpower management Recruitment and human resource development Including enhancing a good working atmosphere
- Directing is command diagnosis Supervision and supervision of operations as executives are the heads of departments
- Coordination of various business activities of the department to achieve good coordination and coordination towards the same destination.
- Reporting is activity of the department's performance so that the executives and members of the department are aware of the movement and progress of the business on a regular basis.
- Budgeting is involved the mission is about planning, accounting, financial and fiscal control.

2.2 Drucker (1995: 67-69) proposes that the management process consists of

-Planning is the determination of the duties that must be performed To achieve the goal Corporate target targeting

By specifying how to proceed and when To ensure success according to the planned plan.Must control allIn the distance

And long-term.

-Organizing (Organizing) is the assignment of people. In the department or department. Target according to the plan. When a department or department successful It will make the organization succeed as well

-Leading the organization is an incentive to attract simulate and cheese. Direction to achieve the goal by increasing productivity and focusing on human relations resulting in long-term productivity that is higher than the working conditions because people tend to not like the work conditions.

-Controlling It is the responsibility of the management to gather information to evaluate the performance. Comparison of works currently.

2.3 Parinya Tongnak , Dr.Parisha Marie Cain and Dr.Yuttapol Tavachalee (2013) Research Result: 1) The process of organisation development planning in overall was on a high level, the best procedure was the procedure of defining and choosing alternatives. Analysing aspects, it was found that the planning and preparation was regarded as high on an average of 3.53. Thus, it could be seen that the Sang Kho Subdistrict Administration Organisation's preparedness in preparing planning was not something it was short of, but the aspect needed improvement was that it should let experts in planning to conduct meetings and set the budgets to support the planning.

2.4 Assoc. Prof. Dr. Soawalak Kosolkittiampon1, Assoc. Prof. Dr. Sanya Kenaphoom (2016) The appearance or nature of a formal organization is as a specialized, standardized, formal, centralized configuration, with flexibility. Generally, there are six important elements of an organization namely; man, goals, structure, data/message and knowledge, technology, and environment. The management, meanwhile, is responsible for the success, efficiency, and effectiveness of the people and resources of the organization. So, the duties of the executives are to carry out the goals of the organization, which are generally considered to be the planning, organizing, leading/directing, and controlling.

2.5 Satit Tipmanee (2019) Concept that will help develop one interesting Startup is POSDCoRB, which is a theory that has been accepted, in use for a long time and caused many successful business organizations. Appropriate use of POSDCoRB with Startup will be able to generate a lot of profit and success for the business

3.Service Quality

3.1 Weber (1966) commented that Providing services that are most effective and beneficial to the public It is giving regardless of the person, also known as "Fine Ira Era Et Studio". That is to say that the service is not emotional and does not have a special liking. But everyone must be treated equally In accordance with existing rules In the same condition

3.2 Shelly (1975) summarized the satisfaction theory that satisfaction is a theory of two kinds of human feelings: positive feelings. And negative feelings All kinds of feelings of humans belonging to these two groups of feelings positive feelings, when they occur, will lead to happiness. This feeling is different from other positive feelings, that is, it has a reverse system. Can cause more happiness or positive feelings, happiness is more complex and affects more people than other positive feelings negative feelings and happiness are intricate relationships. And the relationship system of these 3 feelings is called the satisfaction system In which satisfaction occurs only when there are more positive feelings

3.3 Parasuraman, Zeithamland Berry (1985) states that service quality depends on the gap between service expectations and the real perceptions of consumers or consumers. The expectations of the users are based on the hearsay that has been passed on and the direct experience in receiving the service. Including news releases from service providers Both directly and indirectly As for service recognition, it is a result of services received and communication from service providers with clients. The service quality factor has been determined from 10 dimensions, namely, access to services , communications , service provider Capabilities , service facilitation , reliability , confidence in service , responding to user needs . security physical and understanding and acquaintance with users. Subsequently, the service quality assessment factors were improved by eliminating some factors in order to reduce heat and details. Created as criteria for evaluation, leaving only 5 dimensions, namely 1. Physical characteristics 2. Service reliability 3. Responding to the needs of clients 4. Trust and 5. Access to the mind

3.4 Lovelock et al (2002) has defined service as 2 points as follows (1) service is a reaction or operation that one party offers to the other party Although the process (Process) may be bound to the product. But the operation is invisible. Intangible And cannot be possessed(2) Services are economic activities that create value and provide benefits to customers at specific times and places. As a result of the change that the recipient of the service or the representative

3.5 Buakaew Thavomburanasap , Dr. Thiankaew Liamsuwan (2017) , The findings revealed that the level of service perceptionand expectation of service provided by Chachoengsao Provincial Office of Business Development was at the highest level. Specifically, the service assurance was rated at a higher level than other aspects. Moreover, based on the results from the comparisons, it was shown that there was a statistically significant difference between the level of service perception and expectation

4. Competitive Advantage

4.1 Porter(1990) , which states that competitive advantages create greater advantages than competitors, consisting of (1) Low-cost Leadership is an external environment. Especially business competitors, focusing on reducing their own management costs. (2) Making a difference (Differentiation) is the creation of uniqueness and differentiation of products and services. (3) Focus is the competitive advantage that focuses on only the parts related to the business to meet the needs and Satisfying customers

4.2 Chatree Wisit (2010) , A Competitive Advantage strategy is a business that can be managed better than other businesses, resulting in greater profits or more value for yourself than competitors

4.3 Sutawan Satjasomboon , Teevara Waidee (2018) , There are five ways to make a difference in sustainability: (1) the product is focus on the innovation that is adopted for valueadded the products and services. (2) Services, focus on convenience for the purpose of the satisfaction to the customers. (3) Personalization, focuses on creating competent employees, training staff to build credibility and correctly responding to the customer needs (4) Image, which focus on branding and image to be easy to recognize, remain and create a clear identity. (5) Distribution channels, focus on increasing communication channels to the customers. It is easy to communicate to customers.

RESEARCH METHODOLOGY

This research was a mix method of quantitative research and qualitative reserch which data collection by questionnaires. The distribution of paper based. Which is divided into 3 episodes as follows

Part 1: 5 personal questionnaires regarding personal fundamentals, consisting of a checklist questionnaire with the actual responses of personal fundamentals

Part 2 The questionnaire about the level of problems that affect the management of the Public Cold Storage Industry Organization in Thailand to a sustainable competitive advantage, will consisting of 24-36 items is a Likert's Rating Scale Question Scale has the option of answering according to the level of problem

Part 3: Questionnaire about suggestions Is an open-ended question to provide comments and suggestions.

Researcher had created tools to collect data. The steps were as follows

- 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 questionnaire.

- Analyze the objectives, content and structure of the research to determine the guidelines and scope of the questionnaire.

- Questionnaire was on going in process.

- Resercher should be created a draft questionnaire to advisor for review,consideration and correction then provide to the experts with knowledge and experience in public cold storage business and experience expert of business management to make reserch questionnaire by 3 experts person to confirm complete reserch questionnaire.

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

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REFERENCES

- Approaches to Improve Organisation Development Planning Process of Sang Kho Subdistrict Administration Organisation, Phu Phan, Sakon Nakorn. *Journal of Political Science and Law Kalasin Rajabhat University, Year 2, Book 2 (Jul-Dec 2013)*
- Buakaew Thawonburanat, Dr. Thiankaew Liamsuwan (2017) : Quality of service provided by chachoengsao provincial office of business development , *Journal of Modern management*, Mahachulalongkornrajavidyalaya University ,Year15 , VOL.1, January-June 2017
- Economic Research Center Business and economic foundations The Government Savings Bank in 2019
- Gulick and Urwick (1937) Organization, Public administration, Public administration Henderson and Talcott Person. (4th ed.). New York: NY The Free Press.
- Khamnai Atithiphaschayakun (2007) , Warehouse Management, Chapter 3 Classification of warehouse
- Lovelock, C. H., & Wright, L. (2002). Principles of Service Marketing and Manangement.
- Micheal E.Porter (1990) : Competitive Advantage of Nations , Harvard Business Review , March-April 1990 New Jersey: NJ Pearson Education.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of marketing*, 49(4), 41-50.
- Parinya Tongnak, Dr.Parisha Marie Cain and Dr.Yuttapol Tavachalee (2013)
POSDCoRB and Good Governance for Startup in Thailand 4.0 era, *Journal of Human periscope ,year 5, Vol.1 , January- June 2019*
- Report of Food Institute, February 2019
- Robert J. Galavan (August 2015),Understanding Resources, Competences, and Capabilities in EU Common Security and Defense Police.
- Satit Tipmanee , Naiyana Koetwichai (2019) Satjasomboon, S. (2018). Differentiation: A Tool of Competitive advantage. *Journal of Local Governance and Innovation*, 2(3), 83-92.
- Shelly, M. W. (1975). Responding to Social Change. Pennsylvania: Dowden Huntchisam Press. Inc.
- Supakorn Limkhunthammo,Prasopchai Phasunon (2015),Factors affecting resources and knowledge management To the company's competitive ability In the plastic industry, *Business Journal Review Year: 7 Issue: 1 Page Number: 187-206 Year: 2015*
- Weber, M. (1966). The Theory of Social and Economic Organization. Trans. By A.M.

Increasing the Service Efficiency of BTS Sky Train, During the Rush Hours.

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Abstract This article aims to 1) provide knowledge about increasing the service efficiency of BTS sky train, during the rush hours and 2) to propose ways to increase the passenger service efficiency of BTS sky train, during the rush hours. The content of this article contains problems of providing BTS sky train services during rush hours, how to increase passenger service efficiency and advice for the authorities. The knowledge from this article can be used to increase time management efficiency for the authorities in passenger service and related parties for development and resulting in improved service satisfaction.

Keywords: Service Efficiency, BTS Sky Train, Rush Hours

INTRODUCTION

Transportation is very important in driving the country's economic and social development. Good, modern, and efficient transportation systems are an important part of improving the lives of people in the country. It also reflects that that country is a developed country. And pay more attention to the lives of people in the country but with the traffic conditions in Bangkok being a very important problem Due to economic growth and the increasing number of population By moving labor from rural areas to capital cities to find work Currently, the transportation system has been improved and developed to help solve the problems and reduce traffic problems for the population living in Bangkok.

Samart Rajapolsit (2007, page 5-12) said that Today, the "Sky Train" has become an integral part of the lives of Bangkokians. The hope and solution of traffic problems in large cities to global warming depends on the efficient mass transportation system. Therefore, it becomes an important option for the government that is used to solve or alleviate traffic congestion problems in the capital city and increase the potential for transportation. With various bus routes and stations In addition, the services of the BTS sky train system Convenient to travel, safe and able to reach your destination on time. Therefore resulting in a large number of users but with the mass rapid transit, the BTS system still has various system problems which cannot provide sufficient services for the number of passengers using the service. Which causes many passengers go to work late during the rush hour Because finding a way to get to his destination Which may be inconvenient and has an increased fare As well as guidelines for maintenance take a long time Therefore think that the company should have measures to measure Service quality in order to be aware of service problems in various parts

With the reasons mentioned above Therefore saw that the increase in the efficiency of the BTS Sky Train service during rush hour is very important in providing public transport services. In addition, to enable the carers and related parties to be utilized in increasing efficiency, managing the period of service for passengers In order to achieve better development and satisfaction from service

BTS Sky Train Service

BTS Sky train is a public transportation system by the Bangkok Mass Transit System Public Company Limited which builds and operates a public transportation system running on 2 elevated expressways in Bangkok, the Sukhumvit Line (Station Mo Chit to On Nut Station, with a distance of 16.8 kilometers) and Silom Line (National Stadium To Saphan Taksin Station, with a distance of 6.3 kilometers) Which is one of the busiest business streets in the city center. The objective is to help alleviate traffic problems in Bangkok and to add new alternatives to travel that are most efficient, convenient, quick and safe for the public. Which opened on December 5, 1999 from 6:00 am - 12:00 pm, there are trains servicing every 3-5 minutes and the number of passengers using the service increases every year. As it can help save time in traveling there is also a promotion in the form of various tickets causing consumers to save on travel expenses the economy has expanded. Because it is a convenient transportation fast, modern and safe, which is considered a new dimension of communication in Thailand that are developed into a universal system (Annual Report 2013/2014, BTS Group Holding Public Company Limited).

Service is the backbone of government agencies and business sectors. That affects the response of users to the highest satisfaction. Millet (Millet, 1945, quoted in Viroj Sattasansakul, 1995, p. 7) points out that the first value of all public administration is the operation of services that provide satisfaction. Which has 5 important characteristics;

1. Providing equal service
Based on the principle that all people are born equal Equality means all citizens should have equal rights, both legal and political. And government services must not share racial or racial poverty as well as social status
2. Providing fast, timely service
There will not be any public works that are effective if not on time or in time such as the fire truck arrived after the fire has run out. The service was considered to be incorrect and satisfactory.
3. Adequate service
Aside from providing equal and quick service must consider the number of suitable people a sufficient amount of demand in the right place at the right time as well

4. Continuous service
Meaning that providing services at all times must always be ready to serve public's attention with regular training, such as the work of the police, must be available 24 hours a day
5. Progressive service
Is a service that has progress in both work and quality Modern Technology?

In conclusion BTS Sky train Service is The BTS Sky Train public transport system was built for convenience. Help alleviate traffic problems in Bangkok. And is to add new alternatives for traveling that are efficient, convenient, fastest and most secure for the people In which the operation of service provides satisfaction There are 5 important characteristics which are Providing equal service Providing fast, timely service Adequate service Continuous service And progressive service

Problems Service During Rush hour

Woo Chic, Professor of Public Transport at the University of Pennsylvania (Vuchic, 1981: 55-63). Have studied about the efficient mass transportation system which must consider the needs and the needs of passengers, service providers and communities or society as follows

1. The passenger side consists of
 - 1.1 Travel ability, including the ability to conveniently access the bus station As well as having to consider according to the status of the user group, including children, the elderly, the disabled and those who do not have private cars
 - 1.2 Punctuality Transportation systems must be punctual. There is a definite service schedule. Service frequency Accuracy of service
 - 1.3 Travel time Complete travel time to your destination consists of 4 parts which are
 - Access time
 - Waiting time
 - Vehicle transfer time
 - Departure timeThe transportation system must be fast. And have to shorten the time required for changing Travel modes such as buses to electric trains
 - 1.4 Convenience of the vehicle Which means having a seat Have clean air conditioners with suitable temperature Have good maintenance both of the car's condition Passenger station And the condition is not crowded as well as near the parking lot
 - 1.5 Safety in preventing accidents And crime prevention
 - 1.6 Expenses are another important factor for travelers. The relationship between passenger prices and transportation needs is of the utmost importance. In addition, it includes other expenses such as accommodation expenses. Expenses for access by car
2. Service providers consist of
 - 2.1 Covering the area of service provided by the transportation system the distance should be within 5-10 minutes from the bus terminal to the destination.
 - 2.2 The frequency is expressed in terms of the number of vehicles that leave the station per unit of time (hours)
 - 2.3 Speed. Service providers will consider the speed on the route. Which affects labor costs, energy, maintenance And attracting passengers
 - 2.4 Financial is an important factor in service providers, which can be divided into 3 areas, namely investment, operating expenses and income, which must be as low as possible.
 - 2.5 The capacity is divided into 2 types which are the capacity of the route And station capacity
 - 2.6 Security, service providers must consider safety. If an accident occurs, must pay medical expenses. And should also have an operating system model that makes traveling safe, such as route separation, navigation and safe signal systems
 - 2.7 Side effects Sub-transportation systems have an impact on those who use transport systems and the environment. The service provider should be responsible for physical effects such as aesthetic pollution. Sound and air
 - 2.8 Attracting passengers the number of passengers on the route is an indicator of the success and transportation role of the city. Attracting passengers is caused by service levels. But there are other additional factors such as the ease of the system Reliability of service, frequency and accuracy

Currently, Bangkok has traffic congestion. Traveling by BTS Convenient, fast, and on time, whether traveling to work, go to study. There are people who use BTS sky train services. Lots of variety in each day, but the BTS Sky Train still has news about the system problems in various areas, such as a derailment system. Which causes a lot of people left at the station during rush hour resulting in people late to work from the finding a way to get to their destination. Which may be inconvenient and has an increased fare, it also takes a long time for maintenance.

Therefore, using public transport in Bangkok by BTS Sky train must be efficient enough to meet the needs of passengers using the service. Especially during rush hours to reduce the number of passengers remaining and able to provide passenger services on time

Increasing the Efficiency of the BTS Passenger Service During Rush Hour

Efficiency of public transportation services such as Road system connection, the ability to handle road traffic, a variety of service systems etc. The case study of Khristy and Lall in 1983 (Khristy and Lall, 1983) found that Fares, Comfort, safety, agility in traveling, Punctuality Vehicle, condition Access to user groups, including connections for public transport between areas. Is a factor that reflects the decision to use city public transport.

Barry (1986) states that Successful services must include the following features: (1) Reliability is consistency and dependency (2) Responsiveness Include Willingness to service, readiness to service and sacrifice time, constant contact and good service to users (3) Competence Including the ability to provide services, the ability to communicate And the ability to provide knowledge (4) Access Users are convenient. The procedure is not complicated. Users spend less time waiting. Convenient time for service recipients and in a place that users can contact conveniently (5) Courtesy including showing politeness to service users Give proper welcome and the service provider has a good personality. (6) Communication, namely, communicating the scope of the service and explaining the process of using the service (7) credibility with accuracy, reliability (8) security, namely physical security such as equipment (9) understanding means learning service users Providing advice and attention to clients And attention given to clients (10) tangibility, which is to prepare materials for service Preparation of equipment for facilitating service users and organizing beautiful and clean property

Theories about the electric train system consist of Theoretical reliability of the electric train system the relationship between reliability and quality of the electric train system services. Assessing the quality of electric train services Assessing the readiness of the electric train system Assessment of electrical equipment maintenance for electric train systems Risk assessment of equipment in electric train systems And maintenance activities for electric equipment of electric train systems

Reliability of the Electric Train System

The factors that affect the quality of the train system in Thailand are both from the passenger service operators and the reliability of the equipment in the train system. When a failure occurs, it will affect the quality of service to passengers. Which the mass rapid transit system has common components, namely the availability and safety of passengers Therefore, the quality of the electric train service can be achieved, which must make the system equipment reliable and maintainability of the whole life cycle of the system. Along with providing services



Figure1: Showing the components that affect the quality of the train system services

In order to consider the factors that affect the quality of service, especially from the reliability of the electric train system without considering components from external factors such as system users Fare structure which cannot be controlled will be able to identify the reliability indicators of the system train

Assessing the Quality of Electric Train Services

Assessing the quality of electric train services Can be considered from the unavailable service and the inability of the service Due to the failure of electrical equipment The frequency of the electric train service will vary depending on the day, such as normal work days, weekly holidays, etc., and the duration of the day will have different service frequencies, such as Frequency of Peak Hour Headway service of the day will be higher frequency In order to provide services in time with the needs of the passengers' services Therefore, service considerations are generally considered by using the average headway frequency, which can be estimated from the number of hours the train system is open throughout the year, compared to half of the number of trips served. Throughout the year, the number of trains that are not ready to be serviced or the number of discontinued trains can be estimated from the time of the failure. This occurred and resulted in the suspension of the electric train service being suspended until the system has been modified and returned to normal service conditions. Railway Service monitoring service quality assessment has 2 types as follows

- Train Service Unavailability (TSU)
- Punctuality of the Train Service Delay (TSD)

SUGGESTIONS TO CAREERS

"Sky train" is part of the lives of Bangkokians with the BTS Sky Train Service. It is convenient to travel, safe and able to reach your destination on time. Therefore resulting in a large number of users But the BTS Sky Train Mass Transit System still has news about system problems in various areas, such as a derailment system which causes a lot of people left at the station during rush hour resulting in people late to work from finding a way to get to their destination.

The efficient public transport system must therefore consider the needs of passengers in order to reduce problems. By increasing the reliability of the electric train system And the quality of the train system services Which will need to assess the quality of the train system services Assessing the readiness of the electric train system Assessment of electrical equipment maintenance for electric train systems Risk assessment of equipment in electric train systems And maintenance activities for electric equipment of electric train systems In order to be able to meet the needs of service users until they are more satisfied

REFERENCES

Annual Report 2013/2014, BTS Group Holding Public Company Limited. Retrieved From: <https://bit.ly/3aQ4ym8>
Barry (1986). Retrieved from: <http://www.research-Chang District Trad>".
Guidelines for the development of transportation services for the elderly in Ratchathewi District Bangkok, Thailand.
Kulthon Thanaphongthorn. (2530, referring to Tan Thanakul Boribut, 2009, Page 303). Retrieved from: <https://bit.ly/38Gu3o0>
Mass Rapid Transit Authority of Thailand. (2012). 10 mass transportation network systems for the future.
Master of Public Administration Degree Program Department of Public and Private Management College of Public Administration
Burapha University, 2012 Of users in Bangkok Metropolitan Region". Master of Business Administration Program, Faculty of
Commerce and Accountancy, Thammasat University: Bangkok, Thailand
Retrieved from: <https://bit.ly/2vnYaCl>
Samart Rajaphasit. (2007, Page 5-12). Retrieved From: <https://bit.ly/2uzCaUN>
Sawai Chai Bunrueang. "The service quality of the electricity users of the Provincial Electricity Authority, Koh
system.siam.edu/images/independent/Customer_Satisfaction_Towards_Loans_Credit_Services_Of_The_Government_Savings_Ban
k_In_Bangkok_Region/%E0%B8%9a%E0%B8%97%E0%B8%97_2.Pdf
Vuchic, V. R. (1981). Urban Public Transportation System and Technology. New Jersey: Prentice - Hall.
Wirawat Chatrungnoppakhun. "Factors that affect the satisfaction with the service of Government Savings Bank

The Customer's Satisfaction of the Chao Phraya Express Boat Services.

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Abstract This research is to study the customer's satisfaction with the Chao Phraya Express Boat Services. By comparison satisfaction of the Chao Phraya Express Boat Services and various factors level of satisfaction among different genders, ages, marital status, occupation, the income of the customer. Expected benefits are 1) to understanding the customer's satisfaction 2) to know the relationship between personal characteristic and behavior in using the Chao Phraya Express Boat Services 3) to formulate and strategic plan to strengthen the capability of competition of the business in the short and long term. For data analysis, will collect data of paper based on 400 samples by using a convenience questionnaire among customer or involvement in people who have used the Chao Phraya Express Boat Services. The statistic will use are a percentage (Percentage) and score average (Mean), standard deviation (SD), T-test and F test or one-way ANOVA by defining the significance level at 0.05. Based on the results will help to promote and develop into quality services, safety standards and sufficient to meet the needs of the user. This will lead to the satisfaction of the users as well as using the information to develop for commercial business benefits.

Keywords: Satisfaction, Chao Phraya Express Boat Services

INTRODUCTION

Traffic problems in Bangkok and its suburbs are not just a problem. But now is the way of life of people. Since Bangkok began to develop public transportation, people have never stopped facing traffic problems at all. There are solutions to problems by offering new options. For traveling in many forms such as Bangkok Mass Transit System (BTS), Mass Rapid Transit (MRT) etc. But traffic problems are still intensifying even though there are more travel options. It still seems that there will never be a problem that has been solved for a long time. For traffic problems if carefully considered, cannot just raise one cause and consider solving the problem because the source of traffic problems in Bangkok and its suburbs are numerous and complex whether it is a city plan that does not go as appropriate and lacks cooperation between the government mass transit systems that do not follow an effective plan and sub-causes such as time management of traffic lights that are not consistent with the overall traffic of the entire city.

The Thai ministry of transport has a project "Ship-To-Boat" to help Thailand to encourage people for more water transportation, will lead to the reduction of land traffic problems in Bangkok and its vicinity and increase the capacity of water transportation. To be a transport option that facilitates fast access to passengers, in addition to the development of water transportation, improvements to standards and safety for customers. There are maps to connect with other public transportation systems such as Bangkok Mass Transit System (BTS), Mass Rapid Transit (MRT) and Bus etc. The water transportation of Chao Phraya Express Boat is an alternative to public transportation that helps reduce traffic problems with car transport because it is a convenient, fast and inexpensive transport. It is also popular with Thais and foreigners because you can be connected to using the Bangkok Mass Transit System (BTS) and quickly enter into the heart of Bangkok by the route along the Chao Phraya River starting from the Pak Kret district, Nonthaburi to Rat Burana district, Bangkok. Total distance is about 32 kilometers with 4 main shipping lines, including boat lines Orange flag expresses special boat line, Yellow flag express boat line, and Green flag express boat line.

The important factors in a customer's deciding to use the Chao Phraya Express Boat is the service marketing mix as follows 1) Chao Phraya Express Boat (Product) 2) Fares for services (Price) 3) Accommodation of customers (Place) 4) Marketing promotion (Promotion) 5) Service procedures (Process) 6) Service Staff (People) 7) Physical characteristics of the customer's accommodation (Physical evidence). Based on the survey data of the express passenger density along the Chao Phraya River in 2019 (up-leg downstream) 42,637 people per day on government days and 24,876 people per day on public holidays. Which is a monopoly of the Chao Phraya Expressing Boat Company for more than 46 years and at present; there are 45 ports for passenger transportation throughout the route. Which has large boats that receive investment promotion from The Board of Investment (BOI) has 15 large boats, with 150 passengers, 50 medium-sized boats, with 90 passengers and 300 staff members. (Statistical Analysis Group, Bureau of Planning, September 2018). The Chao Phraya Express Boat passenger services to increase satisfaction in the process of providing services, service staff, facilities and service quality, including overall satisfaction in order to improve and will help to promote and develop into quality services, safety standards and sufficient to meet the needs of users. This will lead to the satisfaction of the users as well as using the information to develop for commercial business benefits. Therefore, satisfaction surveys will be the source of success in responding to consumer needs. Especially the maritime business operators who are able to reach the satisfaction of using the services of consumers and is a way to improve and develop quality marketing strategies to better serve the needs of users. It can also be extended to increase the satisfaction of users in other areas as well. The researcher is interested in studying „The Customer's Satisfaction of the Chao Phraya Express Boat Services“ to obtain behavioral information and service satisfaction levels that are useful for sustainable improvements and development of service systems in the future.

RESEARCH OBJECTIVE

- 1) To studying and understanding the customer's satisfaction using the Chao Phraya Express Boat Services.
- 2) To know the relationship between personal characteristic and behavior in using the Chao Phraya Express Boat Services.
- 3) To formulate and strategic plan to strengthen the capability of competition n of the business in the short and long term.

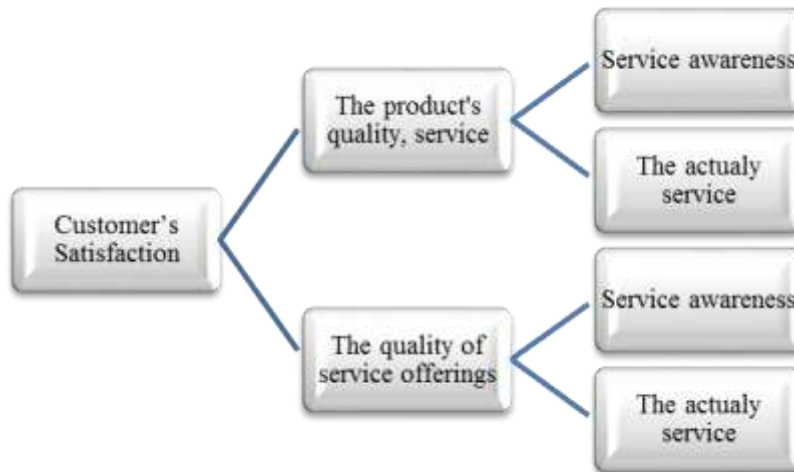
LITERATURE REVIEW

In this research, the researcher studied theories and concepts about the customer's satisfaction, customer's behavior, Marketing Mix 7P's

The customer's satisfaction

Customer's Satisfaction is a personal matter to an individual based on personal experience, different and similar to each person. Satisfying refers to the satisfaction, liking, or approval of a person in his performance and other elements or incentives. The individual's satisfaction never ends, can be changed; can always be according to time and environment. Individuals, therefore have the opportunity to be dissatisfied with what they had previously satisfied. Satisfaction is a personal feeling as a result of comparisons between the perceived performance or efficiency of products and services and the expectations of customers about products and services. The meaning is, if the results obtained from the products and services are lower than expected, will cause dissatisfaction, but if the results obtained from the products and services match the expectations, it will result in satisfaction and if the results obtained from the products and services are higher than expected, will make a good impression. (Kotler, 2003).

Figure1: Components of satisfaction in service (Kotler, 2003)



Generally accepted that service satisfaction is important for the efficient service operation, has general characteristics on 3 reasons as satisfaction is an emotional expression and the positive feelings of a person about something, satisfaction arises from evaluating the difference between what is expected and what is actually received in a particular situation, satisfaction can change at any time according to environmental factors and situations that occur. However, in the modern marketing world, product manufacturers and service providers are fiercely competing. Different types of businesses try to differentiate their products and services by using different strategies such as price strategy, designing products to be unique or after sales service etc. Information can be sent to every corner of the world at a low cost and does not take long. Peoples in one hemisphere can get information about products and services in another hemisphere in just a second. Included the convenient transportation makes all deliveries of products and services not difficult anymore. Therefore, the competition at this time is competing with services. As a result, creating customer satisfaction has become an important factor in competition. (Makoto USUI, 2009).



Figure2: Customer Satisfaction Definition

The customer's behavior

Customers around the world are different in demographic issues on many issues such as age, income, education, religion, culture, traditions, values, tastes, eating, using, buying and the customer's thoughts on products are different. Resulting in different purchases of different types of goods and services in addition to demographic characteristics as already mentioned there are other factors that make a difference to customers. (Kamonphobthip Pala, 2012) The study of the customer's behavior is the study of behavioral decisions and decisions. Customer actions related to the purchase and use of products from resources that are money, time and energy to consume products and services consisting of what to buy, why to buy, when, how, where and how often. (Schiffman and Kanuk, 1994) and most of them are decisions to make a purchase, service in order to receive maximum satisfaction. There are 4 main factors determining the demand and affecting the behavior of customers: Cultural Factors, Social Factors, Personal Factors and Psychological Factors. Found that in general, every time customers decide to use the service, customers have relatively similar thinking processes before making decisions and after using the services. These processes are called "Five-Stage Model of The Customer Buying Process" (Orji and Goodhope, 2013) Consists of 5 steps are 1) Need Recognition or Problem Recognition, 2) Information Search, 3) Evaluation of alternative, 4) Purchase Decision, 5) Post Purchase Behavior. The steps in the purchasing decision process are all important for the study of the customer's behavior. A good marketing research must understand the customer's behavior as a basis for reaching the minds of consumers in order to demonstrate trends in achieving business goals.



Figure 3: Five-Stage Model of the Customer Buying Process (Orji and Goodhope, 2013)

Marketing Mix 7P's

When we apply this concept to businesses in the service sector, more consideration is needed because the services industry is different from the general consumer goods industry. Because there are both tangible products and intangible product are the products and services offered to customers or the market The marketing strategies adopted in the service business need to be provided in a marketing mix that is different from general marketing. (Thithorn Thirathirakwanrot, 2003) The marketing mix concepts for service businesses as a concept related to a service business that is different from general consumer products. Require the Service Marketing Mix or 7P's, defining a marketing strategy consisting of seven factors to consider (Philip Kotler et al, 2008) which can be classified as follows:

1. Product, The product is something that satisfies human needs, what the seller must give to the customer and the customer will receive the benefits, value of that product. In general, the product is divided into 2 types: tangible products and intangible products.
2. Price refers to the value of products in monetary form. Customers will compare the value of the service with the price of that service. If the value is higher than the price, the customer will decide to buy. Therefore, service pricing should be appropriate for service levels that are clear and easy to differentiate service levels, the pricing strategy must take into account the following factors: value that is perceived in the eyes of customers must consider and accept the value of the product that is higher than the price of that product, product costs and related expenses, competition in the market, other factors.
3. Place, Placement or distribution channels as activity related to the environment in providing services to its clients affect customer perception of the value and benefits of the services offered to consider the location and channel offerings.
4. Promotions in marketing promotion are one of the important tools for communicating to users with the objective of informing or inducing attitude and behavior. Service's the key to rapport marketing.
5. People or employees must select recruitment, training, motivation in order to create satisfaction among customers differently than competitors as the relationship between service personnel and users of the organization. The staff must be capable, have an attitude that can respond to users, originality, the ability to solve problems, be able to create value for the organization.
6. Physical Evidence/ Environment and presentation are demonstrating physical characteristics and presenting to customers to see concrete, trying to create quality by including physical, service forms in order to create value for customers. Whether it is dress, cleanliness, neatness, negotiation must be polite, gentle, and provide fast service or other benefits that customers should receive.
7. Processes are activities related to service procedures and practices offered to customer services in order to deliver services accurately and quickly and to the customer's impress.

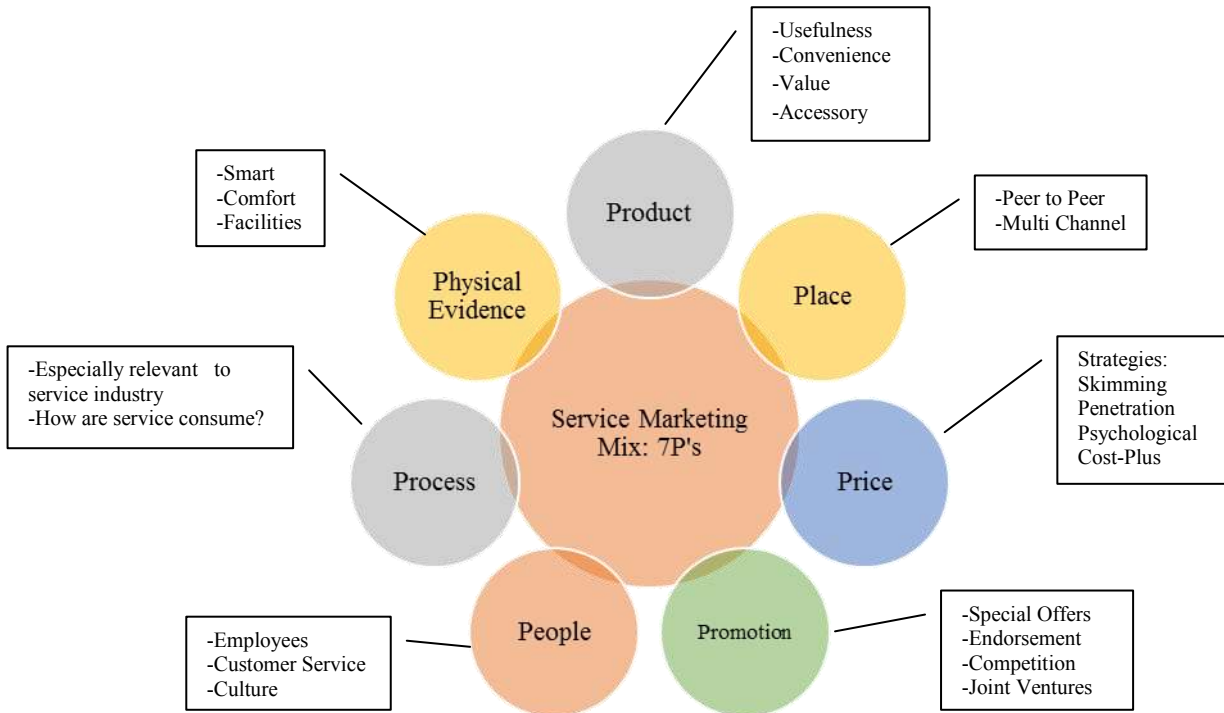


Figure 4: Service Marketing Mix: 7P's (Philip Kotler et al, 2008)

RESEARCH METHODOLOGY

The customer's satisfaction of the Chao Phraya Express Boat services to study the level of satisfaction and behavior of the Chao Phraya Express Boat Services in the aspect of the Chao Phraya Express Boat service, consisting of the Chao Phraya Express Boat, service for, passenger accommodation for service, marketing promotion, process and service procedures, personnel and service personnel including the physical characteristics of the passenger accommodation. The study will be conducted by people using the Chao Phraya Express Boat services in the amount of 400 samples from the population in Bangkok and surrounding provinces and use the tools for collecting data such as questionnaires. There are 6 steps:

1. Population and the sample selection is the customer who uses the Chao Phraya Express Boat Services, the sample is the customer who uses the Chao Phraya Express Boat Services by calculating the formula to determine the size of the sample group that does not know the population value.
2. The process of creating questionnaire is a tool for collecting data in the amount of 400 samples. The structure of the questionnaire consists of questions focused on the objectives of the study divided into 4 parts as follows:
 - Part 1 is a general information questionnaire about the customer's using the Chao Phraya Express Boat Services such as gender, age, status, occupation, income.
 - Part 2 is a questionnaire about the behavior of the customer's using the Chao Phraya Express Boat Services.
 - Part 3 is a questionnaire for satisfaction of users of the customer's using the Chao Phraya Express Boat Services.
 - Part 4 is a problem and suggestions of the customer's using the Chao Phraya Express Boat Services.
3. Sources of information, the information will be used to research the sources separated into 2 parts: the primary is all about the satisfaction of the customer's using the Chao Phraya Express Boat Services. The data are from a survey by questionnaire and secondary data has been researching the literature, such as the theory of related research, article from libraries, government agencies and the private sector.
4. Data collected will be compiled with a questionnaire to collect data from the population in Bangkok and surrounding provinces.
5. Data Processing, the researcher will investigate all issues and queries that have been selected to complete a questionnaire to 400 samples and analyzed using computer software.
6. Data analysis for this research will use descriptive statistics to analyze. The general information of respondents and the needs of the customer are using the Chao Phraya Express Boat Services uses percentage and average methods.

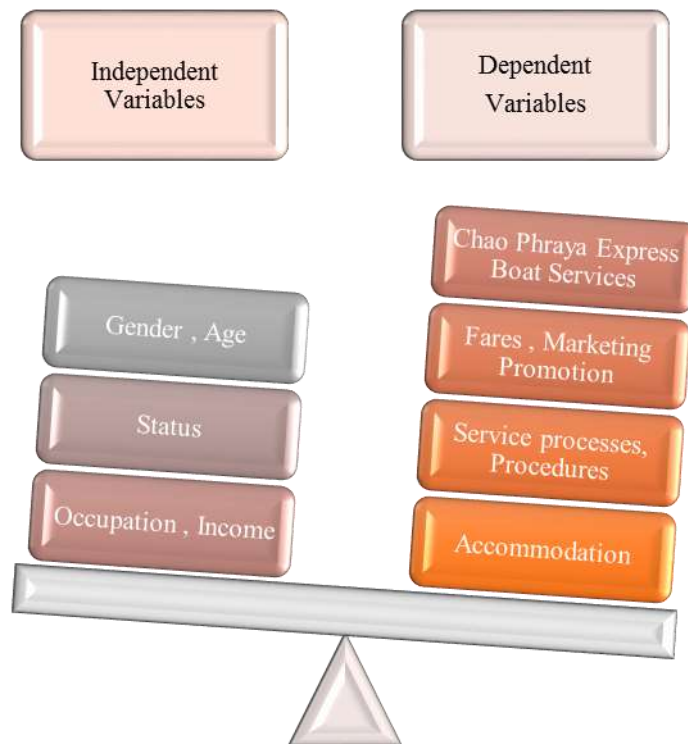


Figure 5: The conceptual framework of the study

EXPECTED BENEFITS

1. Making the researcher aware of the level of people's satisfaction with the customer's using the Chao Phraya Express Boat Services in Bangkok and surrounding provinces.
2. In order to take advantage of public satisfaction data on the customer's using the Chao Phraya Express Boat Services in Bangkok and surrounding provinces as basic information for relevant agencies to use to improve services and increase efficiency related to the marketing mix.

REFERENCES

An Asian Perspective, (5th ed.), Prentice Hall.

Kamonphopthip Pala. (2012). *Consumer Decision Making Process in Mueang Chiang Mai District in the Purchase of Digital Single-Lens Reflex Camera*. Master of Business Administration in Marketing. Chiang Mai University.

Kotler, (P. 2003), *Marketing Management*, International Edition, Eleventh Edition, NJ: Prentice Hall.

Kotler, P., Keller, K. L., Hoon, A. S., and Meng, L. S. (2008), *Marketing Management*:

Makoto USUI. (2009). *Service Innovation: Behind the Success of 7-Eleven Japan and the New Age Service Business*. Translated from Zukai Seven-Eleven Ryu. Service Innovation no Joken by translators Bundit Rojanaranon and Chamaiporn Sutham Wong. Bangkok: Technology Promotion Association (Thai-Japanese). (2011).

Orji, O. (2013). Major Classic Consumer Buying Behavior Models: Implications for Marketing Decision-Making. *Journal of economics and sustainable development*, 4(4), 164-172.

Schiffman, L. G., & Kanuk, L. L. (1994). *Consumer behavior*. (5th ed.). Englewood Cliffs, New Jersey: Prentice-Hall.

SE-ED EDUCATION.

Statistical Analysis Group. Bureau of Planning. (2018). *Report of the satisfaction and dissatisfaction survey of passengers by the Chao Phraya River in Bangkok and its surrounding provinces*. Thailand's Marine Department.

Thathathorn Thirakwanrot. (2003). *Marketing Services (Additional revised version)*. Bangkok, Thailand:

Study of Operational Procedures to Propose Ways to Increase Efficiency in the Loading and Unloading Stations.

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Abstract The study is qualitative research. The objectives include 1) study the operation procedure in the container freight station 2) to study the operational problems in the container freight station 3) to propose solutions for increasing operational efficiency in container freight station. The data is collected from interviews, observations, and manual operation, and there are tools that are used in this study as fishbone diagram and analysis with 4M 1E, questioning by 5W1H then analyze the causes of the process of work, ECRS principles were used to settle the update process steps of work by eliminating, combine, rearrange, simplify. The study indicated that the operation procedure of container freight station has an amount of 17 steps but found that 8 steps of the working process were in troubles. By the way, ECRS was used for resolving the issues. After improving the operation procedure, 15 steps of working process can finish the work efficiently.

Keywords: Operational Procedures, Operational Efficiency, Container Freight Station

INTRODUCTION

Preface a research study on the study of operational procedures to increase the efficiency of the loading and unloading stations. Case study: Hutchison Port (Thailand) Co., Ltd. has been established to study the operational procedures and Study problems occurring in the loading and unloading station department. To find ways to increase work efficiency as intended in this study, there are not some limitations, but the researchers believe that the results of the study will be research that has been developed to be more suitable until causing inconvenience in research development in courses or participants in the future

RESEARCH OBJECTIVE

- 1 to study the operating procedures in the Container Freight Station (CFS)
- 2 to study the operational problems at the Container Freight Station (CFS)
- 3 To propose ways to increase the efficiency of the container freight station (CFS) operations

METHODOLOGY

The research tools

Fishbone diagram or officially known as Cause and effect diagram The cause-and-effect map is a map showing the relationship between problems. With all possible causes that may cause that problem

When to use a herringbone diagram

1. To find the cause of the problem
2. When wanting to study, understand, or get to know other processes, because most of the employees only know the problems in their area But when Fishbone drawing Will enable us to know the processes of other departments
3. When wanting to be a brainstorming approach which will help every People are interested in the group's problems, which are shown at the fish head

How to create a cause-and-effect map or fishbone map, that is important to create a map as a team as a group, using the following 6 steps.

1. Determine the problem sentence at the fish head
2. Determine the group of factors that will cause the problem
3. Brainstorming to find the cause in each factor
4. Determine the root cause of the problem
5. Prioritize the cause
6. Use the necessary improvement guidelines.

We are able to specify any group of factors. But make sure that the groups we define are the factors that can help us to identify and determine the causes. Systematically And are rational, most often use the 4M 1E principle as a group of factors To lead to the identification of various causes which 4M 1E is from

M-Man workers or staff or personnel

M-Machine machinery or facilities

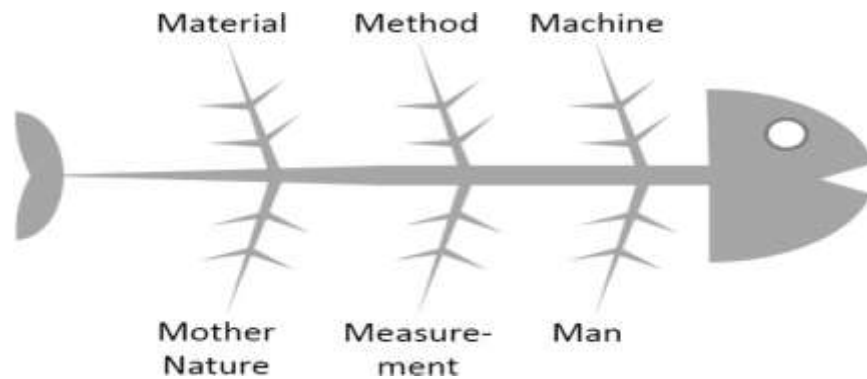
M - Material, raw materials or other equipment used in the process

M-Method workflow

E-Environment - weather, location, brightness and working atmosphere.

Determining the topic of fish head problems

Defining the topic of the problem should be made clear and possible. Which if we define the problem sentence clearly from the beginning Will make us spend a lot of time finding the cause and it will take a long time to Fishbone mapping, determining fish head problems such as loss rate, mortality rate, mortality rate or reducing mortality rate Why is it possible to see the topic in the writing of the letters?



The fishbone diagram consists of the following parts:

The problem or result (Problem or Effect) which is shown on the fish head and Causes (Causes) can be further broken down into Factors that affect the problem (fish heads)

- the main reason
- Sub-causes

Which causes the problem will be written on each fishbone Sub-bone is the cause of secondary fishbone and secondary fishbone is the cause of primary bone, etc.

Basic principles of herringbone charts Is to enter the name of the problem that you want to analyze down at the far right or far left of the chart. With the main line along the length of the spine then enter the name of the sub-issue Which is the cause of the main problems 3 - 6 threads by drawing a herringbone line Oblique from the main line For each fishbone line, enter the name of the cause of the problem.

The level of the problem can be further subdivided. If the problem is still a cause of further sub-elements In general, there are usually 4 to 5 subdivisions of the root cause. Once the information is in the complete chart will make the visualization of all elements that will be the cause of the problem

The cause of the problem

Advantages

1. Do not waste time separating ideas that are scattered among each member the fishbone chart will help gather the thoughts of the team members.
2. Know the root cause and the root cause of the problem. Know the root cause of the problem which allows us to solve the problem correctly

Disadvantages

1. The idea is not free because the fishbone chart determines which team members' ideas will be included in the fishbone chart
2. Must rely on highly talented people So can use a fishbone chart to brainstorm ideas

Ideas for continuous improvement or kaizen concepts

It is currently accepted that an important trend for business operations in the future is to try to reduce costs in order to increase the ability to compete in borderless business in the future, which is one of the important goals of the organization. Therefore, the organization must try to find the excess that is hidden which is a waste to set out and develop the process of creating value continuously

Continuous Improvement (Kaizen) means small improvements that are made by continuous, gradual efforts to improve from existing standards for improvement, including improvement of Better daily work, this improvement May not require any special techniques Just use common sense of every employee in the organization from upper to lower levels to inspect their work and concentrate on their work even better.

Task Type A: Daily work

Job Type B: Update

Task Type C: Solve immediate problems

Which "job improvement" will be squeezed out by job A and job C, so try to push for "Job improvement" is a part of daily work (routine work is improved). Finally, it results in less "problem-solving".

Kaizen is to reduce the excess process, but reduce unnecessary things by changing the way it works.

- Change methods, change methods of work, reduce unnecessary steps
- Change small matters Change small things Or problems encountered each day
- Cope with reality Do things that you can do first. Dealing with limited reality

In general, the Kaizen activities are usually conducted in 2 forms as follows

1. Kaizen in the form of group activities for improvement by using tools to solve problems and improve work 7 QC Tools and Industrial Engineering Techniques Within the area or joint responsibility This type of kaizen is the direct responsibility of the improvement team.

2. Kaizen in the form of activities, suggestions for improvement By creating attitude to improve work and use tools to solve problems and improve work within the area of responsibility of each employee. This type of kaizen is a direct responsibility of all employees. In addition, the use of kaizen in the organization must consider that

2.1 Kaizen is considered as one of the organizational culture that takes time to change.

2.2 Kaizen is something that we all do in our daily lives, so we can take our practices more seriously and with more principles.

2.3 Kaizen must make work easier and reduce costs But if it causes more difficulty, it will not be regarded as chise

PDCA or Plan-Do-Check-Act Kaizen It is a fundamental activity in the development of efficiency and quality. Of operations consists of 4 steps which are Plan, Do, Check, Update (Act)



1. Select and define problems to be implemented. Most organizations have many problems in the workplace starting from waste (Defects) from production, production over demand (Over production), keeping too much stock waiting time / delay Excessive inventory, ordering a lot of materials but using less. Unnecessary Transport Ineffective Process Ineffective Process Unnecessary motion or action and energy wastes, when defects can be found and then prioritized for problems Create improvement activities happen in the organization correctly according to time

2. Understand the problem When the organization selects important problems Before and after, then allow relevant employees to look at the actual situation that occurs in the organization that How did the problem occur in order to understand and improve in the same way? Or may be a feature of bringing employees to see Various case studies Which has carried out continuous improvement activities already To be used as a guideline for further operations

3. Plan a solution Start with the priority ranking. Of target set How the Determine the duration of the operation. The person responsible and the budget to implement the said plan 7 may be modified as appropriate. Which the plan helps to predict what is happening in the future and helps reduce losses. Possible

4. Define methods from analysis. Plan implementation may consist of supporting structures such as committees or departments. There are methods that have been tried and analyzed to be effective.

5. Take the results obtained for analysis, determine the plan evaluation May consist of Assessing the structure that supports the operation, evaluating the operational procedures And the evaluation of the operations as planned, such assessments can be done by oneself by the employees responsible for the work plan Which is a characteristic of self-assessment Without needing to set another committee to evaluate the plan Or do not need to think of complicated tools or assessments. Using the results to analyze, we can know that Activity improvement activities How effective? What obstacles that must be considered and reviewed for further correction

6. Establishing standards for implementation, evaluating results to develop plans May consist of bringing Evaluation results to analyze that there is a structure. Or what operational procedures that should improve or develop the good things even further and synthesize a new operating model that is suitable for the next year

There is no need to complete the PDCA principles to improve work by completing 6 steps before moving on to step 1. If there is a problem, you can go back and do whatever step you want.

The tool used in the study of operational procedures to propose ways to increase efficiency in this container freight station (CFS) has chosen to use the tools consisting of

1. Fishbone Diagram for brainstorming the root cause of problems in But the work process

2. The 5W 1H question system asks questions to analyze the cause in the original work process and find ways to improve.

3. ECRS Principles to begin the process improvement process with Cutting unnecessary work procedures in the process
Integration of work procedures To save time or labor in the workplace Reordering tasks And improvement of working methods Or
build tools to help do Easier work

RESULTS

The process of receiving products into the warehouse

1. Employee prints Manifest documents from customer mail
2. Bring Manifest documents for product placement planning by supervisor Product size and quantity from the manifest. After that, key the queue information into the system so that the Forklift driver can open it in the nTRACS program.
3. Open the container and inspect the goods by the staff opening the container and bringing the goods to the shed. If inspected and found that the product has problems such as Dented, collapsed, torn, torn, etc. Let the staff take a picture as evidence since the product is in the cabinet before taking the product out or the product is not complete according to the Manifest document to notify the owner of the product or Shipping to proceed
4. Put the products in the shed The Forklift driver opens the nTRACS program screen and presses to receive the job queue. Afterwards, the product is placed at the position shown on the program screen. Once the product has been placed at the location, press Confirm (Movement Success) so that the information will be sent to save the information into the system.
5. Once all the goods have been lifted from the container, the inbound containers Change cabinet status to empty cabinet (Can know when the job queue on the computer screen has been confirmed)
6. Bring the Manifest document used to open the cabinet and put the details in the Tally Sheet document. Send mail to the customer.

Product delivery process

1. After bringing the products into the warehouse and each product is already in the system Products will be ready to deliver.
2. The customer will bring the Wharf Receive document to the staff at the drop-off box. The customer must write the vehicle registration number in the said document.
3. Afterwards, the staff at the release cabinet will issue 4 Announcement Card and Delivery Note documents (2 customers, 1 security guard, 1 loading and unloading station) along with the work queue of the desired product location. Will be posted to the company system in order to display in the Forklift Driver nTRACS program in search of products
4. When the Forklift driver receives the workload received and places it on the platform
5. Check the accuracy and the straightness of the straight lines that found conflicts, check from the Tally Sheet, the picture must match the specified, then lift the product into the car.
6. Bring Announcement Card and Delivery Note to customers. Sign all 4 products and have 2 customers keep 1 security officer and 1 container at the loading and unloading station.
7. Forklift driver or product release staff Click to confirm the movement (Movement Success) to give information to the company's system.

CONCLUSION AND FUTURE WORK

1. Should study the duration of the new format of operations that can reduce the time and reduce the error much Along with comparing before and after improvements
2. The study of the cost effectiveness of the nTRACS program in the loading and unloading station should be studied

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Siriphong Khuhamanee. 28 January 2018. Assistant Operations Manager. Interview.
Lapsaphong Chaisilp Sophon 6 February 2018. CFS Supervisor. Interview.
Sakit Sitipraseuk, 26 March 2018. Operations Support Officer interview.

REFERENCES

- Prasert Akkharamrongpong (2009). Reducing waste by ECRS principle. Searched on 21 June 2018 <https://cpico.wordpress.com/2009>
- Suparat Poolsawat. (2016). Increasing Efficiency of Outgoing Document Department: A Case Study of a Ship Line in Laem Chabang area. Department of Logistics and Supply Chain Management, Faculty of Logistics, Burapha University.
- Than Chudaphan Nikulduangphon Sangkhamanee and Prida Pornngam-nga. (2014). Efficiency Improvement in Production process using industrial engineering tools: a case study of 3 bicycle assembly factories, Department of Industrial Engineering, Faculty of Engineering, Ubon Ratchathani University.
- Wanrat Chantakit. (2006). 17 Thinking tools = 17 Problem solving devices. (6th edition, revised version). Bangkok, Thailand: National Productivity Institute.

Development of Staff Potentiality for Work in Process Warehouse Of the Automotive Parts Industry.

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Abstract This research aims to 1) study how to reduce human errors, waste time reduce, waste reduce, and costs reduce, 2) to suggest the executive for planning's enhance staff potentiality for work-in-process warehouse. By using mixed-method research, the sample was 136 people with totals 1,006 people from the warehouse department in the General Chemicals (Thailand) Co., Ltd. The data have been collected by questionnaire and in-depth interview and analyzed by descriptive statistics. It is found that, the construct of development of staff potentiality for work in process warehouse such as; mentor system variables have the highest scores 4.36, staff training and internal testing have the scores 4.31, motivation and punishment have the scores 4.09, and using operation manual have the scores 3.91 respectively. While, the construct of warehouse's performance such as; reducing operational errors have the highest scores 4.55, waste time reduction have the scores 4.46, Cost reduction have the scores 4.31, and west time reduction have the scores 4.27 respectively.

Keywords: Potential Development, Warehouse, Automotive Parts Industry

INTRODUCTION

In the present day, the automotive parts industry is giving precedence to warehouse management (Koson Disilatam, 2011) especially staff management in a warehouse that leads to effective performance (Kamnai Aphipratyasakun, 2010) in the areas of product receipt, product storage, and product disbursement (Taweesak Theppitak, 2011). The study of the warehouse managing problem found that the warehouse staff did two incorrect operations: 1) the staff did not follow the instructions from the software "Auto Flight," which is used to store data of product receipt, storage, and disbursement, and shows the remaining amount of the inventories. The software can also tell the staff how many products and where they need to pick. 2) The error from staff caused the problem of the inadequate and wrong amounts of the products, including wrong and misplaced product labeling or some goods did not get labeled, and product storage did not match the requirement.

From the above issues, if the concepts of 1) Employee training and Testing (Panya Tirawetworakun, 2010), 2) Mentoring (Tamrongsak Kongkasawat, 2010), 3) Work Manual (Jittinan Nanthapaiboon, 2014), and 4) Motivation and Punishment (Jarunan Ithiawatchakul, 2015; Jittinan Nanthapaiboon, 2014) were applied to develop the potential of staff in work-in-process warehouse, they could help increase the warehouse performance by reducing human errors (Kitsak Ploypanichcharoen, 2015), time-wasting, goods waste (Rachata Kambun et al., 2013), and costs (Kamnai Aphipratyasakun, 2013), and solving the issues at the same time. It has an excellent benefit for the company; therefore, it is the main reason why the researcher shoe to study and examine the above concepts.

OBJECTIVES

1. To study ways to reduce human errors in the operation of employees, time-wasting, goods wasting, and costs.
2. To bring the results as suggestions to the management team for the plan to increase the potential of staff in a work-in-process warehouse

SCOPE OF STUDY

The scope of the content is the components of the potential development of staff in a work-in-process warehouse and the elements of warehouse performance. The scope of the population consists of 136 questionnaires and 12 interviews from a sample, specifically chosen group. The scope of variables consists of 4 independent variables: they are Employee training and Testing, Mentoring, Work Manual, and Motivation and Punishment. The dependent variables are to reduce: operational mistakes (human errors), time-wasting, goods waste, and costs.

EXPECTED RESULTS

1. To receive methods for using in operations that helps reduce operational errors, time-wasting, goods waste, and costs
2. To help the management team of the company to receive the beneficial information for the plan to increase the potential of the staff in work-in-process warehouses of the automotive parts industry

LITERATURE AND THEORY

1. Theory

1.1 The concept of potential development refers to the development of knowledge and performance for each individual both in physical and mental aspects by increasing knowledge, new learnings, and experience, and use this new knowledge and skills for the most benefit.

1.2 The components of the potential development of staff in work-in-process warehouses refers to the process of promoting the personnel who is already operational to have better and more knowledge, expertise, skills, attitude, habits, and

working methods until they can perform with the highest efficiency. The components consist of Employee training and Testing, Mentoring, Work Manual, and Motivation and Punishment.

1.3 The components of warehouse performance refer to the quality and the efficacy obtained from warehouse operations, and whether activities are following the goals and objectives or not. There will be indicators consisted of the reduction of: operational errors (human errors), time-wasting, goods wasting, and costs, which can be explained as follow.

2. Related research

Surisa Kwaiphan (2012) has studied “Mentoring System” and applied it with human resource development. She found that potential should be developed in four areas: 1) knowledge, 2) skills, 3) work habits, and 4) attitudes. The system should have unconventional characteristics for flexibility, and be in the same way with a variety of complicated tasks. It also should be able to be applied to a group of newly appointed personnel and a group with rotating jobs.

Sununtha Siricharoenwat (2012) has studied how to increase the efficiency of warehouse management and found that high inventories have improper storage of products causing the mechanics to wait for spare parts, and the errors in picking products. Therefore, the products are stored by order of importance with ABC type. Codes are used for each product type, and the product locations are specified. The result is the wait and disturbance time were reduced from 24 to 11 minutes at a time when applying all of these solutions, and the error rates of counting products also were reduced from 46.14% to 21.25%

Sujitra Theanchai (2016) has studied how to improve and increase the work performance in warehouses of the automotive industry. She has observed the problems occurred in warehouse management and found that the quantity of material import did not correspond with the usage causing inadequate space for storing products. The products then were put confusingly outside the warehouse. There was also a lack of precise storage location, causing more time than usual for staff to search for the products. The research analyzed the cause by using a fishbone diagram to find a solution. The researcher created a warehouse layout, produced labels indicating the cycles of material disbursement for the production lines, and stored material using ABC Analysis. The result of this research helps the warehouse to have enough space and reduce the number of employees who search, collect, and deliver products from 3 to 2 people.

Nichanan Panyachowtikul (2010) aimed to create an operational manual for the process of the license of energy industry application to reduce the delay of document preparation by studying the process and the flow chart of the process of the application. Then the researcher used a fishbone diagram to analyze the cause of the delay and found that the unclarity of information and details on the documents were the leading cause of the delay. The person who submits the documents (a client) need to know what documents need to prepare and how to submit them and follow the protocols as the department specified. The purpose of this research was to increase clarity in providing information for the client, and it would reduce the mistakes as a result. The operational manual consisted of steps and procedures for submitting documents to the department, samples of various types of documents, and other related documents. The result of the tested of the manual found that the document preparation time was decreased by 48.79% from the original number of the delayed and error documents at the average of 7.83%, And the result of the satisfaction from clients had the average score of 4.12 and 4.13 from full score of points, which indicated that the operational document is suitable for use.

AeknareeToomphol et al. (2012) studied the improvement of transportation and warehouse of steel distributor industry. The team aimed to decrease the cost of the work process by reducing working time in the transportation process and other logistic activities, and optimize the utilization of the warehouse while reducing picking errors. Data were collected before and after the experiment by using the 5S Model and ABC Analysis as tools to increase performance, and KPIs as operational indicators. The study found that there was a repetitive work process, and documents were redundant. Some of the work procedures were not systematic, resulting in errors in the work, and the resources were used ineffectively. There was also a lack of planning, work order management, and warehouse space management. The result showed improvements in the work process. There were a reduction in the process and transportation time and optimization of the use of warehouse space, including the decrease of the rate picking errors. The result reduced the operating cost of the company’s logistics activities.

METHODOLOGY

The researcher determined the characteristics of tools used for collecting data and create a tool to use for this research: questionnaire and interviews. In this research, the researcher processed and analyzed the data by using statistical analysis: percentage, mean, standard deviation, and statistical theory to present the data to achieve the purpose of the study of the data used in the analysis.

RESULTS

The result of research show follow table 1 and figure 1

Table 1 Number and percentage detailed information regarding personal data of respondents

(n=136)

General Information	Respondents	Amount	Percentage
1. Department	Raw material warehouse	36	26.5
	Component warehouse	6	4.40
	Work-In-Process warehouse	22	16.20
	Finish goods warehouse	72	52.90
2. Position	Manager	1	0.70
	Assistant manager	3	2.20
	Supervisor	3	2.20
	Staff	129	94.90
3. Sex	Male	56	41.20
	Female	80	58.80
4. Experience	Less than 1 year	56	41.20
	1-3 year	67	49.30
	4-6 year	9	6.60
	7-9 year	3	2.20
	More than 10 year	1	0.70
5. How many years of work experience	Less than 1 year	22	16.20
	1-3 year	83	61.0
	4-6 year	23	16.90
	7-9 year	5	3.70
	More than 10 year	3	2.20
6. Education Background	Junior High School	39	28.70
	Senior High School	48	35.30
	Vocational Certificate	16	11.80
	High Vocational Certificate	20	14.70
	Diploma	0	0
	Bachelor's Degree	10	7.40
	Graduate Diploma	1	0.70
	Other	2	1.50

7. Monthly Income	Less than 9,000 baht	4	2.90
	9,001-10,000	29	21.30
	10,001-15,000	95	69.90
	15,001-20,000	4	2.90
	More than 20,001 baht	4	2.90
8. Major	Logistics	4	2.90
	Management	13	9.60
	Business administration	8	5.90
	Other	111	81.60

And the results of research show follow figure 1

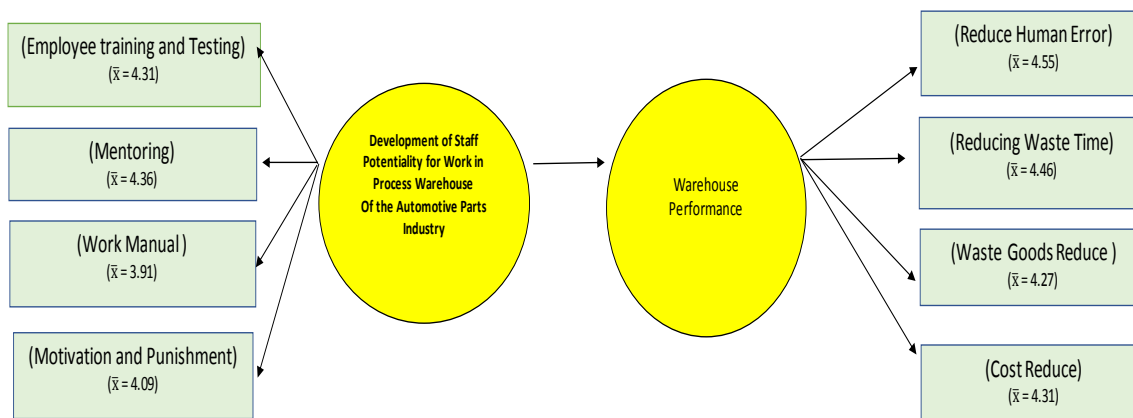


Figure 1. Conceptual Framework

The result found that 26.50% of the questionnaire respondents (Informant) are working in material warehouse department. 94.90% were in general position. 58.80% were female. 49.30% have been working there for 1 – 3 years. 61.10% had a total work experience of 1 – 3 years. 35.30% had a Senior High school education. 69.90% had an average of the monthly income of 10,000 – 15,000 baht. 81.60% have graduated at other levels. These can conclude the quantitative research results of two components as follows.

Considering as a whole, the results of the data analysis of the opinion level of the components of the potential development of staff in work-in-process warehouses found that the Informant have the highest level of opinion towards Mentoring (\bar{x} = 4.36), followed by Employee training and Testing (\bar{x} = 4.31), Motivation and Punishment (\bar{x} = 4.09) and Work Manual (\bar{x} = 3.91) respectively.

As for the results of the data analysis of the opinion level of the components of warehouse performance, when considered as a whole, found that the Informant have the highest level of opinion towards Reduce Human Error (\bar{x} = 4.55), then Reducing Waste Time (\bar{x} = 4.46), Cost Reduce (\bar{x} = 4.31) and, lastly, Waste Goods Reduce (\bar{x} = 4.27) respectively.

CONCLUSION AND RECOMMENDATIONS

Imparting knowledge by using the Mentoring System has the highest level of average rating. It means that using this system will help the newcomers to learn how to do the job from people with real-life experience. They will be equipped with better knowledge and understanding, and this goes in the same way with the work of (Surisa Kwaiphan, 2012) that applying the Mentoring System with human resource. The researcher found that there are four areas in the potential to develop: knowledge, skills, work habits, and attitudes.

SUGGESTION

Suggestions from research

1. The staff using software “Auto Flight” must be strict and able to record the data immediately when goods are disbursed or received to get the highest accurate data.
2. The products should be stored in categories with precise labels. Staff should be strict in storing products to the right category that the company defined in order to reduce the errors of picking wrong products.
3. Warehouses should be expanded to increase space for storing products and categorizing products clearly, which will help reduce misplacing products and inventory counting errors by staff .

SUGGESTIONS FOR CONDUCTING FUTURE RESEARCH

The independent study is the study of the problem from the data of a small sample population. The result may be able to be applied only on a small organization and may not work on a large company. Therefore, the researcher suggests to increase the size of the population in the next research or independent study or use the population from bigger organizations.

REFERENCES

- Aeknaree Toomphol, Chayada Plermpirom, Jarawan Songsan, Kongsak Lolertrattana, & Yutt Plermpirom. (2016). A Studying Improvement of Transportation and Warehouse of Steel Distributer Industry. Bangkok, Thailand: Southeast Bangkok College
- Ithiawatchakul.J, (2015). *Motivation (How to do it the right way)*. *HR A to Z: Great Words for Employee Management*, pp. 88-90.
- Nanthapaiboon.J, (2014). *Discipline and Disciplinary Action*. *Human Resource Management in The Tourism Industry*, pp. 165-171.
- Nanthapaiboon.J, (2014). *Job Analysis and Design*. *Human Resource Management in The Tourism Industry*, pp. 65-76.
- Aphipratyasakun.K, (2010). *HR Factors, Warehouses and Distribution Centers*, pp. 145-146.
- Aphipratyasakun.K, (2013). *Lean Production Distribution. Warehouses and Distribution Centers*, pp.187.
- Ploypanichcharoen.K, (2013). *Process Quality Control. They Made Me a Manager*, pp.169-183.
- Disilatam.K, (2011). *Lean Automotive Industry logistics: Part I*. *Industrial Technology Review*, 16(211), 110-114.
- Nichanan Panyachowtikul. (2010). *Process Preparations and A Manual of How to Apply for Energy Industry License for Energy Regulatory Unit*. Bangkok, Thailand: Chulalongkorn University
- Tirawetworakun.P, (2010). *Personnel Training and Development. A Manual for Developing Personnel to Be Professional*, 2010, pp. 127-140.
- Rachata Kambun, Arthorn Chitsuntornchaiyakun, Chintanai Praisont, Kittichai Athikunlarat, Phongsai Petchrak Sirat Jangruksakul, & Somsakao Sanitwong Na Ayudhya. (2013). *Waste elimination*. *Operations Management*, pp. 323.
- Theanchai.S, (2016). *Enhance Efficiency of Automotive Warehouse Management, A Case Study of Suv Auto Part Co., Ltd*. Chonburi: Burapha University
- Siricharoenwat.S, (2012). *The Efficiency Increase of Warehouse Management: A Case Study of Phumthai Comsys Co., Ltd*. Bangkok, Thailand: The University of the Thai Chamber of Commerce
- Kwaiphan.S, (2012). *The Approach of Potential Legal Officer Development by The Mentoring System: A Case Study of The Office of The Council of State*. Nakhon Pathom: Mahidol University.
- Kongkasawat.T, (2010). *Mentoring System: Another Tool for Developing Employees*. *Supervisor and Personnel Management*, pp. 90-98.
- Theppitak.T, (2011). *Warehouse Management System*. *Logistics and Supply Chain Management*, pp 244-245.

The Knowledge of Logistics Accounting on Warehouse Efficiency Management of Logistics Personnel in Amata City Industrial Estate.

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Abstract This article aims to 1) measure the knowledge of logistic accounting of logistic personnel in Amata City Industrial Estate 2) study the warehouse management efficiency of the logistics staff of the company in Amata City Industrial Estate, and 3) analyze the impact of logistics accounting knowledge for warehouse management of logistics personnel in Amata City Industrial Estate. By study the distribution of knowledge, costs, and methods that can be applied to warehouse management costs, organizational account costs, analysis of procurement data, delivery restoration and operations related to cost, space usage costs and other things that can bring this expense knowledge applied to improve the transportation, warehouse distribution, and customer service to be more efficient.

Keywords: Logistics Accounting, Warehouse, Logistics Personnel, Amata City Industrial Estate.

INTRODUCTION

Logistics cost is an important factor affecting the competitiveness on both macro (national) and micro level (firms). Logistics cost indicates the performance of logistics industry, efficiency level and its competitiveness. (Zakariah & Pyeman, 2013). Manufacturing warehouses can be used to store raw materials, work in process inventory, finished goods and supplies. Along with warehousing costs, there are other costs that can be included in inventory costs. Warehousing costs may be significant. Analysis should be performed by company management as to treatment of such costs.

In general, most manufacturing companies include warehousing costs of raw materials and work in process inventory as part of inventory costs. Such costs, therefore, become an asset until the inventory is sold and becomes cost of goods sold expense. Warehousing costs related to finished goods are included in period expense or costs and are not included in inventory costs.

Currently, due to high competition, whether buying – selling in various formats in which every company must have a logistics cost management. Logistics personnel are task with the responsibility to prepare budgets, to find ways to reduce cost, to monitor and control logistics and much more. Logistics cost are very important in the composition of company warehousing management costs.

At present, Amata Nakorn Industrial Estate There are areas for companies to operate businesses such as Japanese companies and famous international companies located in industrial estates. There are more than 60 companies in the industrial estate, representing 66% and 16% Thai companies with an area of approximately 25,000 rai, according to the latest statistics.

RESEARCH PROBLEM

Despite of its significance logistics cost accounting and management in Amata Nakorn Industrial Estate, logistics personnel may not or may not properly addressed logistics cost which remains incoherent to the cost reduction opportunities.

RESEARCH FRAMEWORK

Reducing logistics costs and improving logistics and supply chain processes Considered an important element In business administration in competition Therefore, the cost of logistics Therefore it is an important strategy to achieve those objectives. An interesting the question is

1. How do logistic personnel see the importance of logistics cost accounting?
2. What is the attitude of the benefits of adopting the logistics cost method?
3. What is the knowledge and understanding of the methods of logistics costs?
4. How is it used?
5. What reasons are not being used?
6. What are some ideas of closing the gap between the importance of logistics cost accounting and personnel utilization?

AIM OF RESEARCH

The purpose of this study is to give an overview of the current state and issues of the understanding and knowledge of logistics cost accounting and especially in warehousing and inventory management Amata Nakorn Industrial Estate.

RESEARCH METHOD

This study used content analysis as a qualitative research tool, and supported by literature material with regards the concerned topics of the attitudes, perceived benefits, knowledge of cost accounting versus the actual knowledge, application of cost accounting.

EXPECTED FINDINGS

This study will find the gap between the attitude, importance of logistics cost accounting versus the actual knowledge and application of various logistics cost accounting tools at Amata Nakorn Industrial Estate.

IMPLICATIONS

This study leads to trigger the awareness of current state and issues of logistics cost accounting and management in Amata Nakorn and lead the necessity of up skill the knowledge of logistics cost accounting for different level of logistics staff, which could lead to signification savings for the companies in Amata Nakorn Industrial Estate.

SCOPE OF THE RESEARCH

Classified logistics personnel into Senior Management, Middle Management and Operational Staff in Amata Nakorn Industrial Estate. The research tools should be able to ...

- 1) To study the perception, importance and knowledge of logistics cost accounting,
- 2) To determine the knowledge of various logistics cost accounting methodologies,
- 3) To determine which of the logistics costing methodologies are already being applied and at what level of maturity.
- 4) To analyze the gap between the importance and the applications of cost accounting methodologies versus actual active usage.
- 5) To determine potential actions such as training of the logistics staff, use of consultants, send for educations, etc
- 6) To measure the knowledge of the logistic accounts of the logistic employees in the Amata Nakorn Industrial Estate
- 7) To study the warehouse management efficiency of the company's logistic staff in Amata Nakorn Industrial Estate and
- 8) To analyze the effect of knowledge about logistic accounts on the efficiency of warehouse management of the company logistic staff in Amata Nakorn Industrial Estate. Research scope

AGREEMENT RESEARCH

In this research, the researcher will study and collect data from specific target populations. Only in Chon Buri province

LITERATURE REVIEW

Presenting in this chapter, the researcher wishes to present concepts, theories and research related to the logistics cost accounting methodologies, the role of logistics cost efficiency and effectiveness in the organization, focusing on warehousing management of logistics staff at Amata Nakorn Industrial Estate from textbooks, books, articles, publications and online media, both at home and abroad defining variables, conceptual framework used in education. Formulate research hypotheses and defining the operational definition as follows

Logistics Cost Accounting

Divided into 2 types, which are traditional cost systems or cost accounting and Activity Based Costing Systems (ABC), a cost management system developed from traditional cost systems to increase the efficiency of cost data closer to the truth. Activity-based costing methodology is a modern costing method commonly used in today's business.

ABC activities are divided into 5 steps as follows

- 1) Activity determination In the target work site which must be considered in full detail
- 2) Calculate the cost of factors or resources (Input) used in all logistics activities By using various accounting documents calculated by each factor to find the cost of how much each part costs. This information must appear on the document and therefore should request cooperation from the accounting department and other relevant departments to collect the information.
- 3) Use the cost of the things used to be suitable for the activities of the organization
- 4) Using the data to calculate activity-based costs
- 5) Data collection To let the logistics staff know about the workload of each activity Which means the number of times the activity is performed which can be observed from The units of each activity will be different. Normally, the accounting staff will record the information. But the logistics staff should know For analysis, data must be collected in the actual work site. Which is quite difficult, but the result is worthwhile because it provides the necessary information for analysis to bring to efficient logistics management especially the improvement of the control and distribution system for advancement with higher efficiency (Dussadee Buntam. 2017).

Traditional costing system or cost accounting refers to production costs and costs that are not related to production. The information that the management receives is only the sum of the cost of production or service.

The role of logistics in the organization

1. Production and operation (Manufacturing and Operation) Logistics plays an important role in production and operation especially in the field of procurement (Procurement) raw materials enter the production line inventory control both raw material and finished goods, including the transfer of raw materials. And material handling in order to support smooth and continuous production. Which is an important part that helps the production to be more efficient in addition, logistics activities such as production planning / Scheduling, Demand Forecasting, raw materials and raw materials storage also play an important role in supporting the production of goods.

2. Marketing (Logistics). logistics has a role that is related to marketing. Especially in terms of demand forecasting, product fulfillment and shipping (Transportation) An efficient logistics activity will enable it to meet customer needs in time. And where customers want resulting in the highest customer satisfaction

3. Finance (Financial) logistics has an impact on the organization's finances, such as revenue and invest by having sufficient products to meet the needs of customers will be a driving force for the organization to increase revenue. While other logistics operations which is effective also helps to reduce the operating costs of the organization greatly. In addition, shorter lead time for raw materials and finished products also helps to reduce inventory. And reduce sinking costs resulting from excessive inventory storage as well

Warehouse management

Means specific management to allow warehouse employees to use the area to the maximum benefit. (Maximization of Storage Space) and reduce the burden of moving as much as possible. (Minimisation of Handling Operations) with the main objectives as follows

Build confidence in labor, tools and utilities are sufficient and in line with the level of business that is planned.

Satisfying the day-to-day working of the movement of goods. And payment By using quantity from procurement and shipping needs of the company

Able to plan continuously, control and maintain the use of various resources in order to provide service at an effective cost Worth the investment And suitable for the size of an ongoing business

Inventory

Refers to materials stored for operational use. Whether the operation, production, sales or other activities in the work process including various products that are ready to be forwarded to customers The inventory is divided into 4 main categories which are 1. Raw material which is the things or parts purchased for production. 2. Work-in-Process is the work in the process. Production or waiting to produce not every step. 3. Material maintenance (Maintenance / Repair / Operating Supplies) are spare parts or spare parts for spare parts for maintenance. When the original parts are damaged or expired, and 4 Finished Goods are the production factors that have been processed through the assembly into a complete piece of work Ready to be forwarded to customers

In this regard, raw material inventory management is to maintain a sufficient amount of inventory to meet customer needs. Which the products are ready to be delivered or sold to customers immediately upon purchase But not too much that it becomes a burden for management Whether it is space or storage costs Therefore, planning to forecast the amount of product storage at an appropriate level both in terms of waiting and maintaining the quality of raw materials. Therefore is the main problem of logistics That the organization must consider together with the forecasting activities for effective product demand.

REFERENCES

- Accounting and Finance for Logistics Service. Retrieved From: www.itbsthai.com>fillupload>document>doc_90
- BB Ilham. (2017). *Activities Base Costing*. May. MIM12. Retrieved From: <https://bit.ly/2Rxwrb1>
- Buntam.D, (2017). *An analysis of the cost of production of industrial work pieces using the activity costing system*. KMUTT Research and Development Journal.12, 36.
- Duangmanee Komaratat. (2010). *Cost Accounting*. Bangkok, Thailand. Chulalongkorn University Printing House.
- Logistics Division Department of Industrial Promotion. (2018). *Best Practices & Lessons Learned*. Mar 1st. Nantakarn Graphic Printing.
- Logistics Division Department of Industrial Promotion. (2018). *Logistics and Supply Chain Management*. Oct 4 th. Aprintandpack.
- Logistics Division Department of Primary Industries and Mines. (2018). *Guidbook for Supply Chain Logistics Specialists : Warehouse and Distribution Management*. May. Pimdeekarpim.
- Mee-ngoan.B Ph.D. (2017). *Logistics and Supply Chain Business Research*. Bangkok, Thailand. Suan Sunandha Rajabhat University. (2018)
- Tongsokhowong Anurak. (2015). *Cost Accounting*. Retrieved From: <https://goo.gl/Mkqh1W> .

Tourist Supply Chain Management For Training & Seminar.

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Abstract This article aims to study tourist supply chain management for training & seminar on various activities, including gain the knowledge, experience in teamwork, good opinions, teamwork, etc., which is the travel participants learning style. Nowadays, many tour companies have come to sell tour serviced in this way, for companies and organizations whose research used qualitative research methods, with quantitative interviews, used in-depth data collection from tour companies about how to create and use them at every step from planning, information, food and accommodation, transportation, customer outreach, plan presentation, etc., until the real tourism workshop and operating results, as well as to study the behavior and opinions of companies or organizations that provide services to the management elements of supply chain tourism training seminars, that should a tour company come in to help organize training and tourism seminar.

Keywords: Tourist, Supply Chain Management, Training, Seminar

INTRODUCTION

Nowadays, tourism is regarded as having an important role to contribute to national development and the quality of life of the general public. It is also an important tool in driving the economy, creating jobs and increasing income for the country. As well as making the country grow sustainably as well. Dumngng Thothong and the group (2007) mentioned the classification of tourism that Tourism is an activity that humans use as a recreation activity. Learning to the world As well as strengthening relationships within the family Or a study visit in an organization Integration of various forms as follows: The type of tourism here refers to the experience of tourism, that is, in the classification of destinations (Type of Destination) tourist destinations can be divided into groups. Or the type of experience (Travel Experience) that tourists get into 7 types which are

1. Ethnic Tourism is a journey with Objective to observe cultural expressions and lifestyle patterns of different populations Races which will include a visit to his homeland Participation in dance rituals And participate in various religious ceremonies etc.
2. Tourism for culture (Cultural Tourism) is a journey. To experience and in some cases join the traditional way of life that has disappeared Returning to create a colorful attraction for tourists, which may organize food. Traditional costume festival Folk dance, ancient art and craft performances Also provided for services
3. Historical Tourism is a museum tour Which emphasizes the prosperity of the past May be a visit to monuments, churches, temples, various light and sound shows about events. In history etc.
4. Tourism for the Environment (Environmental Tourism) is similar to ethnic tourism, which is to attract tourists from afar But tourism for the environment Emphasizing natural and environmental attractions rather than human genres. Return to nature And admiration for the relationships between people and the world belong to this group Which will include photography, long travel, mountain climbing, small cruises And camping etc.
5. Tourism for recreation (Recreational Tourism) is a participation in a sporting event. Mineral springs preserve the world, sunbathing and joining the association To relax the mind in various locations such as sandy beaches, seaside beaches, swaying palm trees Excellent golf course Or excellent tennis courts Promoting tourist attractions In this group will attract tourists who want Especially leisure etc.
6. Business Tourism has distinctive characteristics that are meetings or meetings. Or seminar Which often includes other types of tourism as well When business tourism occurs Each tourist destination will have many types of tourism. Some places are tourist attractions for recreation. Environment and culture Depending on the needs of tourists.
7. Incentive Tourism is a tourism organized to reward employees. To be the welfare of agencies and companies For observation Meeting to learn more And for recreation The department and the company will be responsible for all expenses.

Summary from above The type of tourism is tourism. It is an activity that humans use as a recreation activity. Learning to the world As well as strengthening relationships Within the family Or a study visit in a variety of integrated agencies And experience in tourism Divided into 7 categories, including ethnic tourism. Tourism for culture Tourism for history Tourism for the Environment Tourism for recreation Business travel Tourism as a reward Which, if looking at this research topic, can see that supply chain management for tourism training Will be related to many topics together And for the term Tourist Supply Chain, which Tapper and Font (2004) gave the meaning of the supply chain. Chapter 2: Review literature and related research 25 Ecotourism quality development over The Tourist Supply Chain is a chain consisting of Traders that are involved in Each step of products and services To the process of delivering products to customers in the tourism business and X. Zhang et al. (2009) described the tourism supply chain as the organization's network Tourism that is involved in creating activities and products for

tourism Including the delivery of that service to tourists As well as organizing the tourism supply chain by dividing the components into 4 parts which are

1. Suppliers related to tourism (Suppliers)
2. Tour Operator
3. Travel Agents
4. Customers

In which these 4 elements are considered to be related and connected as one in the supply chain

For tourism supply chains, in general, there is no movement of goods because they are resources that cannot be moved. But will move the consumers into the area Through the process of providing various services by the organization or the tourist administrator Act as a producer Which is the upstream of the supply chain And the various steps of moving tourists to tourist attractions are the steps to move the products And deliver the product to the consumer or midstream of the supply chain and the downstream of the supply chain is the tourist, the final consumer. With an important objective in the supply chain Tourism is Creating satisfaction for tourists

Supply Chain Management Robert B. Handfield & Ernest L. Nichols, Jr. (1999) describes supply chain management as the management of processes related to supply. Of products and services The interaction will have an integrated nature. With the goal of creating added value And respond to the needs of the market for production, distribution and product delivery And including the communication of information and news With the objective of reducing the total cost of the business And increase the potential of competition In conclusion, supply chain management and various processes that Relating to business cooperation From upstream sources to delivery Downstream Customers. These processes cover the process of acquiring raw materials, promotion and marketing activities and production. Including the process of moving the goods to the hands of those who need the products However, various processes Will interact in an integrated manner, aiming to reduce total costs and create added value for products and services that bring superior competitiveness. In addition, Kogg (2003) and Island (2005) said Say Advances in environmental management and product acceptance from environmentally responsible manufacturers have affected manufacturers to have a complete system development. Since the beginning system From the factory downstream Of the supply chain system, as well as explaining the supply chain management that It is a way of combining the work of each organization together into a working Working in the corporate network

In addition, the definition of Supply Chain Management (SCM) in Thailand has been defined as It is the process of every step of administration. Chapter 2 Review of literature and related research 26 Ecotourism quality development in the Northeast From the import of raw materials into the production process Order process Until delivering products to customers to be continuous and with maximum efficiency While also creating a system for the flow of information that causes The work process of each department is passed throughout the organization. The flow of information also includes customers. And raw material suppliers as well (Supply Chain Management, Online, 2009) and Manachai Wongroj (2003) stated that Supply Chain Management is an important part of helping organizations to improve management capabilities. Such as reducing inventory, increasing productivity or reducing waste in the work process, promoting business growth such as increasing opportunities for launching new products faster. Opening up new markets Creating more customer satisfaction, promoting business sustainability, such as reducing business costs Working capital management Supply chain management is the overall process of the flow of materials, products, and information and transactions. Through an organization that delivers, manufacturers, distributors, to customers or consumers. These relationships are In order to improve the organization's supply chain management, the important thing is to give the organization the ability to manage Business growth And business sustainability Viewing angle adjustment Implementation into the concept of supply chain management, therefore, should fully understand the meaning of supply chain management in order to be able to consider And set the strategy correctly and for management, both now and in the future, organizations should pay attention to important issues as follows

1. Making profits at present is more difficult. In the future, organizations may need to manage profits. Specifically by customer types and products and looking for opportunities to create long-term profits in the future
2. Future corporate leaders must focus on creating partnerships. Organization development will be In the form of networking (Networking Organization)
3. The work of the personnel will focus on a variety of work. Work across cultures and receive compensation based on your work. And give importance to co-ownership
4. New business channels are changing and opening up business opportunities. Traditional channels Are changing themselves to maintain the market conditions. With electronic commerce defined And new channels There are middlemen and a new business investment schedule.

5. Having more channels Globalization Having a variety of customers the increased number of competitors makes organization management more difficult. And enter into an organization that expands and focuses on responsiveness Specific customers are individuals.
6. Use a system for decision-making and electronic commerce
7. Evaluation and direction of the organization to focus on the value of shares and added value of the business.
8. Focus on personalized products and services. And give more importance to price Customers have expectations More services
9. Quality is a prerequisite and customers do not want a variety of products but want products that are right for them. The organization must focus on specific marketing by using raw materials together. Including focusing on the production of products that are more unique
10. Marketing must become the focus of each customer. Chapter 2 Review of relevant literature and research 27 the development of quality of ecotourism in the Northeast.
11. Management emphasizes on creating more alliances, such as becoming more partners with competitors both In a singular and multilateral manner. Therefore, supply chain management Therefore has been accepted and used widely To improve the efficiency of the supply chain system Including the efficiency of transportation and activities, material planning and data control Including those with a stake in the supply chain network

The process of supply chain management for tourism training. Seminar will start from the tour company Will think of tourism management Is a picture in my mind Make a list plan. Using methods Plan-Do-Check-Action Study data, survey areas, find clients, propose improvement plans Take customers to explore the area, including accommodation, food, transportation. Conducting tourism training activities and seminars Finally, when the event is finished, activities will be evaluated. To make the customers or participants of the event the highest satisfaction

OBJECTIVES OF THE RESEARCH

- 1) To study supply chain management For tourism, training, seminars That there is a way to do it
- 2) To study the opinions of tour companies that organize training tours and seminars And participants
Workshop tour That knowledge, experience or have any opinions?

LITERATURE REVIEW

Supply chain management concepts is a systematic relationship between the connection of units or points in the production of goods or services starting from the raw material to the final point, namely the customer. In general The supply chain consists of important points: suppliers to suppliers. Manufacturer factory Distribution Centers (Mentzer, et., 2001) Supply Chain Management Is the operation of the part that relates to the chain of goods movements Which will truly bring benefits Including the design of the said chain relationship To maximize benefits for customers And put into operation (Vogt et al., 2002)

For tourism, it is defined as "Moving temporarily to destinations other than workplaces and residences There are activities during the stay at that place and there are various facilities to meet the needs of tourists. "Although there is no consistent definition of the various researchers that describe tourism. And lack of theories related to tourism (Franklin and Crén, 2001). But the concept of tourism as a theoretical subject leads to the emergence of theoretical and educational concepts that create literature or the essence of tourism. There are some theoretical models related to tourism such as descriptive models. Explanatory model And forecasting models The descriptive model describes the tourism system. While the descriptive model helps to visualize the function of the system and subsystem, while the predictive model is developed based on the causal relationship Which helps to predict results.

Tourism training and seminars have become widespread and used to develop manpower in the company. Or more organizations Most of the interview questionnaires often organized this seminar's tourism activities. During Friday - Saturday - Sunday for about 3 days 2 nights, or maybe 2 days and 1 night, depending on the policy. And the budget of that company during the activities that travel and stay together There will be both academic departments Games, recreation, entertainment and leisure, which results in a positive effect on knowledge, experience, as well as encouragement for the participants of the activities of the company or organization that participates as well. Paid in organizing the seminar Can also be used to reduce the company's regular tax up to 200% of the actual cost as well

SCOPES OF RESEARCH

Study of supply chain management for tourism workshop training Will start from the process step from upstream to downstream By studying the management style for maximum efficiency By starting with the company that arranges the training workshop What steps are being taken From thinking of the project, collecting data, planning the presentation to the customers, summarizing the work, bringing the customers to explore the actual area Organize a workshop tour And finally, an evaluation of the operations This article is a study to examine the potential of companies that organize tourism management training seminars. That has carried out various activities While traveling and traveling for seminars Effectively For participants to gain knowledge, skills, experience as a team Creativity as well as fun and entertainment as well

RESEARCH METHODOLOGY

The tools used in conducting this research are to collect data from companies that organize tourism management training seminars. From companies that participate in activities And participants of the actual activity By interview And answer the questionnaire In which the question in the questionnaire relates to

- 1) Methods and procedures Supply chain management For tourism, training, seminars That there are ways to proceed
- 2) Comments about using the service Of the company that participated in the activity And participants of the actual activity About situations, problems, and urgent solutions that may occur during the management of the seminar
- 3) Opinions about the development of supply chain management for tourism training seminars

The researcher has designed and built the tools And collecting data according to the following steps:

- Study concepts and theoretical models from academic documents, textbooks, websites, and related research Is a compilation of data from Many sources to guide the questionnaire construction.
- analyze the objectives, content and research structure to determine the guidelines and scope of the questionnaire
- Create a draft of the questionnaire By interpreting the scope of the questions in accordance with the research objectives
- Bring the draft questionnaire to the advisor for consideration Check and adjust And bring it to experts with knowledge and experience in information systems and supply chain for training seminars
- Use the interview form to complete the interview. And collect data with research samples

In which the researcher will research the data And summarize by using statistics, frequency, percentage, mean and standard deviation.

BENEFITS FROM RESEARCH

1. Learn about the process and steps in creating a supply chain for tourism training and seminars. As well as various forms of activities during the process
2. Know the potential And limitations in the development of the supply chain for training seminars.
3. Acknowledged the importance of training seminars that play an important role in the current development of manpower. Rather

REFERENCES

- Chain Management. New Jersey: NJ
- Franklin, A., & Crang, M. (2001). The trouble with tourism and travel theory?.
- Jintana Somsawat, Chakkrit Chiawiriyaboonya and Vachiraphon Kerdsuk. (2009). Economics of sources Ecotourism in the Northeast. Retrieved from www.ora.kku.ac.th/RES_KKU/ATTACHMENTS.../-942645249.pdf.
- Khamphong Thoeng Thong et al. (2007). Khmer civilization tourism routes in Thailand, Cambodia, Laos. (Research report). Bangkok, Thailand: The Thailand Research Fund.
- Tantikorn Khotchari. (2012). Behavior of Thai tourists in tourism.
- Komsan Suriya. (2008). Logistics for tourism. Bangkok, Thailand.
- Manachai Wongrot (2003). *Do you know the Supply Chain really well? ..* Vision World, 8(44), pp 25 - 30. Burapa university
- Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business logistics*, 22(2), 1-25.
- Pen Sricharoenwanit and Nitipon Phuchachot. (2000). Developing the ecotourism market of the region. northeast : A case study of tourist destinations in 5 provinces: Khon Kaen, Nakhon Ratchasima, Buriram, Loei and Ubon Ratchathani. Khon Kaen: Faculty Humanities and Social Sciences, Khon Kaen University
- Robert B. Handfield and Ernest L. Nichols, Jr. (1999). Supply Chain Management. Introduction to Supply South Africa: Oxford University Press.
- Vogt, J.J., Pienaar, W.J. and De Wit, P.W.C. (2002). Business Logistics Management: Theory and Practices.
- Xavier Font et al. (2008). *Sustainable Supply Chain Management in Tour. Business Strategy and the Environment* 17: pp 260–27
- Zhang, X., Song, H., & Huang, G. Q. (2009). Tourism supply chain management: A new research agenda. *Tourism management*, 30(3), 345-358.

Increasing the Efficiency of Warehouse Management, Forward Steel Line Company Limited

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Abstract: The purpose of this research is 1) to apply the theories learned to be useful 2) to increase the efficiency of the warehouse and 3) to analyze the efficiency of the logistics management of Forward Steel Line Company Limited. This research is a study on increasing the efficiency of warehouse management. By considering three main topics which are internal warehouse layout Inventory turnover rate And dividing the products into categories according to the activity base model and analyze the results to understand the meaning in order to understand and use the error to correct for the most efficiency to that warehouse.

Keywords: Efficiency, Warehouse Management, Forward Steel Line Company Limited

INTRODUCTION

Nowadays, most companies, both companies that manufacture or buy goods, often have warehouses. Keep products or raw materials for production or as an intermediary in transferring goods except companies that produce according to customer orders Warehouse management is therefore an important aspect that cannot be overlooked by the company. Nowadays, due to warehouse management, many factors need to be considered, including capital, customer demand within the market And must also consider the costs that must be borne by having a warehouse that has Value enough or not for the return received. Due to the fact that the warehouse is associated with the company's costs that also means being related to the company's survival as well. Because of the higher cost but unable to produce good results for the company, resulting in the company's profits decreasing as well and if the reduced profits would follow. Which has many problems this research is therefore interested in warehouse management, although it is not a direct revenue source but it also has an indirect revenue contribution. There are products that can support the needs of customers and in time when the products are handled properly in the warehouse.

RESEARCH OBJECTIVE

- 1) To apply the theories learned to be useful
- 2) To increase the efficiency of the warehouse
- 3) To analyze the efficiency of the logistics management of Forward Steel Line Company Limited

LITERATURE REVIEW

Inventory (Inventory) means materials or goods. Stored for the sake of operations may be production, sales, or other operations. Inventory management (Inventory Management) means keeping resources for use now or in the future for the business operations proceed smoothly. Through planning determine the amount of inventory that appropriate. Inventory can be divided into 4 major groups which are raw materials, work in process or work in process. Laboratory equipment, tools, equipment used for maintenance and production and finished products if there is no production inventory that not be smooth. In general, the sales department is quite satisfied if there is an inventory many because it feels smooth. However, the duty of the inventory is to maintain balance between demand and supply resulting in economy of scale because of order a large amount is a cost reduction. And the warehouse helps to store that large quantity of goods. But the inventory considered as direct cost Demand forecasting know the amount of production is therefore directly related to a fixed product, finance and prevention of various risks, in the case that the factory has a lot of raw materials. If the inventory has too much, it costs unusually high storage. If there are too few, it may interfere with the market balance or causing production jams (Jane Banchid Company Limited, 2001) Expenses that are the value of the inventory (Inventory Value) is the value of the asset that is inventory, this value will be the cost of inventory or is the cost derived from multiplying between unit cost and inventory quantity (Logistics Corner, 2009) Importance of Inventory Management Once the product has been produced, it is necessary to manage the distribution of the product. Before the product the final consumer will have a warehouse as a central unit between the production unit and the unit. Consumed in the past, products stored in stockpiles are agricultural products. Keep waiting until the harvest comes one more time causing the product to not move (Dead Stock) which is not popular in storage principles Current inventory. Nowadays, products should be constantly rotated for freshness circulating in and out using the FIFO (First in First Out) principle. Any product that goes into the warehouse first is rotated leave first to reduce the deterioration of storage for a long time in the Supply Chain. It is the part that creates the cost whether the supplier Factories, manufacturers, retailers, wholesalers, storage and product distribution is therefore a branch of science in

logistics. Warehouse is a place for storing, storing and distributing products. Different names such as distribution centers Distribution centers and warehouses, etc. The term warehouse therefore is a word that has all the meanings. What is it called? That depends on the function of each type of warehouse. The warehouse that receives the goods to be sorted and distributed is called the distribution center. (Distribution Center) and the process is called Cross Docking while some warehouses have additional functions. Which means that when you pick up the item and store it and responsible for allocating the product before delivery according to the purchase order Therefore there are additional sub-steps consisting of goods entered, stored, order goods (Order Picking) Which is a process that takes a lot of time and manpower. Finally, inspect the package and deliver, that is to say, it is responsible for the distribution. Therefore called the distribution center products reducing the time and steps in the distribution center can be done as well. Computer assisted ordering buy. However, considerations regarding warehouses include Issues about the owner of the production line, sales and distribution that do not have their own warehouse, do not want build your own warehouse, may use the public warehouse rental service and issues regarding warehouse locations should be set up in a place that responds to the user perfectly.

Warehouse Operation Planning

Each type of warehouse and each storage facility has different in terms of the nature of the business, the shape of the storage space and the characteristics of the product that needs storage It may fluctuate all the time regarding. The type, type, and quantity of the goods that are imported into storage and shipped out each time that the business progresses therefore , the storage plan has been carried out continuously to be able to be used as well with the situation that occurred and change at any one time to book each warehouse. Type, but in general, product storage planning has similar factors to consider. As follows:

1. Product similarity (Similarity) The similarity of the product here means characteristics, qualifications, and intent of use which is a factor in classifying products into categories belonging to the first type. Products must be stored in the same category, May Stored as a group out again for the convenience of storage and payment first in specifying storage space for each product means storing products of the same type, for example Apparel items stored in one area And electrical appliances products stored in another area each type, each area like this, respectively

2. Popularity of products (Popularity) The popularity of goods entering and leaving the warehouse is the first factor in determining the storage location of goods. What kind of product what kind is there? Should be move to the delivery area or the area separate from the package the most. Same as products that are stored as sub-parts in sub-storage cabinets Products that are frequently received, often paid must moving back and forth between most of the storage positions that is to give travel but each trip has the closest distance.

3. Size, Weight and Quality of each product that kept in a warehouse that is constantly changing Due to user needs or people who receive products out of the warehouse. And not receiving the same new products every time. Maintaining the importance of volume size is important. Should be considered the substantial numbers of products due to age, uncertainty of receipt and payment, and the level of storage and accumulation in the up and down all the time Storage staff must be able to manage the quantity of products by classifying. Products in bulk According to the size of the quantity of that product, taking into account the storage space of that product Occupied.

The size of each product is a determining factor in the type of storage equipment used. For that item and size also affects storage costs. For example, shampoo washing your hair in a box of 4 dozen bottles. Should be keep as much as possible in the receiving or delivery area. As far as possible In order to have the shortest distance to move until the full cycle of the admission Come to the storage and distribution of that item Products with high tightness should be heavy, stored in areas with low ceiling openings or roof structures unless the product requires an electric hoist or the crane on a tall structure to lift and transport, such as areas for goods moving fast, medium and slow. The storage area should be used for many types of storage so that Many items can be used and have different storage volumes. The volume of storage space required for a particular model. Can be calculated from the results of the size of that product in each item Multiplied by the amount needed to be stored within the storage space that specify for product lists with different turnover rates.

4. Special characteristics of the product (Characteristics of Material) Most lists of products general categories are products of normal nature that do not require storage or transportation by means of special, in addition to considering the rules of similarity Frequency rate Turnover and size, weight, and volume as already mentioned However, there are still some products that Must be specially treated, including the following items. Hazardous Materials. Some products may have special characteristics that can be dangerous by itself By being exposed to other types of teaching and the danger may Causing damage to the goods or to people operating in storage and transportation in the warehouse Such as products that are chemicals from acids or alkalis that are high intensity Or products with volatile odors Dangerous, etc. These products must have a place for storage specifically to prevent as long as it happens.

-Products that may be easily lost (Sensitive Materials) many products that have a ratio of trade value high compared to the size of the product that can be sold at a good price. Because there is a lot of people wanting to sell easily in the market may therefore be of interest to employees in stealing. Causing loss to the warehouse business products of this nature must be specially controlled for storage and must be kept close to the eyes of the senior officials to be able to look after at all times and have appropriate preventive measures. Perishable materials. Some products have a shelf life. Co., Ltd. needs constant monitoring closely, ensuring that the old rotations are out. To prevent deterioration from being preserved for too long most food products Want to keep in a cold room or storage area that needs to control the

temperature to suit the characteristics with those products. Every product of its nature that has deteriorated nature must be kept the most suitable treatment for each type

5. Capacity of Storage Facilities one of the factors called capacity which is an important thing to consider in storage planning. It is important to know how much storage facilities are. Capacity in volume and capacity in weight, which are normally calculated in cubic units and metric tons in which this consideration must take in to account the physical characteristics of the facilities. Which is convenient, the location, quantity and size of warehouse doors. Rate the floor's carrying capacity the size and location of the loading line and the slope of the Load height of the ceiling and in the case of a multi-store building, it also includes the position, capacity and affects. The volume of space that can be used for the net preservation purposing Determination of storage location and type of storage used for warehouses or facilities the convenience of each type of storage. Whatever happens, it depends on the position of the door. Lighting, pole size, load capacity of the area to be able to place products Height of the ceiling injection system Automatically extinguish Available l Locations of fire extinguishers (Sakul, 2004).

Inventory Turnover

Inventory turnover is the relationship between a company's sales and a fixed product. Finance used by the business to support sales activities at that level of sales. In general, product turnover inventory will be calculated annually. But can be calculated every month if the sales tend to be the highest during that 2-3 months. The inventory turnover will not always have a unit regardless of the method calculated. In 3 ways, but may be counted as the number of cycles (or times) of the average number of units of inventory or the value of the average inventory that is taken to create the number of units sold or sales, which in calculating the turnover of that inventory There are 3 ways of thinking:

1. Calculation method type 1, suitable for the stock item (Stock Keeping Unit - SKU) same all because if the warehouse has many products, then the use of the number of items sold compared. The average number of pieces in the warehouse for calculation will cause the interpretation to deviate from the meaning of true, for example, selling a bottle of 700 cc of shampoo would create revenue for the business not equal to selling shampoo. 1 envelope, therefore, can be counted as 2 items that are considered too superficial.
2. Calculation method type 2 is suitable for general wholesale and retail products purchased because numbers can be easily calculated and clearly see that the average inventory can be circulated for how many sales did it produce that year?
3. Calculation method type 3 requires accounting data regarding the cost of goods sold but the result from this calculation method is an answer that shows a clear picture of the inventory turnover. Because the profit portion has been separated from the total amount mean while the second calculation method still there is a hidden profit in the total sales.

Inventory turnover is the ratio between the number of units sold or sales. Sum or cost of goods sold in that year with the average number of units of inventory or the value of the products. The average treasury bills during that year in which the inventory turnover is an index used to measure. How much the efficiency of the enterprise inventory management is Circulating value of Inventory is considered an important part of the operation of the logistics department.

However, when looking at numbers, only the greater the value of the inventory are turnover a lot. That means that the inventory doesn't stay on the shelves in the warehouse for a long time. But will rotate in to collect on the shelf and quickly moved away from the warehouse. When considered in terms of meaning physical, large inventory turnover value Bring benefits as follows.

1. Businesses use inventory investments efficiently (Efficient Investment) because the inventory can be rotated many times per year and not left in stock.
2. Inventory is always fresh (Fresh Merchandise), for example, food products. Put up for sale in the supermarket. If any department has a fast product turnover Consumers will be assured that the product is fresh and helps reduce the age-related concerns from the date of manufacture. Was also being put forward can also be used as a selling point

Classification of Inventory Based on Activities (ABC Analysis) Is a method of classifying inventory into 3 main groups based on the principle of Pareto that focuses on the small amount of high value products more than product groups Critical Few and Trivial Many This concept leads to control inventory by using unit value as the basis for classification of products. Inventory of type A will account for 15% of the total inventory, but there are High value, accounting for 70-80% of total inventory value. Inventory type B will account for 30% of the total inventory, but there are High value, accounting for 15-25% of the total inventory value Inventory type C will account for 55% of the total inventory, but there are High value, representing 5% of the total inventory value Using the ABC Analysis principle to define the of that collection characteristics. Use the amount of consumption data at occur during the year as a separator, allowing more storage space And can reduce the problem of loss Missing and mixed by analyzing the data using Pareto's Diagram principle to divide which Can be used to classify information by value Or importance And can also be applied in Cost management In order to control costs and know the true cost Used to solve problems in Inventory Management System. This principle is used to reduce costs to a minimum and create that maximum profit. Pareto's principle of inequality in the distribution of importance is there are many products that Products that are few but very valuable are important. By those values pareto said that sometimes 80% of our assets are in our hands. Only products that make more than 80% of the profits come from products that we have only 20%. On the other hand, we may have only 20% of the products we don't need or sell, but we have more than 80% in our hands, from 80% of

our products come from only 20% of our products. This principle may be called the 80% Principle. Therefore, there should be a clear classification of products, such as products that generate more than 80% of their income. Of all that, there are only 20% to be Group A and existing products about 40% and make sales to Approximately 15% are in Group B and the remaining 40% are able to sell at only 5% in Group C. Therefore, products in group A should have special care, such as the frequency of inspection. More (Items Should be Monitored More Frequently) and may have more inventories (Higher Safety Stock Level) to prevent lack of stock. In contrast to the C category, the frequency in Inspection should be less, and should not keep these products to reduce the cost of storage and for the principle of checking stock should use the following principles.

1. Should check the stock when the products are few or close to Safety Stocks Level because No need to count many products. And products in group A should have more frequency in counting
2. When products are reported to be scarce or not available
3. There are changes due to reasonable reasons, such as stock control staff, unusual long-term leave, Theft problem Or cause a fire.
4. Stocks should be counted outside of work hours to prevent the work from being projected.

CONCLUSION

In conclusion, the appropriate inventory turnover setting requires. Compare the advantages and disadvantages that will occur in which you will be weighted on what is important in different circumstances for example If your business wants to create a differentiation strategy (Differentiation) from competitors by raising the level of excellent customer service. You must allow the product level higher average inventory to be able to provide comprehensive services for all situations. Whether to be a customer with increased demand at any time or the product is complete in the entire product line. You must accept that the inventory turnover must inevitably be low, which does not imply. It is a logistical operation of inefficient inventory management, which is a layered view. One way but look deeper into the level of customer service that is rising

REFERENCE

Book

Dr. Kamai Aphisiphasakun (2004). Warehouse management. Bangkok: Police

Jay Heizer, Barry Render. (2008). Production Management and Operations. (Dr. Chintanai Phraesan, Asst.

Phongsai Phetarak, Dr. Arthon Jitsunthornchaikun, Teacher Rachat Kha Bun, Teacher Somsak Sawanitsanitwong

Ayutthaya, Achan Kittichai Aphikulrat, Achan Sirirat Chaeng Rak Sakul Translator). Bangkok: Pearson Ed.

See Vacation Indochina

Electronic media

Jane Banchid Company Limited (Copyright, 2001). Inventory turnover. Retrieved Aug 26, 2019 from http://www.jb-mhg.com/e_logistic/05_j_01.htm.

Thammasat University (Copyright, 2001). Supply chain. Retrieved Sep 10, 2019 from

<http://www.bus.tu.ac.th/usr/sboonitt/im203/Supply%20Chain%20Management.doc>.

Logistics Corner (Copyright, 2009). Inventory Control. Retrieved Oct 12, 2019 from

<http://www.logisticscorner.com/index.php/2009-05-25-00-45-43/42-inventorymanagement/>

[383-2009-07-02-16-03-14.html](http://www.logisticscorner.com/index.php/2009-05-25-00-45-43/42-inventorymanagement/383-2009-07-02-16-03-14.html).

ABC analysis Retrieved Oct 25, 2019 from [http:// www.logisticscorner.com/inventory-abc-based-costing/](http://www.logisticscorner.com/inventory-abc-based-costing/)

The Relationship Between Supply Chain Administration and Service Capability of Palm Oil Purchasing Business At Chumphon Province

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Abstract: This research aims to study the relationship between supply chain administration and service capability of palm oil purchasing business at Chumphon province. 230 samples are collected from the owner of palm oil purchasing business at Chumphon province. The questionnaire was used to collect the research data. The research was analyzed by Percentage, Mean, Standard deviation and the statistics testing with Spearman's Correlation Coefficient. This research revealed that the majority of responses are female, age between 31 - 40 years, having undergraduate degree, are small business, and having their own funding. The level of supply chain administrations are revealed in each aspect, planning, sourcing and services are at the high level in over all delivery is at a moderate level, and return is at the lowest level. The important level of service capabilities are revealed in each aspect. Trust and reliability, speed, warranty, empathy are the highest level. Moreover, this study was found that the relationship between supply chain administration and service capability of palm oil purchasing business at Chumphon province with 0.01, significantly.

Keywords: Supply chain, Palm oil, Service capability

INTRODUCTION

Business competition is mainly focused on customer satisfaction. Responding to needs that are fast in line with changes in customers. And based on low production costs, maximum profits by producing the right amount Therefore, bringing tools to help manage the organization to achieve efficiency is very necessary. And tools that can help entrepreneurs In the current competitive environment, it is Supply chain management system. Which is a management system with concepts that focus on consistent and continuous relations It is a management system that responds to customers' needs with efficiency and effectiveness. By managing both internal and external departments Can deliver products or work pieces to the next department continuously Until producing a quality product Delivered to the customer as the customer wants. This concept shows that organizations can no longer compete alone. But must compete in the form of supply chains Or a competition that is networked In order for an organization to be successful it must have appropriate structure. And able to cooperate with agencies in the network to offer better and faster things to their customers In the past, most organizations tend to stick to management principles that focus on operations within the organization to maximize benefits. But doesn't give much importance to the suppliers and customers. In which the business model of the said organization is characteristic "Trading only" means products and services are bought and sold near the supply chain Also known as the Arm-length basis, by ignoring the long-term relationships and mutual benefits between departments that are further away in the supply chain. The result is the customer at the end of the supply chain. Receive goods and services with high cost. And low quality while the funds and resources in administration Is becoming increasingly scarce, so corporate executives are awake and start to realize that it is not necessary for organizations to do everything by themselves Often it is found that there are other departments outside the organization that have specific resources and techniques that are able to perform specific tasks better than themselves, or even if the organization itself has resources and techniques. That can be done but may not be in position Suitable in the supply chain. Thinking like this, the way That will lead to a sustainable competitive advantage in the present day is to manage the complex relationships of many business units. In which each business unit will offer its products and services But in the end, it must be assembled into a final product and service for a cost Lower and have a lot of added value to customers The success factor of this concept is how to make the relationships of all departments. Whether partner or suppliers mold together to achieve the benefits of all parties (Demonstration Panang Thong, 2005)

RESEARCH OBJECTIVE

1. To study the personal factors of palm oil pouring operators in Chumphon province.
2. To study the level of oil palm supply chain management in Chumphon province
3. To study the level of service capability of oil palm pouring operators in Chumphon province.
4. To study the relationship between supply chain management and service capability levels of oil palm yard operators in Chumphon province.

RESEARCH METHODOLOGY

This research Is a combination of both quantitative And qualitative The research instruments were 1) interview form and group discussion list form. Operating problems of oil palm plantation 2) survey research By using a questionnaire To study the services of oil palm pouring operators in Chumphon province, with research procedures as follows

The population used to conduct the study are palm oil pouring operators. There are approximately 492 oil palm plantations (Department of Internal Trade, Chumphon Province, 2019) and to avoid errors at the 95% confidence level and using random sampling methods. The researcher conducted The sample group is set to 230 places.

The content of this research studied the relationship between supply chain management and the level of ability in providing logistics services. Supply chain management consists of planning, raw material procurement, production, delivery and return. And the ability to provide logistics services consisting of Touch Trustworthiness and trust, speed, warranty and attention

Variable scope Personal factors include gender, age, occupation, income, education level, and ability to provide contactless logistics services. Reliability, reliability, speed, warranty, and variable care include supply chain management, planning, procurement of raw materials, production, delivery and return.

Time boundary This research takes time to collect data in documents. And collecting data by interviewing oil palm farmers. And palm oil pouring operators Takes approximately 2 months

RESEARCH RESULT

From the study of "The relationship between the exclamation chain management and service capabilities of oil palm field operators in Chumphon province" has the following effects

The results of general information about personal factors of the respondents found that Most of the respondents are female. Age between 31-40 years. Marital status has a bachelor's degree. Is a small entrepreneur Have sources of funds from your own capital Operates a business of buying palm for 1-5 years with the initial funds for operating a business of buying palm for 1 - 5 years, with annual income from palm operations for 1 - 5 years and most of them live in the district Most chars.

Table 1 Level of supply chain management of oil palm plantations in Chumphon Province

Supply chain management	X	S.D.	Priority
1. Planning	4.36	0.53	Much
2. Procurement of raw materials	3.92	0.36	Much
3. Production	4.39	0.31	Most
4. Delivery	3.41	0.29	Much
5. Returns	1.17	0.31	least
Total	3.45	0.29	Much

Found that supply chain management of oil palm field To meet the needs of entrepreneurs in Chumphon is important. At a high level When considering each aspect, it is found that production is of the highest level. Next is planning. Procurement of raw materials And delivery, respectively. Returns are important in administration. Oil palm supply yard supply chain least

Table 2 Service Capabilities of Oil Palm Yard Operators In Chumphon province

Ability to provide logistics services	X	S.D.	Priority
1. Touch	4.29	0.33	Much
2. Trust and trust	4.81	0.29	Much
3. Speed	4.56	0.28	Much
4. Warranty	4.84	0.30	Most
5. Take care	4.68	0.34	Much
Total	4.64	0.25	Much

From Table 2, the service capability level of oil palm field operators In Chumphon province Overall, found that The ability to provide logistics services is important at a high level. When considering each aspect found that Guarantees are at the highest level of importance, followed by reliability and trust, attention to speed, and exposure at a high level of importance, respectively.

Table 3 Analysis of the relationship between supply chain management and service capability of oil palm plantation operators in Chumphon Province.

Service capability	Supply chain management in general		
	Spearman's Correlation (r)	Sig (2-tailed)	Relationship
1. Touch	-0.11	0.04*	Very Low
2. Trust and trust	0.27	0.00**	Low
3. Speed	0.15	0.01**	Very Low
4. Warranty	0.20	0.00**	Very Low
5. Take care	0.11	0.07	Very Low
Service Ability	0.26	0.00**	Low

A test of Spearman's Correlation Coefficient, found that the overall supply chain management has a relationship with the service ability of the oil palm yard operators in Chumphon province is worth. Sig. (2-tailed) equals 0.00 which is less than 0.01. That is, reject the hypothesis (H0) and accept the hypothesis of (H1) means Supply chain management is related to the service ability of oil palm field operators in Chumphon province. At statistical significance of 0.01, with the correlation coefficient (r) equal to 0.26, which has a low correlation in the same direction, that is, if the overall supply chain management is more important Will increase the service ability of oil palm plantation operators to a low level When considering each aspect found that.

1. Service capability of palm oil pouring operators in Chumphon Province Things that touched have a relationship with supply chain management as a whole. With statistical significance at the level of 0.05. The correlation coefficient (r) is -0.11, which has a very low level in the opposite direction.
2. Service capability of oil palm pouring operators in Chumphon Province Reliability and reliability are related to overall supply chain management. With statistical significance at the level of 0.01, with the correlation coefficient (r) equal to 0.27, which has a low level of correlation in the same direction. Very reliable and trustable Will make the overall supply chain management more efficient
3. Service capabilities of oil palm pouring operators in Chumphon Province In terms of speed, it has a relationship with supply chain management in general. With statistical significance at the level of 0.01, with the correlation coefficient (r) equal to 0.15, which has a very low correlation in the same direction. That is to say, if operators of palm oil pouring operators have the ability to provide services faster Will make management More efficient supply chains
4. Service capabilities of oil palm pouring operators in Chumphon Province In terms of guarantee, it is related to overall supply chain management. Statistical significance at the level of 0.01, where the correlation coefficient (r) is equal to 0.20, which has a very low correlation in the same direction. That is, the operators of palm oil pouring operators have more guarantees of products and services which will make the management More efficient supply chains
5. Service capability of oil palm pouring operators in Chumphon Province In terms of care, there was no relationship with supply chain management in general. With statistical significance at the level of 0.05

DISCUSSION

1. The study of general information regarding personal factors of the respondents found that Most of the respondents are female. Age between 31-40 years. Marital status has a bachelor's degree. Is a small entrepreneur Have sources of funds from your own capital Operates a business of buying palm for 1-5 years with the initial funds for operating a business of buying palm for 1 - 5 years, with annual income from palm operations for 1 - 5 years and most of them live in the district Most chars

2. Supply chain management analysis data To meet the needs of entrepreneurs in Chumphon Province, summarized as follows

2.1 Planning: In overall, the effect is at the high level. When considering each item, it was found that Planning for product distribution in advance With the highest average (4.55), followed by the marketing plan for business expansion and data collection. With an average of 4.41 and 4.17 respectively

2.2 In procuring raw materials sources, it was found that In overall, the effect is at the high level. When considering each item, it was found that Is a person in the area Had the highest average (4.55), followed by garden owners contacting the entrepreneurs themselves and using advertising flyers with an average of 4.14 and 3.09 respectively

2.3 Production: In overall, the effect is at the high level. When considering each aspect found that Cut directly from the garden Had the highest average (4.74), followed by purchasing from regular customers of the canteen and determining Deliver goods into the factory day by day. With an average of 4.33 and 4.09 respectively

2.4 Shipping: In overall, it is at a medium level. When considering each aspect, it is found that Management that meets the needs of customers. Had the highest average (4.81), followed by delivery to various factories at a higher price and delivery to the palm yard With an average of 3.17 and 2.25 respectively

2.5 On the return side, it was found that In overall, the effect is at the smallest level. When considering each aspect found that Rotten palm Had the highest mean (1.13), followed by small palm and raw / soft palm With an average of 1.12 and 1.10 respectively

3. Data analysis of data on service levels of palm oil palm operators in Chumphon Province can be summarized as follows:

3.1 In terms of things that were found In overall, the effect is at the high level. When considering each aspect, it was found that There is a clear service notification. Had the highest average (4.80), followed by a friendly operator and a suitable and sufficient place to welcome customers. With an average of 4.24 and 4.19 respectively

3.2 Reliability and trust were found In overall, it has the highest level of results. When considering each aspect, it is found that Integrity for users Had the highest average value (4.95), followed by punctuality in providing services and not taking advantage of customers who entered the service With an average of 4.93 and 4.75 respectively

3.3 In terms of speed, it was found that In overall, the result is at the highest level. When considering each aspect, found that the service is punctual and systematic coordination Had the highest mean (4.77), followed by fluency With an average of 4.15, respectively

3.4 In terms of warranty, it was found that In overall, the result is at the highest level. When considering each aspect found that Reliable operation and safe operation The highest average (4.90), followed by working with politeness. With an average of 4.73 respectively

3.5 Regarding care and attention, it was found that In overall, the result is at the highest level. When considering each aspect, it was found that it was convenient and had the highest mean (4.74), followed by customer understanding and Have contact with the owner With an average of 4.68 and 4.63 respectively

4. Data regarding the analysis of the relationship between supply chain management and palm service capacity in Chumphon Province is summarized as follows:

4.1 Supply chain management relates to the service capabilities of oil palm field operators in Chumphon province. At statistical significance 0.01 with the correlation coefficient (r) equal to 0.26, which has a low level in the same direction.

4.2 Service capability of oil palm field operators in Chumphon province, in terms of contact, has a relationship with overall supply chain management. With statistical significance at the level of 0.05. The correlation coefficient (r) is -0.11, which has a very low level in the opposite direction.

4.3 Service capability of oil palm field operators in Chumphon Province, in terms of reliability and reliability, is related to the overall supply chain management. With statistical significance at the level of 0.01, with the correlation coefficient (r) equal to 0.27

4.4 Service capability of oil palm field operators in Chumphon Province in terms of speed has a relationship with overall supply chain management. Significantly Statistical analysis at the 0.01 level, with the correlation coefficient (r) equal to 0.15, which has a very low correlation in the same direction.

4.5 Service capability of palm oil pouring operators in Chumphon province in terms of guarantee has a relationship with overall supply chain management. Significantly Statistical level 0.01, where the correlation coefficient (r) is equal to 0.20, which has a very low correlation in the same direction.

4.6 Service capability of oil palm yard operators in Chumphon province regarding care has no relation with overall supply chain management. With statistical significance at the level of 0.05

CONCLUSION AND RECOMMENDATIONS

From the study of The relationship between the supply chain management is related to the service capability of the oil palm yard operators in Chumphon province. The researcher has the following suggestions:

1. Supply chain management in the palm oil industry for development and efficiency It is necessary to develop and improve the management style in various parts related to operators' palm oil palm service, which is to create a lot of credibility and trust. Which is important for the supply chain management of oil palm etc.

2. The guarantee of palm service quality will occur from errors between consumer expectations and actual results from service providers (Marketer). Therefore, in order to close the gap aforementioned And ultimately make customers satisfied There should be a warranty on the products that customers receive. When compared to the standards that customers expect (Customer Expectations)

3. The palm oil palm yard should have a consistent marketing plan. And have a proactive marketing plan continuously

4. There should be knowledge and competency development of personnel at all levels. Continuous Especially knowledge of various quality systems

REFERENCES

- Paniang Thong Demonstration. (2005). Strategic supply chain management. Bangkok, Thailand: SE-EDUCATION.
- Coyle, et al. (2003). The management of business logistics. New York, NY: Thomson Learning. Canada.
- Sorat, T. (2007). Application of logistics and supply chain. Bangkok, Thailand: V-Serv Logistics.
- Department of Internal Trade, Chumphon Province. (2019). *Palm oil, palm fruit and daily palm oil prices Agricultural Trade Promotion Division 1*. Retrieved from https://agri.dit.go.th/index.php/department_doc/3
- Chatchat, C. (2019). *TDRI report*. Strategic Plan for 3-Year Logistics and Supply Chain Research (2019-2021) Issue 149 February 2019.
- Kerdpitak, C. (2009). *Increasing competitive advantage by using logistics strategy in Oil palm industry. Presenting research in logistic management conference. Logistics and Supply Chain 9th (ThaiVCML 2009)*. Chon Buri: Burapha University.
- Amornrak, S. C., & Kanlayarat, T. (2015). Causal factors influencing the creating competitive advantage of the service sector logistics in the central region. *Journal of Research and Development, Valai Alongkorn under the Royal Patronage*, 10(3).
- Sopadaeng, A. & (2008). *A project to study the supply chain management system of fresh longan in Thailand*. The Thailand Research Fund (TRF), Chiang Mai.
- Desire-well-wish and Team (2009). *Supply chain management and logistics of cassava products in Thailand*. Full research reports Office of Agricultural Economics.
- Wiraphong, P. (2018) .Confirming the analysis of supply chain performance measurement of automotive parts manufacturers in Thailand. *Academic journal Bangkok Thonburi University*, 7(2).

Tourism Logistics Management Model in Muang District, Nakhonpathom Province

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Abstract: This research aims to 1) study the knowledge to create the Tourism Logistics Management Model (TLMM) in muang district, Nakhon Pathom province, 2) to create the Tourism Logistics Management Model, and 3) to measure the Tourism Logistics Management Model. By using mixed-method research between quantitative method and qualitative method, the sample size was 400 people from totals 374,540 people from the tourist group and logistics service providers group. The data have been collected by questionnaire and in-depth interview 12 people and analyzed by descriptive statistics. The findings found that, the construct of Tourism Logistics Management Model (TLMM) in muang district, Nakhon Pathom province such as; tourist services variable have score 3.91, inbound logistics have score 3.88, and outbound logistics have 3.85 respectively. While, the construct of performance's tourism logistics service provider such as; increase competitive advantage variable have score 3.91, increase tourists have score 3.85, and increase income have score 3.78 respectively. Then, the Tourism Logistics Service Provider (TLSP) in muang district, Nakhon Pathom province should to use the TLMM for enhancement to performance.

Keywords: Tourism Logistics Management Model, Tourism Logistics, Nakhonpathom Province

INTRODUCTION

At present, the tourism industry is regarded as an important industry in Thailand that plays an important role in the country's economic and social development. Nakhon Pathom is a province located in the central region of Thailand. It is a city of old important monuments. It is a city that is rich in fruit and food. Therefore, it is the province that tourists, both Thai and foreigners, are interested in traveling to visit. Nakhon Pathom province has encountered problems that traveling to travel by public transport is not convenient. And problems with tourist services such as maps, city plans, signs, and route arrangements. Including a small number of service points and facilities for tourists. And lack of public relations, information and news, lack of information to promote tourism. Which overall evaluates that the district Nakhon Pathom still facing the problem of tourism logistics management system. Which will negatively affect the tourist service providers in the area. From the said problem. Travel logistics management concepts. It is considered one of the important tools that can be used to manage the tourism logistics system more efficiently. By the concept of tourism logistics management consisting of 1) inbound logistics 2) tourist service 3) outbound logistics.

From the reasons mentioned above. The researcher is therefore interested in conducting an independent study on "Tourism Logistics Management Model in Muang District, Nakhon Pathom Province" that will help improve the performance of tourism service providers in the District of Nakhon Pathom province.

OBJECTIVES

1. To study the knowledge set used to create a tourism logistics management model in Muang District Nakhon Pathom.
2. To create a tourism logistics management model in Muang District Nakhon Pathom.
3. To measure the tourism logistics management model in Muang District Nakhon Pathom That affect the performance of travel service providers.

SCOPE OF STUDY

The content scope is composed of the components of tourism logistics management model in Muang District. Nakhon Pathom and the performance composition of tourism service providers in Muang District area Nakhon Pathom. The scope of the population is 400 people. The sample group is 2 groups which are tourists group and a group of 200 tourism service providers and 12 samples were selected by the specific interview. Early variables of tourism logistics management model components in Muang District Nakhon Pathom Province has 12 variables which are 3 inbound logistics, 3 inbound tourist services and 3 inbound outbound logistics in 3 variables. The variable in accordance with the operational components of the tourism service providers in Nakhon Pathom province, there are 3 variables in the area, namely, increased income more tourists and higher competitiveness. The scope of the area and duration of independent research is 1 year between 1 June 2017 - 31 May 2018.

EXPECTED RESULTS

1. Acquire the knowledge set used to create a tourism logistics management model in Muang District Nakhon Pathom.
2. Get the tourism logistics management model in Muang District Nakhon Pathom The tourism business operators can use this model to manage tourism logistics in Nakhon Pathom. For smooth operations Meet the needs of tourists in the area. And has a great benefit to the business performance of entrepreneurs.
3. Get to know the effect of using the tourism logistics management model in Muang District Nakhon Pathom Which affects the performance of the tourism service providers, so it is a way to improve the efficiency of tourism services for tourists who visit in the area and tourism operators can use it as a guideline in planning services in order to be more efficient and to make tourists satisfied Impressed again on the trip.

LITERATURE AND THEORY

1. Theory

1.1 Tourism Logistics Management concept of Logistics means the management of raw material flow. And information flow in the production cycle of products and services to respond to customer needs Emphasize the duties of moving, collecting, storing and distributing through communication, cooperation, coordination and collaboration in each activity. Logistics typically pays attention to activities that occur within the boundaries of an organization and in a single supply chain. Logistics will focus on activities Procurement-sourcing Product Distribution Warehouse Management and storage and inventory management. Logistics is considered part of the supply chain. In which the logistics has 7 components which are 1) customer service 2) customer order processing 3) communication between goods passing through distribution 4) inventory control 5) forecasting Demand forecasts 6) transportation processes 7) warehouse management and the main goal of logistics is to reduce costs and improve service levels

1.2 Components of tourism logistics management model in Mueang District Nakhon Pathom Tourism logistics management model in Mueang District Nakhon Pathom means a model developed for use as a model in tourism logistics management in Mueang District. Nakhon Pathom with the logistic management model to help the tourism service providers in the Muang district Nakhon Pathom province improved contain with Inbound Logistics Tourist Services and outbound logistics.

1.3 The composition of the performance of tourism service providers in the Muang District area Nakhon Pathom The operation of the service provider faces many risk factors. And there are many risk factors that can affect the service provider's operations. The performance of tourism service providers in Mueang District area Nakhon Pathom Is the service provider's performance whether the results are objective and the results are as expected By being able to measure and evaluate the performance of Service providers quarterly or annually, and set indicators in different fields Measuring the performance of the service provider, if the service provider has a profit Operating successfully as expected or beyond expectations Will show that the method used by the service provider is carried out in the right way But on the other hand Executives will have to find a cause or method that causes errors and make improvements. However, service provider performance evaluations may use value indicators to supply chain customers. Risky performance is too high and improve operating results.

2. Related research

Panasaya Sirarongrotekanok (2016) Studied Behavior and satisfaction of Thai tourists towards tourism logistics management: a case study of Amphawa floating market Samut Songkhram Province To study behavior Tourist satisfaction and comparison of tourists' behavior and satisfaction with tourism logistics management of Amphawa floating market Samut Songkhram Province According to studies, it has been found that Tourists have a moderate to high level of satisfaction with tourism logistics management of Amphawa floating market. Samut Songkhram Province. Phatcharee Lalang (2014) Has studied logistics and development of tourism on the Gulf of Thailand (Royal Coast) in Chumphon province and the connecting areas. The study indicated that Tourists will encounter problems in improving travel routes and organizing transportation systems such as road conditions. Increase road number Add as path Increase the number of lights There are more public buses. And provide services on time, at a fair price. In addition, there should be more signs to be produced and should provide information for tourists. In addition, information should be provided while traveling. Nearby attractions nearby There is an increase in internet connections and brochures. As well as should have facilities, parking, and resting areas around tourist attractions sufficient. There are more clean bathrooms / toilets / convenient to use. Have a local guide training by training people in the community to give advice to tourists and promoting cooperation on tourist attraction management. Sujitra KritMuk (2018) conducted a study The Tourist's Viewpoint on Community Tourism Logistics Management: A Case Study of Ayodhya Floating Market Phra Nakhon Si Ayutthaya Its objectives are 1) to study tourists views towards community tourism logistics management: a case study of Ayodhya floating market, and 2) compare tourists' views on community tourism logistics management: The case study of Ayodhya floating market is classified by sex, age, marital status, education

level, occupation, average monthly income and domicile. Visitors to the Ayodhya floating market with a total of 400 people and tools used in the research. Is a questionnaire with confidence value 0.924 The statistics used in data analysis are percentage, mean, standard deviation. Test statistics One-way analysis of variance with F-test and to test the differences of the pair values by Fisher's test. The research found that The views of tourists towards community tourism logistics management: a case study of Ayodhya floating market in general are at a high level. When considering each aspect, in order of average highest to average Can be as follows Flow of community life Physical flow Financial flow And the flow of information As for comparison of tourists' views on community tourism logistics management: a case study of Ayodhya floating market Classified by marital status Differences were statistically significant at .01, when classified by education and domicile, which were significantly different at .05, classified by gender, age, occupation and average monthly income. not different.

METHODOLOGY

The population used in independent study is 400 people. The sample group is 2 groups which are tourists group. And a group of 200 travel service providers and 12 samples were selected by interview. The researcher has determined the characteristics of the tools used for data collection and construction of the tools used in this research, namely Questionnaire and Interview by testing the quality of the tools. The researcher has used 2 methods which are 1) Index of Item Object Congruence: IOC and 2) Reliability as follows. The researcher has drafted the questionnaire approved by the advisor. Presented to 3 experts to evaluate the quality of the inspection tools. Index of Item Object Congruence: IOC by using the calculation formula and find confidence in each questionnaire The questionnaire was tested with 30 non-sample respondents and brought to Cronbach's alpha Coefficient and selected questions with values of 0.70 and above. In this research, the researcher has compiled data from the following sources Primary data by collecting questionnaires from tourists who have traveled to Muang District, Nakhon Pathom Province and tourism service providers in the Mueang District area Nakhon Pathom and secondary data is collected And researched from books, documents, academic textbooks, related research on the website of the National Research Council of Thailand And related websites. Processing and data analysis, the researcher uses statistics to analyze data which are percentage, mean, standard deviation. And statistical theories to analyze and present the data to achieve the objectives of the study, the data used in the analysis are as follows Frequency values and percentage values To describe the data from the questionnaire, part 1 Personal data of entrepreneurs and tourists in Mueang District Nakhon Pathom Province The mean (\bar{X}) is used to describe the average of the data from the questionnaire part 2, the standard deviation S.D. to describe the standard deviation of the data from the questionnaire part 2, the hypothesis testing with reference statistics It is the analysis of the level of influence of the data related to the studied variable. Part 2 affects the variables by using multiple regression analysis according to the importance of variables and summarize the hypothesis at the significant level of 0.05% and analyze the qualitative data from the interview The researchers used the data from the sample interviews to check the completeness. Which the data validation uses triangular data checking as follows: Inspection of data centers by verifying that the information obtained is correct or not. By checking from different sources of information, time, location and source of people but getting the same information and checking the triangles using data collection methods by collecting data in many ways Both from the study, the interview documents In-depth interviews, observation when the information is correct After that, classify the data according to the objectives set in the research.

RESULTS

The research found that Tourists visiting the Muang District area Nakhon Pathom province, consisting of 200 people, mostly 57.50% female, 22.50% aged between 19 - 25 years, 57.50% live in the central region, 24.00% have a trade, have a monthly income of less than 15,000 baht, 35.50% have a picture My favorite travel style is Travel with friends / family, 79.50% have favorite travel characteristics which are Beach / island / diving trips with 26.50% have a travel budget of 1,000 - 2,000 baht per trip, 43.50%. The vehicles used for traveling are private cars / rentals, 76.00%, non-overnight trips, 77.50% have travel. 59.00% came with their families and received information about tourism in Muang District Nakhon Pathom Province, from various media (radio / internet), 42.04% in the travel service provider In the Muang district area Nakhon Pathom Province, consisting of 200 people, by name of establishments, most of which are Nakhon Pathom Passenger Transport Office, 20.00%, there are tourism service providers which are transportation providers, hotels, restaurants, tour operators, souvenir shops, hundred 20.00%, with a small business of 100.00%. The business duration from the establishment of the business is 10 - 19 years, 33.50%. Tourists have a high level of opinion towards the tourism logistics management model in Muang District, Nakhon Pathom Province. By overview and each side Was at a high level (\bar{X} = 3.85, S.D. = 0.78) while tourism service

providers had a high level of opinions on the tourism logistics management model in Muang District, Nakhon Pathom Province. By overview and each side Is at a high level ($\bar{X} = 3.90$, S.D. = 0.84) and tourists have a high level of opinion on the performance of tourism service providers in Muang District Nakhon Pathom by overview and each side Was at a high level ($\bar{X} = 3.79$, S.D. = 0.83), while tourism service providers had a high level of opinion on the performance of the tourism service providers In the Muang district area Nakhon Pathom By overview and each side High level ($\bar{X} = 3.90$, S.D. = 0.83).

CONCLUSION AND RECOMMENDATIONS

Opinions towards the tourism logistics management model in Muang District, Nakhon Pathom Province Of tourists And travel service providers from the study found that By overview and each side At a high level Tourists And tourism service providers have a high level of opinion on the performance of tourism service providers in Muang District area Nakhon Pathom By overview and each side At a high level Which is consistent with the research of Panasaya Sirarungrojkanok (2016) to study the behavior and satisfaction of Thai tourists towards tourism logistics management, a case study of Amphawa floating market Samut Songkhram Province Found that tourists are satisfied with the overall tourism logistics management at a high level.

SUGGESTION

Suggestions from research

1. should increase transportation such as having a van running in the city for tourists that do not have a personal car.
2. There should be a variety of souvenirs. Because selling the same product leads to a price cut.
3. More toilets should be added.
4. There should be a cabinet for comments or requests. Staff to allow passengers to use the service in order to be safe in order to be reliable to use the driver.
5. There should be activities various tourist destinations for more tourists to come and travel.

Suggestions for conducting future research

1. This research found that Tourists do not cooperate as they should. Therefore, it should be clarified for tourists to see the importance of this research more.
2. The tourism logistics management model should be studied in other provinces in the country in order to enable the researcher to understand and understand the opinions about the tourism logistics management model.

REFERENCE

- Apiphatsakul, K. (2016). *Logistics and Supply Chain Management*, "Strategies to Make Wealth and Save", Bangkok, Thailand: Nataporn Printing House.
- Collier & Harraway. (1997). *Tourism Industry. Principles of Tourism*. Auckland: Longman Paul Ltd.
- Kaplan, R. S., & Norton, D. P. (2001). *The Strategy-Focused Organization*. Boston, MA: Harvard Business School Press.
- Kotler, P. (1997). *Marketing management: analysis, planning implementation and control*. (9th ed). New Jersey: Asimmon & Schuster.
- Kroes, J. R. & Ghosh, S. (2010). Outsourcing congruence with competitive priorities: Impact on supply chain and firm performance. *Journal of Operations Management*, 28(2), 124-143.
- Martin, C. (2016). *Logistics & supply chain management* (5th Edition). FT Publishing Financial Times, UK.
- Martin, R. & Patterson, J.W. (2009). On measuring company performance within a Supplychain, *International Journal of Production Research*, 47(9), 2449-2460.
- Ministry of Tourism and Sports. (2014). *Statistics of tourists*. Bangkok, Thailand: Ministry of Tourism and Sports
- Morgan, C. (2004). Structure, speed and salience: performance measurement in the Supplychain. *Business Process Management Journal*, 10(5), 522-36.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17, 460-469
- Oliver, R. L. (2010). *Satisfaction: a behavioral perspective on the consumer* (2nd ed.). Armonk, NY: M.E. Sharpe.
- Panangtong, S. (2005). *Strategic Execution Chain Management*. Bangkok: Se-Education.
- Pimolsompong, C. (2015). *Sustainable tourism development*. Bangkok, Thailand: Press and Design.
- Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York, NY: Free Press.
- Rovinelli, R.J. & Hambleton, R.J. (1976), *On the use of content specialists in the assessment of criterion referenced test item validity*. Laboratory of Psycho-metric and Evaluative Research Report, No 24, pp. 1-48.
- Surbhi S. (2017). *Difference between inbound and outbound Logistics*. [Online]. Retrieved from <https://bit.ly/2Ry4Bvm>
- Techawari, C. (2010). *Tourism Logistics*. Bangkok, Thailand: Lock in Design Works.

Increasing the Efficiency of Product Receiving in the Case of Nim Express Co., Ltd

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Abstract: The purpose of this research is to 1) study the internal work processes of the product receipt 2) analyze the problems from the internal work process of the product receipt and 3) create a model to increase the efficiency of the product receiving process to be more efficient. In this research, the researcher has studied the internal processes of Nim Express Co., Ltd., therefore, sees that warehouse management or distribution center planning is one of the important work strategies that will help the business succeed and operate as more efficiently, the researchers selected the workflow theory to assemble all processes within the organization and Fish charts are analyzed to find the root cause of the problem and use ECRS theory to help increase work efficiency in process improvement. The work of the product delivery team is becoming increasingly efficient by eliminating repeated process processes and being able to use them more efficiently. Process implementation using loss reduction theory using ECRS principle of car segment, with an average operating distance of 1.57 minutes from a sampling of all 7 cars resulting in the car receiver to receive the car Reduce working time from the original, can work more efficiently.

Keywords: Efficiency, Product Receiving, Nim Express Co., Ltd

INTRODUCTION

Currently the logistics business is quite popular in the market. Which leads to quite high competition in which various organizations have developed in order to increase efficiency for their own organizations to be as effective as possible In order to meet the needs of consumers or customers as much as possible Both in terms of management within their own organization as well as providing the best service That can answer the needs of customers as much as possible In which various organizations Trying to discern and look for marketing gaps as well as gaps in one's own organization to see if there are any problems or weaknesses in any area In order to be developed to their organization as efficiently as possible And leads to the marketing strength in fighting with various organizations That provide services or conduct business of this type Which is one of the working processes in logistics at various companies Should pay attention to this hour, which is no less than the movement of transportation or stock management. Nim Express Company Limited is a distribution center consisting of receiving, storage, sorting and distribution of products to customers, and is also a provider of transportation services with a variety of strategies, such as For example, Door to Door to pick up at the source - deliver to the destination, Door to Port to pick up at the source - customers pick up themselves at the destination, Port to Port, customers send themselves at the source - customers pick up themselves at Destination etc. in order to have full access to transportation service providers The study therefore requests permission to have professional experience within the company. Nim Express Co., Ltd. (DC Suvarnabhumi) from January 5, 2018 until April 25, 2018, after studying the work processes that cause ineffective transportation gap problems. The problem encountered was the delay in receiving products caused by having a redundant work process, which affects the work of the vehicle release team work section Ineffective and delayed beyond the time limit.

Therefore, the student sees that the planning of warehouse management or distribution center is one of the important working strategic that will help the business to succeed and operate more efficiently. The study uses flowchart theory to compile all processes within the organization and fishbone diagrams are used to help analyze problems and find ECRS theory to help increase Work efficiency to improve the work process of the receiving team's department to be more efficient It will help eliminate redundant processes and be able to operate more efficiently as well.

RESEARCH OBJECTIVE

1. To study the internal work process of the product receiving team.
2. To analyze problems from work processes within the product receiving team section.
3. To create a model to increase efficiency in the product receiving process to be more efficient.

LITERATURE REVIEW

Flowchart

Flowchart is an image or symbol that is used to represent a process, description, text or speech used in an algorithm because the presentation of the work process is to be understood exactly. Between people involved with words or text is more difficult than using a flowchart.

Flowcharts are tools to show steps. Or work process by using the same standard symbol in which the symbol has a short text describe information that requires results or processing instructions of that step. And associate those steps with lines that have arrows indicating the direction of work from the beginning to the end of the process here are 2 types of flowcharts.

1. System Flowchart is a flowchart that shows the working process in a systematic area. But not drilling into the subsystem

2. Program Flowchart is a flowchart that shows the steps in the operation of the program from receiving calculated data to showing results

System Flowchart shows the process Work within a system by mentioning various information all related documents such as preliminary documents, what is the material used, what type of memory is used and which unit will be sent to? Processing methods and result display

Program Flowchart this type of flow chart shows the steps of commands used in a program to receive data, process data display sometimes referred to as the programming flow, the symbol used in the flowchart drawing.

Benefits of the flowchart (Sunandha Siricharoenwat, 2012)

1. Help the process sequence Program operation and able to write programs without being confused
2. Assist in the inspection and easily edit the program when an error occurred
3. Helping modifications to be made quickly and conveniently
4. Help others to study easily program operations and more quickly

Fish Bone Diagram

The cause and effect map is a layout panel that shows the relationship between the Problem and all possible causes that may cause the problem (Possible Cause). We may be familiar with the cause and effect map in the name of the herringbone map. Fish Bone Diagram), which was first developed in 1943 by Professor Kaoru Isikawa of the College of Tokyo.

1.1. When to use the cause and effect diagram

1.1.1 To find the cause of the problem

1.1.2 When wanting to study, understand, or get to know the process

Other because most employees will know the problem only in their area but when Fishbone drawing will make us easier to know the processes of other departments

1.1.3. When wanting to be a guideline for brainstorming which will help everyone to

Interest in the group's problems, which are shown at fish

1.2. How to create a cause-and-effect map or fishbone diagram

It is important to create a diagram as a team as a group using the following 6 steps.

1.2.1 Define the problem sentence at the fish head

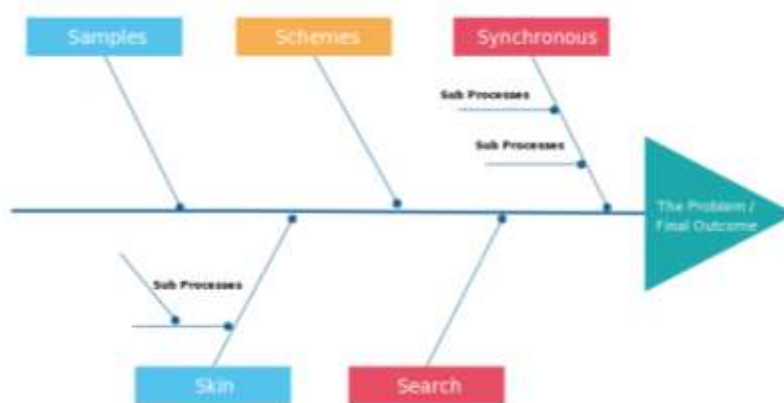
1.2.2. Determine the group of factors that cause the problem

1.2.3 Brainstorming to find the cause in each factor

1.2.4. Finding the root cause of the problem

1.2.5. Prioritize the caus

1.2.6. Use the necessary improvement guidelines



LITERATURE AND THEORY

Figure 1: Fishbone Diagram

1.3. Fishbone drawing consists of the following parts

1.3.1. Problem or effect, which will be displayed on the fish head

1.3.2. Causes can be further classified as factors that affect the problem (fish heads).- the main reason - Sub-causes

Which causes the problem will be written on each fishbone Sub-bone is the cause of the secondary bone, is the cause of the primary bone.

We are able to specify any group of factors. But make sure that the groups we define are the factors that can help us to identify and determine the causes. Systematically And the cause is the result

Most often use the 4M 1E principle as a factor in order to differentiate the causes. This 4M 1E comes from (Sunandha Siricharoenwat, 2012)

M Man Workers or staff or personnel

M Machine Machinery or Facilities

M Material Raw materials or other equipment used in the process.

M Method work process

E Environment, weather, location, brightness and working atmosphere description

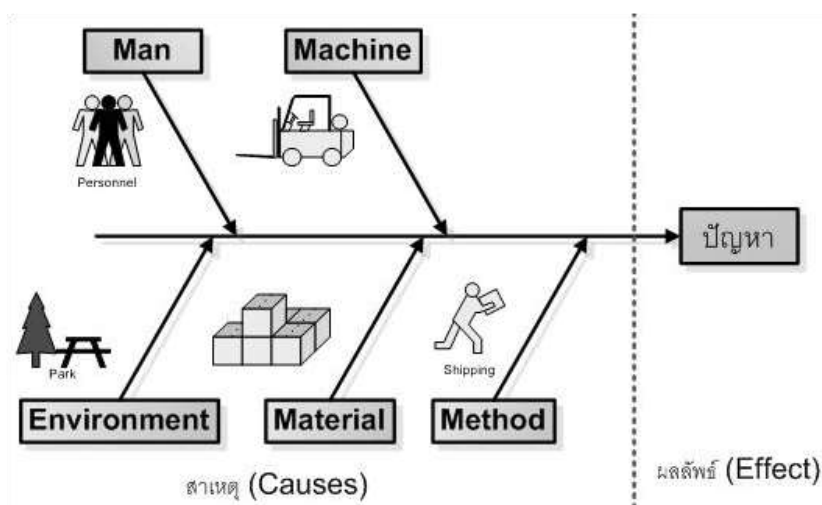


Figure 2: Principle 4M 1E

Reducing Waste with ECRS Principles

ECRS is a principle that consists of elimination, combine, rearrange and simplify. That can be used to reduce waste or MUDA down as well

1. Eliminate means considering current operations and eliminating all 7 wastes found in production. Is too much production, waiting for unnecessary movement / movement Unproductive work too much storage unnecessary movement and waste

2. Combine can reduce unnecessary operations By considering whether or not you can combine the steps with which the work can be reduced or not, as in the previous 5 steps, some steps were combined Causing the steps to be reduced from the original Production can also be done faster and reduces the movement between steps. Because if the steps are combined, the movement between the steps decreases

3. Rearrange is to rearrange the production process to reduce unnecessary movement or waiting, such as in the production process. If switching between steps 2 and 3 before 2 causes the distance to decrease, etc.

4. Simplify means to improve the operation to be easier and more convenient, which may design jig or fixture to help in work to be more convenient and accurate which can reduce waste therefore reducing motion that is not necessary and reduce unnecessary work. We therefore provide examples about the many documents that are around them. We may think that it is a document that is necessary to use. But not always sure because those documents may contain unnecessary documents and is a document that has many redundant arrangements which, if we have never had to focus on those documents at all in the past, it used to be used, however, is still used continuously without thinking of changes to those documents. The disadvantage of the document, if there are too many will cause storage chaos Consumes space to store documents and waste time considering documents and preparing those documents In addition, it is a waste of resources, namely wasted paper. Therefore, we should turn and look around and begin to reduce the amount of documents together Help each other eliminate unnecessary trash documents. We can use this

ECRS principle to reduce unnecessary documents, that is to say Eliminate means getting rid of unnecessary documents. If considering various documents around some documents may not be necessary. We can eliminate it straight away. Combine (Combine) is a collection of documents from multiple can be added to the same sheet this will make it convenient for analysis and reducing the amount of documents that need to be stored. Rearrange Sometimes the documents used are duplicated. Should have to rearrange the documents to reduce duplication and complications in some documents. Simplify means the format of a document to be easy to understand and convenient for use. If reducing unnecessary documents will make the work more streamlined No need to bother with making duplicate documents. And reduce the time it takes to make documents that aren't useful if able to reduce all 7 wastes that occurred. Will make the factory have better production efficiency Reduce the hassle and chaos in the production. Which will definitely result in reduced production costs All of these things are very useful for every company in the economy right now (Mustazah Yuzo, 2015).

CONCLUSION

From the selection of flowchart theory to compile all the processes within the organization and will use fish central flowchart to help analyze problems and find occurrences and use ECRS theory to help increase work efficiency to improve work processes of the product receiving team for greater efficiency. That will help eliminate redundant processes and be able to operate more efficiently as well. Improvement of work process by using the ECRS principle of waste reduction theory in the receiving section, the average operating distance is reduced to 1.57 minutes from the random sampling of all 7 cars. As a result, the car can pick up the car up. Reduce working time from the original Able to work at full efficiency.

REFERENCES

- Lee, W. P. (2013). *Reducing Parts Warehouse Cost*. Retrieved from <http://libdoc.dpu.ac.th/thesis/152907.pdf>
- Tiyada, J.-M. (2015). *Increasing warehouse management efficiency*. Case study 2 Rat Burana, Bangkok. Warehouse Organization Mahabhat Business Administration Bangkok University.
- Sunarak, T. (2012). *Improvement of production line efficiency: a case study of magnetic wire production line (Stator)*. Retrieved from <http://www.dms.eng.su.ac.th/filebox/FileData/WPS036.pdf>
- Yuzo, M. (2015). *Reducing waste in the assembly process by balancing the production line*.
- Wichaiyadej, O., & Charoenjai, N. (2011). *Improvement of work to reduce waste in the production of clean rooms*. Retrieved from http://acad.vru.ac.th/Journal/06_1-2.pdf
- Siricharoenwat, S. (2012). *Increasing warehouse management efficiency*. Case study of Phoom Thai Communications Company Limited. Retrieved from <http://eprints.utcc.ac.th/2670/3/2670fulltext.pdf>

Logistics Management for Halal Food Business

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Abstract: The demand for halal food products is increasing not only from Muslim country but also non-Muslim customer that trust in halal food safety. Halal industry in Thailand, need to be developed to be recognized in the international market. The production process must follow Islamic laws and also the activities in the supply chain related to mobility or logistics between the various groups must be considered, involving the series of activities such as the warehousing, transportation, terminal operations and others supporting activities alongside the flow of halal logistics. This will ensure a consumer's confidence in the Halal food products. It also manages logistics costs inefficiently operation

Keywords: Halal Logistic, Logistics Management, Halal Food

INTRODUCTION

Currently, Halal products are valued at \$ 150,000 million a year and can be expanded almost four times by calculating that there are approximately 1.8 billion Muslims around the world. Each person will spend about 85% of food every day. Become an opportunity for the southern population that has many Muslims Allowing to be part of the halal industry, the government has played a role in the development of halal industry in the south, beginning with the development of community halal industry with enterprise network systems, promoting the development of halal product marketing. By focusing heavily on international market research, promoting the opening of the Halal food center Or Thai Halal kitchens in foreign countries Halal brand development, southern border provinces Exhibition and product distribution Both at home and abroad Product quality and standard development of halal products, by focusing on packaging development, promoting the development of small and medium-sized enterprises (SMEs) to be certified for production process standards and the development of supporting factors. Such as the development of halal chefs Development, analysis and certification of product quality and personnel development supporting the growth of the halal industry. Which will find that all of the above is for Halal product development and manufacturers only still lacking distribution channels that after developing these halal products, how will they be distributed? If the product is developed and not distributed, then there will be more supply problems than Demand will cause the price of Halal products to fall. It is also a useless investment that does not actually generate revenue for the people in the community. Therefore should find ways to distribute products to people in the community as well So far, OSMEP has collaborated with the AEC Prompt Board of the Thai Chamber of Commerce and the Board of Trade of Thailand. Carried out activities to promote Thai SMEs to the Malaysian market Due to Malaysia Is the largest country in the neighboring countries which has a border with Thailand and has implemented economic and free trade policies Therefore, Thai entrepreneurs should hurry to create opportunities from the advantage of being an ASEAN member and location. Bordering countries to expand trade opportunities Investment in Malaysia in the industrial, agricultural and service sectors. The mode of transporting goods from Thailand to Malaysia is mainly road transport. As Thailand has a continuously increasing road cutting project and can conveniently connect to neighboring countries In addition, land transportation has the advantage of being cheaper and cheaper compared to plane transportation. And still much faster than shipping by boat

However, the main problem of Thai businesses is Logistics costs, which have a higher proportion than neighboring countries, both Malaysia and Singapore. At present, Thailand has logistics costs at 18% of the total production cost. While Malaysia and Singapore are lower than 10%. Therefore, if Thai businesses will manage the cost of internal processes to be cheaper And able to deliver products and services to consumers faster, such as contacting the Customs Department in advance before shipping. Or study transportation measures of each country very well and strictly follow will help shorten the time for document management and coordination throughout the route of transportation and also helps deliver products to consumers on time. Increasing the effectiveness and efficiency of both the public and private transportation and logistics networks to help support the enhancement of competitiveness and facilitate trade in the Thai business sector. Therefore, the effectiveness of transportation between southern Thailand - Malaysia is important because it increases competitiveness. And can reduce the cost of business for this reason, it is the source of research on creating a logistics management model of halal products between southern Thailand - Malaysia.

OBJECTIVES OF THE RESEARCH

- 1) To find the effectiveness of transportation between southern Thailand - Malaysia under the limitation of halal products
- 2) To find the relationship model Halal freight transport logistics by rail, water and road and the effectiveness of Halal freight transportation

RESEARCH HYPOTHESES

Logistics, rail transport, waterways and roads are correlated with the total effectiveness of Halal freight transportation.

LITERATURE

Halal Logistics and Supply Chain Systems "Islam" is one of many religions. Religion that exists in today's world. And is a religion that has a population the second most respected in the world. Islam is a religion that is determined by the God who named Allah Subhanahuwaataallh or Allah with the belief that Islam comes from God and is not created by humans God created the world and everything. Including determining the fate of humans and sentient beings He is also the person who knows everything. His Highness Has greater power than anything there is nothing beyond Him. The general Islamists consider Islam to have appeared in the world since the first human being, Adam And has evolved in the teachings according to the evolution of human society through the announcement of the Prophet Which in every age Allah will appoint His messengers In order to teach people to know the true God And obey His Majesty's provisions and ordinances Which at one time he had chosen "Muhammad" as his messenger to teach humankind from the teachings of Allah which in this era is considered the era that has the most perfect teachings. "Halal" is a word derived from Arabic, meaning approved when used with religion. It means things approved by religion, such as allow eating, drinking, making etc. In addition to their practice and consumption Halal products and services also include cosmetics, medicines, and clothing. Financial services and logistics as well "Haram is something that His Highness forbids. And the things that remained silent, he approved to be your favorite things. "Halal Logistics refers to the process of managing the flow of Materials and news throughout the supply chain to comply with Halal standards. Of Halal products As well as the supply chain in accordance with the process that does not conflict with the principles established in the Muslim way to the flow of products covering from manufacturers to consumers. There is a flow of information covering the supply chain such as Product info Demand information and freight system which must have a name tag or code on the Halal product which is a basic system that verifies the source of a product. The transport of Halal products will be separated from non-Halal products. With the objective of Avoid (Cross) contamination, avoid mistakes that may occur from transportation, can be checked throughout the transportation process to meet the expectations of Muslim consumers. The need to separate halal products specifically to prevent contamination Prevent mistakes and to build confidence for Muslim consumers Entrepreneur in business Logistics in many countries is beginning to realize the importance of the halal market. And accelerate the development of Halal Logistics to support the full range because that will enable their products to confidently penetrate this market. The Halal World, the IHI Alliance, has been set to cover 10 standards (modules), which were announced during the Halal World Conference. (Halal World Forum) held in Kuala Lumpur 01 is the standard for logistics. Which has a rough principle that separating halal and non-halal products from mixing throughout the transport, storage, both land, water and air, for example, not to put the products together on pallets Or in the same container Or a vehicle used to transport the same vehicle (in the case of bulk shipment) and must be separated for storage or transportation by reefer when frozen. Cleaning of containers and transportation vehicles is very important when transporting goods Lal Must strictly comply with the rules. Nowadays, the efficiency of the logistics system is very necessary. Especially food products that are diverse in types, scents, flavors, colors, sizes, and packaging. The logistics will deliver the correct product items to the location. And the right time to make a difference in sales and loyalty to the store (Raviporn Kucharoenphaisan, 2009: 279).

Basic Principles of Halal Transportation and Warehouse

Halal products should be separated and not halal including the process of transportation and storage in warehouses, including

- 1) Check the status of halal products and clearly label the halal products
- 2) The carrier and cargo carrier should separate the halal and non-halal products from mixing- In the same pallet, there should be no mixing between Halal and non-Halal products.

In the same container, if there are Halal and non-Halal products, they must be separated by using another layer of container (Tertiary Packaging) to prevent touching between the two types of products and must be careful when using mobile devices Move not to be contaminated.

In bulk shipment, Halal products must be careful not to contaminate the non-Halal products.

- 3) Halal products should be stored in a place or cold room designated for Halal products only. And maintain storage conditions suitable for each product in the case that storage space cannot be separated, halal products must be separated and not halal with another container. To prevent physical contact
- 4) Halal shipping should put in a container or product packaging which is specified to be used with halal products only by using labels that are colored or symbolic as an indication for ease of operation in the inspection
- 5) The container or equipment used to transfer Halal products must be hygienic. And if applied to non-Halal products must be cleaned according to Islamic principles before using with Halal products.
- 6) Cleaning according to Islamic principles Here's how. Begin to wipe or remove. (Dirt according to Islamic principles, divided into Najis Ba, Najis, medium and Najis). First out and wash according to the found For example, in the case of contact with heavy nights (pigs or pigs), after washing, the soil must be washed 1 time and then washed with clean water for another 6 times for a total of 7 times must be used the method of allowing water to flow through (Not a dip or dip) in the case of using containers or equipment to transport or store Halal products. If you do not know the history of the use of those containers or equipment before must be washed with a heavy removal method.
- 7) Importance of Halal Products Every product must have a label indicating the product and on the Halal transportation documents. However, transportation and warehouse management are considered is the most important logistics activity for Muslim consumers (Raviporn Khucharoenphaisan, 2009).

Halal Separation Procedure

- 1) The product should be separated from unaffected products such as dogs or animals that were born with dogs or dogs and other animals from such animals (Mujahalahah).
- 2) Halal beverages should be separated from alcoholic beverages the separation of carcass products, the milk of animals that do not consume blood, pus, lymph, vomiting, feces, urine, which is a medium type (Muta Wassitah)

Therefore, the logistics operation should be managed in a halal manner because logistics is the most important thing which must have a Halal logo that has been verified to be a measure of efficiency.

4.4 Key Points in Halal Logistics Halal product separation is not to be contaminated with non-Halal products provides the transportation by land, water, air. The requirements for each component of logistics are as follows.

- 1) In the transportation of Halal products and non-Halal products Cargo carrier Sorting of carts or transportation vehicles should be sorted out. (In the case of group delivery)
- 2) Storage of products in a cold room should not store halal products and non-halal products in the same container. Especially pork which is considered a violent najis it is important to consider the procedures for cleaning containers and vehicles in the transportation of goods and the address for processing Halal goods.
- 3) Must know the origin of containers and vehicles that are contaminated or not. If contamination occurs have to wash up to seven.
- 4) Must request a cleaning certificate with warehouse storage which is a product that moves through the supply chain. Therefore, the nature of the environment and management And other people related to halal products is extremely important Which makes the warehouse more sensitive to contamination Which can occur at various stages of the process such as inbound product management Storage And export of goods, etc. Therefore should have a good management, efficiency.

Components of the Logistics Costs

Logistics costs can be divided into 4 major categories as follows

- 1) Cost of transportation (Transportation Cost) The cost of transportation and service activities. These costs vary depending on the volume of transport, weight, distance, and destination transportation methods that cause different costs.
- 2) Warehousing Costs The costs of activities in the warehouse and the storage of goods. Data transfer in the warehouse Location selection, such as factories, warehouses, which will vary depending on the type and quantity of products.
- 3) Inventory Carrying Cost the costs associated with keeping an inventory that will vary with the amount of inventory and cause other costs such as Capital Cost and Opportunity Cost. The cost of product supervision includes insurance and taxes, storage space costs Is the cost of the place which is related to the quantity of the product the cost of storage risk is obsolete and theft.

4) Administrative costs (Administration Cost) is caused by 3 main types of activities which are customer Service Level is money that is paid to support customer service, such as costs associated with completing orders.

Order Processing and Information Costs are the costs associated with the order process. Communication distribution and demand forecasting lot Quantity Cost, which, in principle, depends on the quantity of products procured and produced

Concepts of Efficiency and Effectiveness of Transportation Logistics

Efficiency and effectiveness are the term widely used. From the processing of the documents, it was found that the meaning of both words given in the following meanings (Sawang Ratanamongkolmat, 1971, p. 99). The performance results in satisfying human beings and receiving profits from that operation too (Human Satisfaction and Benefit Produced; Thanachot Rungsanit: 2014) about the similar performance, if you consider that which work is the most effective? Look at the relationship between the inputs and the outputs. Therefore, according to this view, the efficiency is equal to the outputs with the inputs. And if it is a government administration and a government organization, then the satisfaction should be added. Of the client (Satisfaction) with which Write the formula (Sawang Rattanamongkolmat, 1971, page 99) as follows.

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

E = EFFICIENCY (work efficiency)

O = OUTPUT (the product or work received)

I = INPUT (the input factor or administrative resource used)

S = SATISFACTION (the satisfaction of the work that comes out)

Including the viewpoint of Katha Wuthaporn, meaning that the meaning of business management efficiency in a narrow sense means Reducing production costs and the broad definition means Quality of Effectiveness and Competence and Capability and in business operations that are considered most effective is to be able to produce products or services in the desired quantity and quality that is appropriate and at the least cost To consider the current situation and financial obligations Therefore, the concept of the word Business efficiency has 5 components: Cost, Quality, Quantity, and Method (Production). Management that receives profits or losses for public administration in practice, performance measurement is very difficult. Methods of measuring performance in the government sphere therefore include Performance results that create satisfaction and benefit for humanity Therefore, the efficiency in the government must consider social values, therefore not necessary to be economical or profitable because some work if done economically May not be effective (Uthai Hiranto, 1982, p. 123) Efficiency means having high performance. Able to have the most efficient operation system which the products with higher value of the resources used (Thongchai Santiwong and Chaiyos Santiwong, 1992, page 314). Efficiency is an indication of the worker's work (performance) over a period of time, which is used as a measure of whether How appropriate is the use of the organization's resources or departments? (Speaker, Chiang Rai, 1997, p. 173). Part of effectiveness is related to effectiveness. Or only the highest production, so the performance measurement must also measure the difference in the quality of the product (Jindalak Wathanasin, 1987, p. 70), Bureau of Logistics, Department of Primary Industries and Mines the Ministry of Industry announced performance indicators. Logistics aspects of industrial establishments In the food industry group Textile and garment industry Electrical and electronic industry, automotive parts industry And the plastic industry The indicator of the effectiveness of the logistics that has been established has 9 activities, which are.

- 1) Customer service and support activities
- 2) Purchasing and Procurement
- 3) Logistics Communication and Order processing
- 4) Transportation
- 5) Site Selection Warehousing and Storage
- 6) Demand Forecasting and Planning
- 7) Inventory Management
- 8) Materials Handling and Packaging Management
- 9) Reverse Logistics

By evaluating the performance in 3D (Bureau of Logistics, Department of Primary Industries and Mines, Ministry of Industry, 2010, pp. 10-14) consists of

- 1) Cost Management is an index that shows the cost ratio of activities. Logistics compared with the total annual sales of the business.
- 2) Lead Time is an index that uses the period of goods movement and information that occurs in each logistics activity.
- 3) Reliability (Reliability) is an index used to measure the reliability of product delivery and customer response.

Related Research

Kanwachathanathanachotrungsathit (2014) studied the subject of The effectiveness of Thai rice transportation logistics: a case study of the transportation route from Nakhon Sawan province - foreign exports with the objective To study the relationship between transportation logistics and the effectiveness of Thai rice transportation logistics in the transportation route from Nakhon Sawan - foreign countries and to study the efficient transportation logistics model on the route. Transport from the province Nakhon Sawan - Foreign Exports The population used in this research is A group of personnel related to exporters, Yong, wholesalers, retailers, buying and selling rice from rice mills Or rice paddies in Nakhon Sawan Province and operators in the transportation of goods in 15 districts of Nakhon Sawan Province The quantitative research obtained a total of 787 samples. The qualitative research obtained a total of 8 samples. The instrument used in the research was the questionnaire and the interview form created the data were validated by 5 expert, data were analyzed using descriptive statistics, frequency, percentage, mean, standard deviation. And inferential statistics by Canonical Correlation Analysis and demonstrated the Path diagram. The results of the Thai rice transportation logistics model found that. The rail transport logistics is in the medium level. Water transport logistics is in a moderate level. And road transport logistics have high level of transportation and road transport logistics have high level of transportation the effectiveness of Thai rice transportation logistics at the transportation cost is at a high level. The transportation time is high and the transportation reliability is high. Canonical Correlation Analysis Results Found that the water transport logistic model And the road transport logistics Moderate relationship and affect the effectiveness of Thai rice transportation logistics In terms of transportation costs Transportation time and reliability in transportation (Canonical Correlation = 0.645). The analysis of the path model found that the model. The effectiveness of Thai rice transportation in Nakhon Sawan - foreign exports Water transport logistics model in water transportation network The point of connection with the transport of other models by water And the side of the water trade gate and the road transport logistics model In the field of vehicles used for road transport. Usani Kongraksawet (2013) conducted a comparative study of the efficiency of the logistics service providers between Malaysia and Thailand. The objective is to evaluate the service efficiency of the logistic service providers of Malaysia in comparison with Thailand to use the results of the study to use as a guideline to improve the service of the logistic service providers in Thailand. By using a questionnaire to collect data from 13 logistic service providers in Malaysia, with 10 logistic service providers in Malaysia, 67 logistics service providers in Thailand And 102 logistic service users in Thailand and use the quality analysis of each country in 5 dimensions, including physical appearance Reliability Responding to customers To build customer confidence And customer care As well as comparing locations and service locations for international travelers with tools used in management, management, and ranking (SCM / Logistics Scorecard: LSC). The results show that the service quality acknowledgment of service providers in all dimensions. Assessing the potential of logistics and supply chain management with LSC found that the logistics service providers in Thailand are more efficient than the logistics and supply chain management providers below Malaysia logistics in all 5 aspects, namely the establishment strategy Planning and operational ability Logistics efficiency and effectiveness.

Nichitima chandelier (2012) studied the subject the relationship of the market focus on logistics, supply chain management and effectiveness of pharmaceutical products in the Pharmaceutical Organization The objective is to study the relationship between market focus, logistics, supply chain management and effectiveness in the Pharmaceutical Organization. The data was analyzed from a questionnaire collected from a sample of 280 employees in the Marketing Organization of the Government Pharmaceutical And analyzing the structural equation model using the Lisrel Version 8 program. The level of all variables studied is quite high. And the analysis of the rational relations found that the market focus has a positive influence on logistics Supply chain management and effectiveness. In addition, logistics has a positive influence on supply chain management and effectiveness, and finally, supply chain management has a positive influence on effectiveness, respectively, with a statistical significance of 0.05 For all the independent variables mentioned above, 70% of the variance could be explained or predicted the effectiveness variables (p-value <0.05). Therefore, the pharmaceutical industry should pay attention to the focus of the logistics market and Supply chain management to be able to increase the effectiveness of operations. Logistics and supply chain management can be more.

Krisana Sathitanuwat (2005, p. 2-3) applied the simulation model to study the important problems of sugarcane delivery from farms to sugar factories in Thailand, namely The truck wasting time waiting for delivery at the factory in order to pour sugar cane into the production process in the factory. The long wait is caused by the unevenness of the amount of trucks delivered to the factory. Resulting in the utilization rate of resources Such as trucks, labor and

various tools are low. And cause weight loss and sweetness of sugar cane the cost of transportation of sugarcane into the factory and the cost of sugar production in Thailand are at a high level.

Conceptual Framework

Compared to other major sugar exporting countries the study presents a new operating system. For sugarcane delivery from the plantation to the factory, there are 3 systems which are advance reservation of delivery time. The system separates the delivery intervals of trucks and the queue lock delivery mixing system (The system that calls the truck into the factory) and Q Seri (the system that does not call the truck into the factory) together. All proposed systems have the same purpose Want to distribute sugarcane delivery among farmers for a consistent delivery throughout the period for the delivery of sugarcane to the factory offered by the researcher Can reduce the average waiting time that trucks use within the factory significantly.

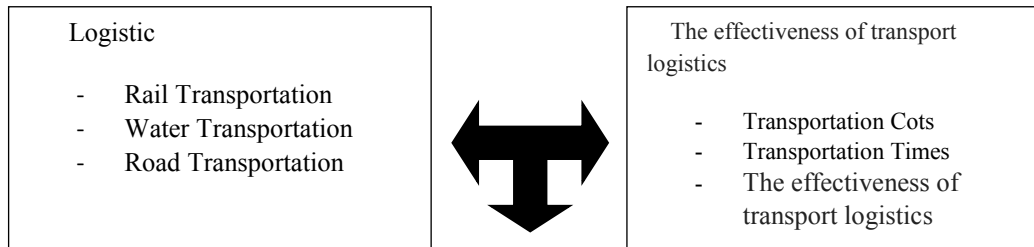


Figure 1: Conceptual Framework

From the conceptual framework in order to find the model of the relationship between Halal freight logistics and the effectiveness in transporting halal products has divided transport logistics studies into 3 areas: rail transport, waterways and road transportation. The effectiveness of transport logistics conducted studies on costs, time and transportation reliability.

RESEARCH METHODOLOGY

5.1 Population in research in this research, the population is about operators' Halal cargo transportation in Songkhla province during 2014.

5.2 Sample The sampling method of Halal cargo operators in Songkhla province is calculated from the formula of Taro Yamane (1967) as follows

$$n = \frac{N}{1 + N(e)^2}$$

n = the number of samples or the size of the samples)

N = the total number or size of the population

e = the proportional value that is required for the sample proportion to be different from population proportion which allowable error is 0.05.

Instead of N = 236 cases (data from the office database Product transportation year 2014)

$$n = \frac{236}{1 + 236}$$

Therefore, to allow 5 percent of the error is at the belief level of 95 percent, the number of samples used in the study. Calculated with a minimum value of 149 samples, but in the study, a total of at least 150 questionnaires will be collected using Accidental Sampling because the selection of the sample is based on Suitable for the purpose of the researcher (Siriwan Serirat and others, 2006, pp. 177-178).

Research Instrument

The instrument used for data collection was a questionnaire. The questionnaire can be defined in 3 parts as follows

Part 1 Questions regarding general information of respondents, including types of services transported goods the mode of transportation chosen and work status.

Part 2 is a question about the effectiveness of transportation. Halal products include Transportation costs Transportation time Reliability in transportation The questionnaire is a Likert Scale, divided into 5 levels: lowest level, low level, moderate level, high level and highest level (Boon Chomsri-sa-ad, 2010, page 121).

- 1 means very low level of effectiveness
- 2 means low level of effectiveness
- 3 means medium level of effectiveness
- 4 means having a high level of effectiveness
- 5 means the most effective

Part 3 is a question about the logistics of Halal freight transportation by rail, waterway and road. The questionnaire is a Likert scale rating scale divided into 5 levels which are lowest level, moderate level, high level and highest level (Boonchom Sri SA-at, 2010, page 121) as follows

- 1 means very few levels of transportation
- 2 means low level transportation
- 3 means medium level of transportation
- 4 means there is a high level of transportation
- 5 means the highest level of transportation

DATA ANALYSIS

In the research to find the effectiveness of transportation between southern Thailand - Malaysia, the descriptive method is used. The statistics used are mean, standard deviation and use of computer software. In the analysis of the data obtained from the questionnaire, the mean of the mean value is divided into 5 Levels from 1–5 that can be used as a basis for interpreting scores can be given in the table (Polsak Chirikraisiri, 2011, p. 150), with the ratio scale that has been used to create the model relationship for the next objective

Table 1: The Criteria for Interpreting Scores

Average Score	Means Score
1.00 – 1.49	Very low
1.50 - 2.49	Low
2.50 - 3.49	Medium
3.50 - 4.49	High level
4.50 - 5.00	Highest
standard deviation	Meaning
Greater than 1.75	Very different
1.25 – 1.75	Medium differences
Less than 1.25	Few or similar

In relation to the modeling of the relationship between Halal freight logistics by rail, waterway and road and the effectiveness of Halal freight transportation, the Multiple Regression Analysis method is used because it requires analysis of more than 1 Predictor variable. Built-in character and variable relationship Is linear The Multiple Regression Analysis model can be shown as follows.

$$y_i = \beta_0 + \beta_1 x_{1j} + \beta_2 x_{2j} + \dots + \beta_k x_{kj} + \epsilon_j$$

Y = Variable

X1 = 1st independent variable

X2 = 2nd independent variable

Xk = k independent variable

β_j = Damage coefficient (Regression coefficient) where β_0 is the value of Y, taking into account the X value or the value of Y When X1, X2, ..., Xk are 0 and $\beta_1, \beta_2, \dots, \beta_k$ are the values showing the change in Y when X changes by considering each item sometimes, so it is called each regression coefficient (Partial Regression Coefficient)

EI = Tolerance

K = Types of independent variables

i = Observation i

For hypothesis testing Logistics, rail and water transportation, road and correlations with total effectiveness of Halal Cargo the Pearson Product-Moment Correlation Coefficient was used for analysis.

RESEARCH RESULTS

From collecting data to find the effectiveness of transportation Between the southern region of Thailand - Malaysia under the limitation of Halal products and create a relationship model between the logistics of Halal goods by rail, waterway and road and the effectiveness of Halal goods transportation. The research results are as follows
 Effectiveness of transportation routes between southern Thailand - Malaysia under product limitations Halal from the questionnaire was conducted to study the effectiveness of the transport routes between southern Thailand - Malaysia under the limitations of halal products in 3 areas, namely transportation cost, transportation time and transportation reliability as shown in Table 2.

Table 2: The Effectiveness of Transportation Routes

The effectiveness of each side	x	level	SD	Level Difference
Transportation Costs	3.73	much	0.58	few
Storage Costs	3.77	much	0.67	few
Handling Costs	3.62	much	0.73	few
Transportation Costs	3.89	much	0.67	few
Administrative costs	3.59	much	0.92	few
Transportation Times	3.61	much	0.59	few
Halal product storage time	3.55	much	0.86	few
Halal goods Handling time	3.75	much	0.80	few
Travel time	3.39	moderate	0.86	few
Response time	3.99	much	0.81	few
Delivery reliability	3.73	much	0.59	few
Products Delivery	4.19	much	0.79	few
Responding to customer needs	4.01	much	0.74	few
Product damage	4.09	much	0.87	few
Product return	3.06	moderate	1.07	few

Total effectiveness	3.69	much	0.47	few
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From Table 2, it is found that the effectiveness of the route Transport between southern Thailand-Malaysia under the restrictions of halal products in overall, at a high level with an average of 3.69. For considering each aspect, it was found that all aspects have a high level of average, with reliability and transportation costs having the same average of 3.73, followed by transportation time of 3.61. And when considering each of the sub-sectors it is found that every sub-side Have a high average, except for travel time and product bounce the average values were at 3.39 and 3.06 respectively. In which all the differences between the highest and lowest scores are at a low level or similar. From the findings of the research the problem of logistics effectiveness lies in travel time. And the bounce side of the product if able to solve these 2 problems will do providing a higher overall efficiency of transportation routes.

The relationship model between transport logistics Halal products by using rail, water, and road, the effectiveness of Halal products before the analysis of the logistics relationship of Halal goods by rail, water and road and the overall effectiveness of transportation. Halal products need to check the basic agreement of regression analysis that all independent variables are independent to prevent problems Multicollinearity and using the Collinearity test, the Tolerance and VIF (Variance inflation factor) values are shown in Table 3.

Table 3: Tolerance statistics and VIF

Model	Collinearity Statistics	
	Tolerance	VIF
2 (Constant)		
Water transport logistics	0.893	1.120
Road transport logistics	0.893	1.120

In general, problems with Multicollinearity At a high level, a tolerance value is lower than 0.2 (Menard, 1995. referred to in Field, 2000), but from the table it shows that each independent variable has a chance of Multicollinearity is very small due to the Tolerance value approaching 1. In addition, if the VIF value is greater than 4 or 5, it means that the independent variables have a relationship (Phongsri Kiatlertnapa, 2010). However, from the table, the VIF value is less than 4, therefore According to the basic agreement of regression analysis that all independent variables are independent of one another therefore, the researcher performed multiple regression analysis.

Table 4: The relationship of Halal freight logistics by rail, waterway and road and the overall effectiveness of Halal freight transportation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	0.468a	0.219	0.208	0.42450

- a. Predictors: (Constant), Water Transport Logistics, Road Transportation Logistics
- b. Dependent Variable: Total effectiveness in halal freight transportation

From Table 4, it is found that there are 2 independent variables which are water transportation logistics And road transport logistics Which together can predict the total effectiveness of Halal transportation by 46.8 percent, with a standard deviation of the tourist satisfaction forecast of 0.42450 And the correlation coefficient (R) is equal to 0.468, indicating that water transportation logistics And road transport logistics correlated with the overall effectiveness in the transportation of halal products at a moderate level (Cohen Runyon and other.1996: 238).

Table 5 shows the ability to predict total effectiveness in transporting Halal products from water transport logistics variables and road transport logistics

Model	SS	DF	MS	F	Sig.
2 Regression	7.281	2	3.641	20.203	0.000a
Residual	25.948	144	0.180		
Total	33.230	146			

- a. Predictors: (Constant), Water Transport Logistics, Road Transportation Logistics
- b. Dependent Variable: Total effectiveness in halal freight transportation

From Table 5, it is found that 2 independent variables are water transport logistics and road transport logistics have been selected as predictive variables into the equation in order to predict the overall effectiveness in transporting halal products significance since the value Sig. <0.05.

Table 6 shows the results of the analysis of the predictive power of water transportation logistics. And road transport logistics affecting the overall effectiveness in the transportation of halal products

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
2 (Constant)	2.294	0.224		10.223	0.000
Water transport logistics	0.214	0.052	0.322	4.131	0.000
Road transport logistics	0.172	0.053	0.250	3.212	0.002

From the table 6, it shows that water transport logistics (X1) and road transport logistics (X2) can predict the overall effectiveness in transporting halal products with statistical significance at the level of 0.05. Can order the importance in forecasting from highest to least is Water transport logistics ($\beta = 0.214$) and road transport logistics ($\beta = 0.172$) respectively have the following forecasting equations: $Y = 0.214X1 + 0.172X2$

Hypothesis analysis results

The result of the hypothesis testing that Logistics, rail transport, water routes and road correlations correlate with the overall effectiveness of Halal transportation as shown in table 7.

Table 7: shows the relationship between rail transport, waterway and road transportation and the overall effectiveness of Halal freight transportation.

Transport Logistics	R	Sig.	Item
Rails	0.28**	0.00	3
Water	0.40**	0.00	1
Road	0.36**	0.00	2

** With statistical significance at the level of 0.01

From Table 7, it is found that the overall effectiveness of Halal transportation has a significant correlation with water transport by road and rail transport at the statistic level of 0.01 with the same direction. By water logistics and the roadways had a medium correlation coefficient equal to 0.40 and 0.36 respectively, while the rail traffic had a correlation coefficient. As low as 0.28 (Cohen Runyon and Other.1996: 238)

DISCUSSION

Effectiveness of transportation routes between southern Thailand - Malaysia under the limitations of halal products the effectiveness of the transportation routes between southern Thailand - Malaysia under the restriction of

halal products in general is at a high level. And when considering each aspect found that both costs, time and reliability are also at a high level. And when considering each of the sub-sectors it is found that every sub-section has an average value at a high level except for travel time and bounce of products. Which corresponds to Kanwachee Thanachot Rungsatis (2014), which has studied the effectiveness of Thai rice transportation logistics, which has a high level of effectiveness in terms of cost, time and reliability as well.

The overall effectiveness of Halal transportation is correlated with road transport logistics in terms of transport network. Transportation vehicles Connection points with other subjects and information technology with statistical significance at the level of 0.01, which is consistent with Usanee Kongraksavej (2013). It is found that the Thai logistics service providers still have low management efficiency. Therefore, the quality of service providers of logistics service providers should be improved in terms of information management and information technology.

The study of the model of the relationship between the Halal freight logistic, water transport logistics (X1) and road transport logistics (X2) can predict the overall effectiveness in transporting Halal products with statistical significance at the level of 0.05 which is in line with Nichit. Magma Kaew (2012) who studied the relationship of the focus of the logistics market, supply chain management, found that Supply chain management, logistics, and market focus can 70% predict or explain variability in the effectiveness of a pharmaceutical organization. For road transport logistics it cannot be used to predict the effectiveness of Halal transportation time. This is consistent with Krishna Sathitanuwat (2005) that has delayed delivery of sugarcane to the sugar factory due to the truck delivery system. In conclusion, road transport logistics has problems with time management systems.

CONCLUSION

The study of the effectiveness of the transportation routes between southern Thailand - Malaysia Under the limitations of halal products, found that the overall effectiveness is at a high level with an average of 3.69. When considering each aspect, it was found that every aspect has a high level of average value. The reliability and the cost of transportation have the same average of 3.73, followed by the transportation time is 3.61 and when considering each of the sub-sectors it is found that every sub-side have a high average, except for travel time and product bounce. The average values were at the middle level of 3.39 and 3.06 respectively, with every difference between the highest and lowest points being at the low level or similar.

For the hypothesis testing, found that the overall effectiveness of Halal transportation is correlated with logistic, water transport by road and rail at statistically significant level 0.01 with the same direction. And able to study the model of the relationship between Halal freight logistics by rail, waterway and road and the effectiveness of Halal freight transportation. $Y = 0.214X1 + 0.172X2$

SUGGESTIONS

From the research on creating a logistics management model of Halal products between southern Thailand-Malaysia There are important suggestions as follows; recommendations

There should be development of rail logistics throughout the transportation network. Transportation vehicles and Connection points with other shipments to increase the effectiveness of the transportation logistics.

1) Water logistics should be developed, especially the limitation of the channel depth And the lack of harbor cranes, which, if developed in these two areas, will result in a wider variety of cargo vessels.

2) Road logistics should be developed In terms of traffic density in order to increase efficiency in transportation time.

Suggestions for future research

It is appropriate to have a thorough study of the rail transport system. Especially the study of double track trains, finding links with other transport models to be diverse and appropriate for the study of water logistic systems Especially Songkhla deep sea port.

REFERENCES

- Benchmark Indicators for Entrepreneurs. Retrieved from <https://bit.ly/3aHIDi6>
- Bureau of Industrial Product Standards Ministry of industry. (2007). *Moving the Logistics System in Thailand*. Retrieved from http://herb.tisi.go.th/central/elearning/talk/no_6/logistics.doc
- Bureau of Logistics Department of Primary Industries and Mines Ministry of industry. (2010). Bureau of Logistics Information. Retrieved from <http://www.logistics.go.th/index>
- Bureau of Logistics Department of Primary Industries and Mines Ministry of Industry. (2013). A Guide to Logistics Performance Assessment Benchmark criteria for entrepreneurs. Retrieved from <http://logistics.dpim.go.th/webdatas/articles/ArticleFile2171.pdf>
- Bureau of Trade and Investment Cooperation. (2012). Halal market. Opportunities for Thai businesses to global markets.
- Charoenpanying, S. (2014). Railway connected with neighbors. Retrieved from <http://www.tri.chula.ac.th/triresearch/connect/connect.html>
- Chirakraisiri, P. (2011). Research methodology in social sciences: Research mapping techniques. Bangkok: Faculty of Political Science, Ramkhamhaeng University.
- Chucharukun, K. (2004). Road transport between Thailand and neighboring countries. Retrieved from <http://www.tri.chula.ac.th/twwwroot/journal/02.doc>
- Department of Foreign Trade. (2013). Transportation of goods and passengers from Thailand to Malaysia. And FTI. (Por. Por. Por.). A guide to diagnose logistics capabilities of business operations. Rajabhat University http://www.prachachat.net/news_detail.php?newsid=1379670846
- Jamsai, C. (2014). Thailand can be a logistics center in ASEAN, if helping each other. Retrieved from http://www.forbesthailand.com/article_detail.php?article_id=152
- Khucharoenpaisan, R. (2009). *Distribution of marketing channels and logistics*. Bangkok: Sam Lada Limited Partnership.
- Kiatlertnapa, P. (2010). *Research tool construction and development*. Chon Buri: College of Commerce Burapa university.
- Kongraksavej, U. (2013). Comparison of the efficiency of logistic service providers between Malaysia and Thailand. *Journal of Technology Management, Mahanakorn*, 10(1), 59-79.
- Logistics Digest. (2011). Halal logistics. Opportunities of Thai businesses to the world market. Retrieved from <http://www.dft.go.th/Portals/>
- Logistics Information Service Center Project. (2013). *A guide to assessing logistics efficiency*.
- Moral, K. D. (2005). Evaluation guidelines for lean organizations. *For Quality Journal*, 12(92), 14.
- Office of Business Service and Trade Logistics. (2008). *Halal logistics system*. Retrieved from http://www.tradelogistics.Go.th/page_bx.php?cid=7&cno=510
- Office of Foreign Affairs Coordination, OSMEP (2014). Opportunities in neighboring countries. CLMV.
- Office of Small and Medium Enterprises Promotion (2009). Songkhla economic, social and cultural structure. Retrieved from <http://122.155.9.68/identity/index.php/south/s-border/songkhla>
- Paniang Thong Demonstration. (2005). *Strategic Supply Chain Management*. Bangkok: SE-Education.
- Phutthawithi, W. (2004). *The power of modern business: Logistics management*. Bangkok, Thailand: Oasis Printing and Publishing.
- Riewkaew, N. (2012). Relationship between market focus, logistics, supply chain management and effectiveness of pharmaceutical products in the Pharmaceutical Organization. *Journal of Business Administration*, 35(136), 47-61.
- Runyon, R. P. (1996). *Fundamentals of behavioral statistics*. New York, NY: McGraw-Hill.
- Sa-at, B. S. (2010). *Preliminary research* (8th edition). Bangkok, Thailand: Suwiryasarn.
- Saharamrang, W. (2002). *Supply chain management*. Bangkok: Pearson Education Indochina.
- Sathitanuwat, K. (2005). Operating system for Delivery of sugarcane from the farm to the factory (Master's thesis). Faculty of Engineering Chulalongkorn University.
- Serirat, S. (2006). *Market research*. (2nd edition). Bangkok, Thailand: Thammasarn Company Limited.
- Sirikhan, P. (n.d.). *Islamic Studies, Ton 4*. Bangkok, Thailand: Thammasat University Press.
- Sorat, T. (2005). *Supply chain management in the era of globalization*. Bangkok, Thailand: Mekong River.
- Stock, J.R., & Lambert, D. M. (2001). *Strategic logistics management*. Boston, MA: McGraw-Hill-Irwin.
- Sukdanon, S. (2014). *Port of Songkhla*. Retrieved from <https://bit.ly/2tZqkmO>
- Suthiwatthamruthiput, K. (2001). *Logistics management*. Bangkok: McGraw Hue International.
- Kanwachathanathanachotrungsathit (2013). Efficiency and the effectiveness of Thai rice transportation logistics in Transport routes from Nakhon Sawan - foreign exports. *Suthipat Journal*, 28(88), 309-342.
- Svetanand, N. (2013). Thai port in AEC. Retrieved from the impact under the memorandum of understanding between Thailand and Malaysia.
- Waiwanitkul, N., & Udomsri, C. (2005). *Business research methodology*. Bangkok, Thailand: Chulalongkorn University Printing House.

Enhancing the Local Wisdom with the Logistic System

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Abstract: This research aims to enhance the value of local wisdom products that are more modern and value by using the key concepts of the 4.0 era (Industry 4.0 and logistics 4.0 and 4.0 marketing) and Transportation development to help, the researcher used methods to study local wisdom. With an interview from a group of local wisdom producers and interviews from a group of local wisdom product manufacturers and comparing the value of the new sales and the old sales figures from the updated to be in line with the concept of logistics 4.0 (Industrial 4.0 and Logistics 4.0 and Marketing 4.0) and the development of transportation Trade, The researcher will analyze the data and summarize the results by using statistics, frequency, percentage, mean and standard deviation.

Keywords: Logistics 4.0 , Wisdom Products, Transportation

INTRODUCTION

His Majesty King Bhumibol Adulyadej, 9th, uses wisdom to create benefits for the nation. And countless people using intuition solving domestic political crises until escaping many disasters He uses wisdom. Wisdom in many ways. Wisdom is knowledge which is learned from the grandparents, relatives and intelligence of each person. Or knowledgeable people in various local villages folk wisdom is about making a living, such as fishing, catching animals, growing plants, raising animals, weaving, and making agricultural tools. Therefore, wisdom plays an important role in community development. And the economy in the community can be seen from Nowadays, regardless of the direction, the products of local wisdom are often used, whether Thai people or even foreigners themselves the researcher is interested in the improvement of Thai wisdom that exists in every locality. To have higher value and increased revenue from local knowledge by adopting the concept of logistic 4.0, whether using technology to help Logistics management By the development of Industrial 4.0 and Logistics 4.0 and Marketing 4.0 in accordance with business operations and increasing the efficiency of the supply chain From sourcing, manufacturing, transports, and product distribution (Distribution) to consumers The researcher focuses on reducing the time required for transportation by using milk run principles to make the products reach the consumer's hands quickly and at the best possible cost.

RESEARCH OBJECTIVES

1. To upgrade local wisdom products to the era of logistics 4.0.
2. To develop the transportation of local wisdom products.

LITERATURE REVIEW

Ministry of Education (1996: 2) refers to the knowledge that comes from the experience in our lives through the education process. Observe, analyze, and develop wisdom and crystallized into knowledge that is made up of many specific knowledge. Such knowledge is not broken down into science Specific subject areas may be said that Local knowledge is the basis of modern knowledge that will help in learning, problem solving, management and adaptation in the lives of people. Local knowledge is knowledge that is common in society. Community and in one's own knowledge If searching for education and used, it will be known, resulting in acceptance, transfer and development to new generations according to the era. Sakchai Kiatnakin (1999: 2) gave the meaning of local knowledge which is the knowledge and ability of the community that has been inherited for a long time. It is the true truth of the community and the potential to solve problems, manage, adjust, learn, and transfer to the new generation. In order to live happily is the core of a well-preserved community a nation to survive from suffering all disasters. Jaruwan Thammasat (2000: 1) gave the meaning of local wisdom is a way of life that shows value and intelligence of people and society, which has accumulated and treated each other Wisdom will be a human resource. Or knowledge resources From the study of the meaning and concept of the wisdom of the villagers mentioned above, it can be concluded that Thai wisdom means knowledge, ability to live in that area by using wisdom to accumulate knowledge widely. Integrating harmony between religions weather Occupational environment and these processes until generations, which will be the way of life of humans Caused by learning and accumulation of experience for a long time. By using existing wisdom for settlement Adjustment and problem solving in life until suitable for the environment of nature and society. Logistics 4.0 using the concept of Industry 4.0 which is to increase the efficiency of production, service or product delivery. By connecting with digital technology Development of communication technology with machines used in transportation the system of the machine can communicate by themselves. Automatic production and delivery of products according

to the needs of consumers. As a result, it may be able to respond to individual needs while maintaining fast, accurate and high quality transportation. However, expectations or challenges in logistics Arising from the national industrial policy of Germany. Which will focus on the production that is the most automated By bringing robots, machines, digital technology And internet Used to help in the production process of the product In this era, there are more concepts that use automated tools to help with transportation. Route selection system Unmanned truck Automatic car intelligent warehouse system Moving production using robots Organizational development to be ready for the era of Logistics 4.0. The important thing is Must have strengths in bringing digital technology To help control the transportation as much as possible by connecting data with the production sector Therefore, the organization of logistics If wanting to have the potential and ability to compete in the future Must start to set clear policy and information plan Focusing on the development of work to improve the logistics to be the standard Encourage continuous research and development To create the competitive advantage of the organization to keep up with the situation all the time. Logistics 4.0 is the introduction of digital technology to assist in the activities of business logistics management. The development of logistics in the 4.0 era will reduce the gap between logistics activities and supply chains. Allowing manufacturers to meet the needs of consumers with their own business model to Digital Process, can create value for consumers and compete with competitors in the world market. Applying the concept of Logistics 4.0, whether using technology to help Logistics management by the development of Industrial 4.0 and Logistics 4.0 and Marketing 4.0 in accordance with business operations will bring benefits and value to business profits and increasing the efficiency of the supply chain from sourcing, manufacturing, transports, and product distribution (Distribution) to consumers. Milk run means one of the techniques used to support a just-in-time (jit) production system to help reduce the total cost of transportation and Reduce inventory the factory introduced the idea of milk run in organizing trucks to run out to receive materials from each supplier along the route provided. And make appointments for the period of receiving materials when all trucks from the supplier have been received on the route that has been arranged will return to the factory. The Milk Run transportation system mimics the milk delivery system in the United States, where every morning of the day the milk farm will arrange a pick-up truck to park in front of each house. With the number of empty bottles placed in front of the house as needed to symbolize how many bottles of this house needs to receive after that, the milk truck will bring a new bottle to exchange for customers. Then collect the empty milk bottle back into the car to the milk farm.

The successful application of the Milk Run system there are 3 important components together.

1. Personnel preparation Personnel used for milk run delivery can be divided into two parts, the planning and operating sections, with both types of personnel having different types of work. But must communicate to each other all the time.
2. Packaging design because each supplier of raw materials uses different types and sizes of packaging, these differences have a direct impact on the Milk Run transportation system. If there is no standard operating procedure for the packaging of the raw material suppliers will cause the transportation efficiency by not using the Milk Run system as specified.
3. Application of technology and equipment In Milk Run, technology and systems are used to order raw materials - products to suppliers, resulting in more accurate and faster information. These systems are connected and relevant. Such as the EDI (Electronic Data Interchange) system to transfer data between manufacturers and each supplier of raw materials.

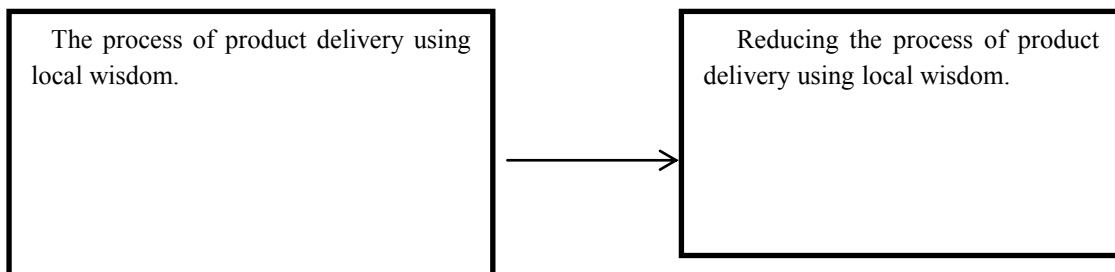
RELATED RESEARCH

The purpose of this research was to study the efficiency of fashion transportation development of effectiveness electronics commerce business in 4.0 Age in a case study of Thailand Post. A convenience sample of 400 people was administered a closed-ended questionnaire survey, with a reliability of .97 and its content validity being approved by specialists. The data were analyzed by percentage, mean, standard deviation and multiple regression analysis. It was found that the people who use the Thailand Post transportation service for fashion in e-commerce business were mostly female with an age range of 31-40 years, possess a bachelor's degree and are single. They are mostly employees of a private company with an average income per month of 10,001 -20,000 Bahts. The most popular purchased product is clothing which has been delivered by the Thailand Post service between 1-5 times. They had a high opinion about using transportation for fashion in the e-commerce business via Thailand Post. The hypothesis test found that the model of fashion transportation in the e-commerce business via Thailand Post had a positive effect on the efficiency delivery and the delivery performance which had a positive effect on the efficiency delivery. The efficiency delivery also had a positive effect on the effectiveness delivery. This research has focused on the development and community participation for empowering of farmers. The principle of integrating supply chain management and logistics efficiency. The objectives include: 1) to study the links of the supply chain between farmers. The harvesting to processing the frustration. In the district Wang Yang Si Prachan District, Suphan Buri 2) to study the relationship of supply chain frustration. That supplier Traders Middleman/collector the selection of raw truffle delivered to the factory, according to customer requirements. In order to deliver the best quality raw materials. Delivery on time and safely. 3) to study the problems and difficulties arising in the supply chain of frustration in Tambon Wang Yang. Si Prachan district Suphan .Buri 4) to determine the form of communication to create awareness

about the identity of frustration plants offense. The study was conducted using qualitative research methods to study collected data from documents and interviews; in-depth research is to focus on the benefits to farmers. The main contributors to the grower’s frustration. The area planted with domicile and residence in Tam Bon Wang Yang Am Phoe Si Prachan Suphanburi Province. The research was based on in-depth interviews and participant observation. For study the linkages the supply chain between the farmers, collector to entrepreneur. That is found to change traditional supply to modern supply chain. The farmers exchanged information to stakeholder. To know market want to the domestic consumers that demand. Then come back to plan production on order pre-planned. That study the relationship of supply chain frustration that supplier traders, middleman/collector the selection of raw truffle logistic to the factory, according to customer requirement, logistic on time and safety. Operation in supply chain management using theory Supply Chain Reference Model (SCOR Model) to study the relationship consisting of process to 6 step as following: 1. Plan 2. Source 3. Make 4. Delivery 5. Return and 6.enable there are barriers that occur within the supply chain. Input: 1.investment -investment must find a source out loans outside the system. Because of the loan system properties do not pass that high interest rate. 2. Workers in rare areas must employ foreign workers problem from new labor royal commission. Farmers have not money to pay fees in management. 3. Changes from the traditional system to the modern system. Gradually, there is no quick change. Because the behavior of farmers made the traditional is still attached to the old. Production process: maintenance, mostly on plant diseases and insect pests. The water are not a problem. Because in Am Phoe Sri Prachan have to irrigation is thorough. There is a drought that lasts a long time. Product (Output): When the harvest is the middleman, it will come to buy in the price and quantity agreed, the contract is pre-trading. If not sold, it must be immersed in the field for maintain quality is not required by the market. Another problem is the middleman mostly influential in the area. Monopoly, forbid farmers to sell to others and payment of the merchant was slow. That to determine form of communication to create about the identity of frustration plants offense of Suphanburi Province. The perception of communication the people want to know most is internet/social network.

The object of this study is to study the possibility to change the delivery mode of the component parts to the car assembly manufacturing from supplier’s self-delivery to be milk run delivery by the car assembly manufacturing. There are six selected suppliers located in Amata Nakorn Industrial Estate, Chonburi which are currently managing the delivery by themselves. The study is to compare the delivery cost between these two delivery modes based on the production forecast from February to July 2015. This study is focused on transportation cost reduction from the delivery mode change; supplier’s self-delivery to be milk run delivery by the manufacturing, without considering milk run route and packaging study. The result showed that it has potential to change the delivery mode to be milk run delivery because the transportation cost is reduced THB 523,146 per month or 67.58% comparing to supplier’s self-delivery.

RESEARCH FRAMEWORK



RESEARCH METHODOLOGY

The research instruments were 300 questionnaires divided into 200 sets of supplier questionnaires and 100 sets of manufacturer questionnaires.

- 1) Comments about the issue of transport management.
- 2) Opinions about product preparation.
- 3) Comments about the transport process.

The researcher created the tools and collected the data according to the following steps. Study concepts and theories from academic documents, textbooks, websites, and related research It is a collection of data from many sources to guide the questionnaire construction. analyze the objectives, content and research structure to determine the guidelines and scope of the questionnaire. Create a draft of the questionnaire By interpreting the scope of the questions in accordance with the research objectives, the accuracy of the content that affects the understanding of the questions

And the use of language in evaluating the results of decisions for finding the consistency index between questions and objectives (IOC). Use the complete questionnaire to ask questions in the research sample.

The researcher selected the questions with IOC values greater than 0.6 to be used as the actual question, as well as improving the questionnaire to be clear and easy to understand to meet the research objectives. The researcher used the questionnaire to adjust according to the guideline recommended by the experts and to try the sample with the same characteristics as the sample that the questionnaire was used previously. The researcher will research the data and conclude by using statistics, frequency, percentage, mean and standard deviation.

BENEFITS OF RESEARCH

1. Understand the process of delivering wisdom products.
2. Know the potential and limitations of the transportation of wisdom products.
3. Know the problems that are obstacles in the transportation of wisdom products.

REFERENCE

- Sirianusornsak.w, (2019). The Efficiency Of Fashion Transportation Development Of Effectiveness Electronics Commerce Business In 4.0 Age In A Case Study Of Thailand POST. Rajamangala University of *Journal of Business Administration and Social Sciences*. 2(1),120-121.
- Miss.Sutathip Lerdwiwatchaiyaporn. (2018) . *Logistics and Supply Chain Management of Water Chestnut Farmers Group Suphanburi Province*. (Rajamangala University of Technology Suvarnabhumi)
- Wiriyasahakij.T, (2015). *Transportation Cost Reduction Study Applying Milk Run Delivery*. (Master's thesis). Logistics and Supply Chain Management of Burapa University)
- CHAIWAT0933. (2017)Local knowledge, basketry.Retrieved from: <https://chaiwat0933.wordpress.com/2017>
- Prapasiri Klang Pon. Folk wisdom or local knowledge. Retrieved from: <http://www.ipesp.ac.th/learning/thaistory/index.html>
- Udomthanathira.K, (2018).Logistics 4.0. Retrieved from: <https://www.iok2u.com/index.php/article/logistics-supply-chain/450-4-0-logistics-4-0>
- Logisticafe. (2017). *What is Thai Logistics in the 4.0?* Retrieved from: <https://www.logisticafe.com/2017/04/logistics-4-0/>
- Modern Manufacturing. (2017). *How to increase the efficiency of the organization's logistics system in the industrial 4.0*. Retrieved from: <https://www.mmthailand.com/>
- LOGISTICAFE. (2009). *What is milk run? Production system to help reduce transportation costs and reduce product quantity*. Retrieved from: <https://www.logisticafe.com/2009/08/milk-run/>
- THAILANDINDUSTRY. (2009). *Logistics Management by using strategy MILK RUN*. Retrieved from: http://www.thailandindustry.com/indust_newweb/articles_preview.php?cid=8910.

Tourism Logistics Management for Muang Pattaya in Chonburi Province

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Abstract: The objectives of this study were 1) to study the logistics situation for tourism in Pattaya Chonburi province 2) to study the satisfaction of tourists towards the components and the logistics management for tourism in Pattaya Chonburi province 3) to study the logistics management for tourism in Pattaya Chonburi province from the perspective of tourists 4) to collect data to be a guideline for the development of the logistics management for tourism in Pattaya Chonburi province. The sample group used in the research was 400 tourists in Pattaya. The tools that were used for data collection were questionnaire and statistics used for data analysis: frequency distribution, percentage, mean, standard deviation, t-test and F-test by using One-Way ANOVA. The benefit from this article can be used to improve the tourism logistics management for function and department concern.

Keywords: Tourism Logistics Management, Pattaya, Chonburi Province

INTRODUCTION

In 2017 - 2019, the Thai economy expanded in the first half of the year, driven primarily by both external and domestic demand. But in the second half of the year, the export demand of foreign demand clearly decreased Especially the product export sector of Thailand since beginning to be affected by the trade war between the United States and China And the economic slowdown, the trading partners that come from other factors And it is expected that the effects of the trade war will become clearer Which is an important factor that pressures the growth of the Thai economy this year (Sirawit Woramongkol, 2019) which the tourism sector gradually recovered. Thailand's tourism sector, which has expanded well in the first half of 2017 - 2019, had to stumble from a boat crash in Phuket in July 2018 which affected confidence. The safety of Chinese tourists severely. The tourism sector began to signal. The recovery continues after the government has accelerated the promotion of tourism safety standards. Including using various stimulus measures Resulting in Chinese tourists beginning to have signs of improvement. In addition, tourists from other countries continued to expand well and should have continued growth in the year 2019, but the problem of excess usage of various airports. Is still a significant supply constraint to the Thai tourism sector (Sirawit Woramongkol, 2019) Tourism Authority of Thailand (TAT) announced the direction of tourism promotion for the year 2017 - 2019, emphasizing that TAT will adjust the marketing plan to focus on reducing serious inequality and pushing the distribution of income to travel provinces to travel in every season Increase the target from tourism income to grow at least 11.5 percent by mentioning the national strategy which is Long-term national development framework in order for the country to achieve its goals. Covering from 2017 - 2037 in the tourism industry the target is to be a world-class travel destination. Or is a world-class tourist magnet by the concept of creative economy which this year 2017 - 2019 TAT has set a target for revenue of both foreign and domestic tourists to increase by not less than 11.5 percent by setting the growth target of international markets 12 percent and domestic 10 percent, up from year 2018 which will not focus solely on increasing economic income in a specific area but will give importance to income distribution to reduce inequality and at the same time having to consider the environmental and community impacts quality tourism emphasizing the environment and safety while promoting secondary cities and communities (Tourism Authority of Thailand, 2019). Tourism in Pattaya in Pattaya Chonburi province is a special administrative area established under the Pattaya City Administration Regulations, dated 29th November 1978, equivalent to the municipality of Chonburi province. Considered as a world-renowned international tourist destination, especially the beaches that stretch along the coastline. Organized as beautiful in Thailand, Pattaya is also a popular tourist destination for both Thais and foreigners. In which tens of millions of tourists visit Pattaya each year Because Pattaya has everything that a tourist needs Since the accommodation which has sufficient tourist support and there are many styles to choose from the travel is convenient. Whether private cars, buses or taxis from Bangkok to Pattaya, because the distance is not very far. (Tourism Authority of Thailand, 2019).

In 2017 - 2019, TAT Pattaya Office has set a target for total revenue of 2017. There are 17.4 million tourists in Pattaya and Chonburi, increasing by an average of 2.4 billion baht, an increase of 16%. The numbers will increase both the income and the number of tourists. Year 2018 will increase by not less than 7% in 2019. As for the growth of tourism revenue as a whole, will try to maintain 16% of the number of tourists each 14.7 million people are Thai people.

Nearly 9 million members and more than 6 million foreigners. Consisting of the top 5, namely China, Russia, Korea, India, Germany will accelerate the engine to grow more than 10% or more depending on the future situation next year which we will see that If the logistics management system is good, it will be able to service tourists to tourist destinations in different regions of Thailand in many directions and also able to accommodate the number of both Thai and foreign tourists visiting Chonburi causing tourists to be impressed with good management. Generate income from tourism in the province, increasing the proportion of tourism income to gross domestic product (GDP) at the national level. From a study of past research data about tourism in order to use the results to develop the tourism industry to be sustainable Able to generate income for the country That province and locality There must be something that can attract tourists to visit and make tourists satisfied while traveling. Until after traveling back, there is still a need to visit again next time Those attractions often include various tourist attractions or various activities which helps to encourage tourists to travel, such as accommodation availability local food, excellent service friendliness of the local people. Which these are what make the tourists satisfied in using the service and causing tourists to come back and travel repeatedly many times.

The researcher is therefore interested in studying the situation of the tourism logistics management system of Pattaya in Chonburi province to study an overview of the logistics management system for tourism in Pattaya in Chonburi province. Currently, studies on tourist satisfaction have also affected the various aspects of tourism logistics management systems in order to encourage repeat visitors. A study of the concept of developing a logistics management system for tourism in the perspective of direct tourists. Therefore, it is very important in the planning of sustainable tourism development in Pattaya in Chonburi province.

RESEARCH OBJECTIVE

Research on tourism logistics management for muang Pattaya in Chonburi province have established important objectives as follows.

1. To study tourists' satisfaction with components and logistics management for tourism.
2. To study tourism behavior in Pattaya Chonburi province in the perspective of tourists.
3. To study and compare the satisfaction of tourists towards the logistics management for tourism classified by personal factors.
4. To study the guidelines for the development of logistics management systems for tourism in Pattaya Chonburi province.

LITERATURE REVIEW

In this research, the researcher studied about logistics management concepts, tourism and types of tourism, concept of tourism logistics management, concepts and theories about tourist satisfaction.

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.

Tourism and Types of Tourism

Chalongsri Pimonsompong (2007) said that when taking the definition of tourists and tourism Come together "Tourist" means a person who travels from a normal place of residence to another location. Temporarily voluntarily and for any purpose that is not a career or to earn more than 24 hours round trip (must stay overnight in the destination or tourist attractions), which is a journey that has 3 important conditions, which are 1) Travel on a voluntary basis. 2) Traveling temporarily from a normal place of residence to another location. 3) Travel for any purpose, but not for a career or income. Office of Tourism Development (2009) said that the definition of tourism as World Tourism Organization (WTO) means travel with 3 conditions which are 1) Travel means a trip that is not forced or rewarded. By planning travel from one location to another and use vehicles for a short distance or Can be a long distance. 2) Destinations means having a destination to temporarily stay Then have to travel back to the original address or original copy as a place that tourists choose to visit and spend a period there where there are facilities and sufficient services to meet the needs and satisfaction for tourists visiting. 3) Purpose means any purpose or purpose for traveling who is not for a career or to earn income with the intention of traveling more than one time.

Chantouch Wanthanom (2009) said that tourism is a journey from normal housing. To be temporarily elsewhere for the purpose of resting, enjoying, or for any non-occupation purpose. In summary, tourism is any activity related to travel movement. Of a person from a normal place of residence temporarily for any purpose which is not for earning money. In which such activities causing phenomena and relationships resulting from interaction between persons traveling (tourists or visitors) businesses in the tourism industry that manufacture products and services to meet the needs of tourists' government that oversees tourism and communities in the tourist area.

Concept of Tourism Logistics Management

Conceptual framework used to determine the causal relationship between logistics management. With loyalty to tourist attractions, it is an assessment of the satisfaction of tourists received from the logistics management of tourist attractions in 3 points (Thakerngsak Chaichan, 2012) as follows 1) Financial Flows: Financial management, payment, currency exchange and various forms of tax refunds. 2) Physical Flows are operations in relation to tourism management of tourists. Accommodation management, baggage, security tour program for convenience and the safety of tourists. 3) Information Flows is the management of information. From the information that makes decisions about choosing a tourist destination to the information received when arriving at various attractions Which tourists should access information conveniently, quickly, and correctly receiving information.

Butsaba Sittikarn & Siriwattana Chaima (2009) have the idea that various tourism resources categories that can attract tourists to travel to that tourist destination Should have characteristics of at least 6 elements or 6As. 1) Attraction means tourism resources that help attract Causing tourists to be interested or to make it look attractive, attractive, and has a unique charm Mainly due to the beauty of nature such as on the beach, coral reefs are colorful Including various fish species Or caused by the beauty that humans have created, such as lakes or resorts in the valleys. 2) Accessibility means to make tourists interested in traveling to travel Which if tourists traveled to travel comfortably Because if the tourist attraction is beautiful but the travel is difficult It's difficult for tourists to travel. Therefore, the agency responsible for tourist attractions should create comfortable travel.

3) Amenity means that tourists travel to various locations. What tourists want from tourism is the convenience of traveling. By agencies involved in tourism Will construct the facilities which the infrastructure such as electricity, water supply, roads, communication systems. 4) Accommodation means the place to stay for tourists. Because traveling may sometimes have to stay overnight in the tourist location. Therefore, as a facility Therefore has a place to stay for tourists. 5) Activity means activities that are organized in tourist attractions, such as organizing festivals, rafting, hiking, boating, etc. 6) Ancillary Service in tourist attractions requires various services. To facilitate tourists such as banks, hospitals, tourist service centers and petrol station etc.

Concepts and theories about tourist satisfaction

Service satisfaction is the highest and most important goal of service work. Creating satisfaction for users until feeling good. Impressed and returned to use the service again Considered to be a true success of the service. Therefore, studying the satisfaction of users is important. That relevant persons, whether service providers or operators, must always be aware of Because that means sustaining existence and the importance of satisfaction with service users that the service organization must give priority (Chittinan Dechakup, 2008) as follows 1) The satisfaction of users

determines the features of the service. Corporate executives and service workers need to survey the satisfaction of users. Regarding the products, services, and the nature of the presentation of the services that users are satisfied and liked. Because the said information shows the evaluation of the feelings and the opinions of the users. Want to show the response to the needs of each user desire. This is good for service providers to be aware of the needs of users. And can make it match the needs of users.

2) Customer satisfaction is an important variable in evaluating service quality. Offer good quality services that match the needs and expectations of users. Resulting in the user being satisfied with the service and is likely to return to use again including locations good personality of the staff the reliability of the service which will make the service able to build trust and understanding with others.

Lovelock & Witz (2011) discusses the importance of customer satisfaction, which provides many benefits to service organizations. And the satisfaction of users at a high level will lead to corporate loyalty in the long run. If better retain users, than to incentivize or develop new users to replace those who have passed away. Users with the highest satisfaction will spread the word positively, becoming advertising to service organizations. This will reduce the cost of finding new users. This is very important for service providers. Because reputation and spreading are important sources of news for new users. Service quality is important to make users happy. And the benefits of satisfaction will positively impact the service organization.

RESEARCH METHODOLOGY

1. Population and the sample selection are Tourists in Pattaya Chonburi province 400 people by accidental selection method with a simple sampling method.

2. The instrument used in this research were questionnaire and interview information which has general information for tourists who came to travel in Pattaya 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 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 Pattaya Chonburi 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 400 samples and analyzed using computer software.

5. Data analysis and statistic 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.

Independent Variables		Dependent Variables
Logistic elements - Physical flow - Information flow - Service process aspect - Location - Marketing promotion - Personnel - Regarding returning / sharing experiences - Expenses	Tourist Satisfaction level	Development guidelines logistics management for Muang Pattaya in Chonburi province

Table 1 : The conceptual framework of the study-

EXPECTED BENEFITS

1. Able to bring logistic management factors that tourists are satisfied with in order to improve it until it has the potential to help attract more tourists to come to Pattaya.
2. Introduce logistics management guidelines to develop readiness to support tourists in Pattaya Chonburi province.
3. The data studied will be able to become a database of public and private sectors. In order to develop the entrepreneur efficiently as well as a guideline to promote new entrepreneurs.

REFERENCE

- Sittikarn.B, & Chaima.S, (2009). *The research report on the development of the role of the administrative organization local promotion and support the availability of tourist routes by communities in the upper northern region of Thailand*. National Research Council of Thailand.
- Pimonsompong.C, (2007). *Planning and Development of Tourism Market*. (7th edition) Bangkok, Thailand: Faculty of Humanities Kasetsart University.
- Wanthanom. C,(2009). *Tourism industry*. Bangkok, Thailand: Sam Lata.
- Dechakup. C,(2008). *Attitude and satisfaction in service Teaching materials, course set service Psychology, Unit 8-15*. (12th edition) Nonthaburi: Sukhothai Thammathirat University.
- Office of Tourism Development. (2009). *Definition of tourism*. [Online]. From: <http://www.tourism.go.th>.
- Woramongkol.S, (2019). *Thai economy in 2019: slowing down but still growing well*. Economic department macro Bank of Thailand.
- Stock, J.R., & Lambert, D.M. (2001). *Strategic logistics management*. Singapore: McGraw-Hill.
- Chaichan.T, (2012). *Logistics Management for Tourism in Wang Nam Khiao District, Nakhon Ratchasima Province*. Department of Management Technology Institute of Social Technology. Suranaree University of Technology.
- Tourism Authority of Thailand. (2019). *Destination about Pattaya*. [Online]. From: <https://thai.tourismthailand.org>.

Strategies for Reducing Transportation Costs by Managing the Use of Special Semi-trailer (B-Double)

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Abstract: After the liberalization of trade in logistics and services within the framework of the ASEAN Economic Community, that have been spoken about the mode of transportation, one of the main reasons for this awareness is the concern that Thai businesses are less competitive than today, because the cost of shipping in Thailand is quite high even though many years have passed. We will set goals for cost reduction logistics up to 16 percent on the country's economic growth rate, but at present, still not successful Thai logistics costs are still high and the trend is increasing. Therefore, studying methods to find strategies which can help reduce fuel consumption per trip or making it more portable each time or in smaller quantities, such as using a special semi-trailer (B-Double) to reduce transportation costs to support the ASEAN Economic Community is an innovation presentation to reduce transportation costs, increase transportation efficiency throughout the country in order to compete with ASEAN and transportation efficiency.

Keywords: Strategies, Transportation Costs, Special Semi-trailer (B-Double)

INTRODUCTION

Transport vehicles and cost reduction strategies trucks after free trade, logistics, and services within the framework of the ASEAN Economic Community have been discussed more and more over the years. There is an important proposal that makes sense. Annoyed in loud matters Will be disadvantaged in terms of competition because everything that has been developed is the cost of transportation of goods in Thailand Reducing the cost of reducing the national economic cost But still not conducive to succeed in reducing economic costs Facing the logistics costs of other ASEAN countries like Singapore and Singapore at a much lower cost. Moreover, operators in the logistics business Many small and medium reduction participants see it as a weakness. But that's not the case. It's hard to survive. Studying methods that can help reduce trees, such as reducing the use of per trip or spending per trip more by using energy. Same or less work, such as the use of special trailer trucks (B-Double) to reduce transportation costs. The ASEAN Economic Community is an innovator to reduce transportation costs. Famous for competing in the ASEAN championships

The B-double truck was developed in Australia and has many more models than those used in different countries. The B-double is expected to come from the so-called head-type A and tail-type or trailer B models, when available. 2 semi-trailers are called B-double. If there are 3 semi-trailers, they are called B-triple. If 4 is called Double B-double, this type of vehicle is called Road Train. Some states in Australia and this special vehicle Has a maximum length of 53.5 meters and has Whether the total up to 200.If using a special semi-trailer (B-Double), it can reduce the problem of road breaking. And overloading Because technically Special semi-trailer (B-Double) has an increasing weight per trip Without causing damage to the road Like a ten-wheel truck Overdue due to the weight pressed into the shaft. Was spread out Since the special semi-trailer (B-Double) has more axles, it can distribute the weight better without damaging the road, the law has determined the total weight to allow the weight taken to Each axle of the car has an acceptable value. The weight of a single shaft must not exceed 9.1 tons, and the weight of a double shaft (2 axles that are close to each other) must have a value of not more than 8.2 tons in each shaft. Design of road structure And is a weight value that will not cause damage while also reducing the number of trips due to the increased weight and load, can carry twice the ten-wheel truck Because it can reduce the weight of one empty car in the case of carrying with 2 ten-wheel trucks, change to load with a special semi-trailer (B-Double).



Freight car and strategy to reduce costs by using a B-Double truck

The freight company and the effect of the service. Freight company is related to the economic, political, and social systems. The development of the public transportation system and the development of the public transportation system are part of the development of taxation systems for national development. Rural areas have better incomes but it has caused many rural people to change their lives a lot differently since they were able to buy Consumers from the city are more convenient to change the production system in the countryside from production for consumption to land sales and pesticides more than ever. Content analysis is an important issue in the country's economic development. Rapid development is rapidly due to the building of railroads into the area, which can be exported to the market and resulting in more income that needs to be expanded. Also brought goods from the city into the village again by exchanging products and creating products Economic, economic development, the development of rail transport and road transportation are one of the important factors that cause the country to have rapid economic growth. The transportation network project (round trip). Target is to be a leader in the transportation service industry in Thailand, providing quality service for the highest satisfaction of users. Can meet the needs

International Standards

Freight car and transportation management strategies Both traveling to and from. Increasing transportation efficiency by reducing empty runs is a management Transport that aims to make use of vehicles Because of transportation by General when the product has been delivered. Will hit the empty road back and forth, resulting in the cost of Operations increased by Vain Which this cost occurred It is a cost that does not create value. And operators must Bear these costs, which is an important part of the increase in operating costs, but the current return management is not able to Carried out very efficiently due to the unknown volume of Need to transport products Including important product destinations The amount of demand for the transportation between origin and destination is usually there. Therefore, creating a transportation network project (round trip) is very necessary because it has many benefits which are

RESEARCH OBJECTIVE

1. Enhances efficiency Transportation by reducing empty runs or Backhauling Management is transportation management that aims to the use of vehicles in the empty voyage (Backhauling) in the transportation business industry group, Chachoengsao province.
2. Is a network construction Cooperation with various agencies, including the government, private sectors, associations, and educational institutions Start integrating cooperation Achieve efficient transportation by using vehicles and energy efficiency
3. To study and analyze Important factors in increasing transportation efficiency by reducing the joint free running
4. To build capacity in the competition for industrial enterprises, the business of transportation of goods which can meet the needs of the changing customers Both at home and abroad, continuously and sustainably

LITERATURE REVIEW

Land transportation can be divided into 5 types according to the nature of the operation, which are:

1. Public transport operator means Transport service providers for the general public Both routing and non-routing Complying with the contract
2. Means a trader who provides freight forwarding services to a particular person with a contract of employment between them to provide continuous transportation services
3. Personal transport operator means Transport operators for business of their own for their goods using their vehicles
4. The freight forwarder means the person who collects the goods to deliver to those Engage in public transport or transport operators following the contract Which the consignee will be responsible for the transportation
5. Operators of transportation locations mean Operator of a freight station which is a place to transfer goods or collect goods for further transportation. Generally, the state will operate the transport station itself.

Solutions for Problems of Freight Vehicle Operators

1. Transport management factors Freight carriers and transport contractors are all the most efficient need is to have the lowest transportation costs. Deliver products to the consignee at the most appropriate time. To allow processes in the supply chain to continue with maximum efficiency

1.1 Products and services Currently, there is a need to have standards to support quality standards and business trends. Every customer needs standard quality. Both in terms of products and services, manufacturers and carriers must manage to deliver products on time, completely, and safely. Without damage by having the lowest transportation cost

1.2 Freight vehicles Need to choose the type of truck that suits Operating Type And the most effective, Therefore, in choosing Trucks must consider that What kind of goods will we transport? How much weight does the running route have on the terrain? Need speed or focus on safety etc. These things are all important in choosing the right truck for the type of transportation Including after use, should have a car inspection and good maintenance to seize the use for longer

1.3 Each driver company needs a driver who uses fuel oil. Can save fire, drive safe, be enthusiastic, have good personality, look after the car properly Have awareness to help reduce costs and help promote sales, marketing for the company Truck drivers must have Responsibility to the public, society and the environment is high, in addition to accepting the product responsibility, but also responsible for the car.

2. Reducing shipping costs Transportation costs may be classified into major categories as follows:

2.1 Fixed cost is the cost of the transportation business. Mostly The capital is stable and difficult to reduce. Which will consist of Employee salaries, insurance fees, vehicle taxes, office expenses, rental fees Depreciation, that is to say, the cost is a fixed amount This type of cost Even if there is a mass production or a small amount, the cost will be the same.

2.2 Variable costs are costs or expenses that change according to the amount of production. The important thing that operators can reduce costs is running costs because running costs of transportation that Caused by the fuel ratio is relatively high compared to the cost, Therefore, if able to manage in engineering, it will be able to know the behavior of truck usage Which type causes high fuel consumption? Which, if informed of the cause of those fuel wastage Then will be able to place. The measures for saving money can be greatly reduced as well. Factors that are the costs of truck fuel consumption Can be classified into 4 factors, namely technical factors, engine maintenance factors External environmental factors such as traffic congestion, slope, and driving factors should instill drivers to use fuel economically

3. Personnel management the quality of drivers is strict from the start since the selection should be interviewed. Knowledge about traffic regulations, which today is still not very attentive, should have a physical examination and driving test, including supervision and evaluation, training and development of personnel is very important. Should

appoint and assign the person responsible for staff training, create standard manual for work, cultivate attitude And consciousness in The issue of road safety therefore When studying transportation costs In truth, will find that Cost of return trip Is a major cause of problems Currently traveling to empty highways One comes from the lack of information. For example, one operator must transport goods from Chachoengsao to Nakhon Pathom Province But without a branch office in Nakhon Pathom, resulting in the lack of tools to be able to verify that On arrival In Nakhon Pathom province, there are people wanting to hire to transport products from Nakhon Pathom to Chachoengsao at the right time or not Therefore having to travel back in vain Chachoengsao, in fact, there may be someone wanting to hire a truck from the province From the data collection, it was found that the central region had the highest number of cargo carriers, 483, followed by the eastern region 92 and compared by Proportion of the province, it is found that the eastern region has the largest number of transport operators, excluding Bangkok and its surrounding provinces (Nonthaburi, Pathum Thani, Samut Prakan) with approximately 359 operators, indicating that the eastern region has a large amount of land transportation, causing many people Entrepreneurs are most interested in investing in this region.

4. Prepare the demand table. the return transportation Together, training to give basic knowledge and principles of interconnection planning for transportation networks, the working group held a meeting to monitor the progress of Ongoing project In addition, the consulting team has also provided training Knowledge of planning with GPS Technology for transportation planning and system development programs by experts in designing information systems and transportation management systems. Travel together the design of this system will be able to meet the needs of entrepreneurs who are members of the pilot project for efficient transportation management with modern innovation. That combines the concept of GPS coordinates with the function Work through technology Wireless communication network Therefore helps to control and track every movement of vehicles from every point in the country through the screen, as well as reporting the condition of that vehicle, such as vehicle location at various times On the speed route used while driving, parking, or stopping (Engine on / off), etc. or even a command Cut the engine electrical system in some cases And preparing various data reports to enable efficient transportation management Reduce costs and also have to manage return goods in all 5 product groups, with the observation that there are 2 types of return goods which are

4.1 Return goods originating from large travel goods, as well as products that require customers to be very popular. Products returned for use in the next shipment, which is thought to be 100% agreed on the price that includes the cost and Travel profits are back. (Return profits by approximately 20% compared to the cost of travel)

4.2 Return goods resulting from goods returned to transport are approximately 5% of the return trip (approximately 50% return profit compared to the return shipping price). Up, it can increase profits another way profit compared to the return shipping price). Up, it can increase profits another way

5. Return goods that are caused by having products nearby. For example, chemicals from transportation by the car to various tourist attractions in Bangkok - metropolitan areas must have land transportation to get products (fertilizer) from the area. nearby (Ang Thong province) Delivered to nearby areas before returning to Map Ta Phut Industrial Estate, 10% of the trip (the return profit is approximately 80% compared to the transportation price too)

6. Return goods resulting from having goods returned from tourism but accounting for 10% of the return trip (return profits of approximately 80% compared to the return trip price from here will find that the return transportation is 5% of the money (except as agreed in agreement 1), most still have to be Finding products near the destination and returning it to the starting point, or about 20% of all return trips used in this section, will have an additional 20-30% cost if we have. Extensive use. Receiving product distribution. (Distribution Centers, DC) Building networks to reduce exports outside the transportation route to be less simple and easier to Help to reduce the cost of transportation quickly, reduce the cost of transportation and transportation in areas far from the city Per unit higher) then use the method of creating frequency to distribute products to important points in the area.

REFERENCES

Information (Industrial Promotion Center Region 9 Department of Industrial Promotion Ministry of industry
5 strategies to help reduce transportation costs Published by Bangkok banksme.com Reterived From:
<https://www.smeone.info/center-service-sme-detail/945>

Increasing the Operational Efficiency of the Warehouse Staff, Amarin Book Center Company Limited

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Abstract: The objective of this research is to study the factors that affect the work efficiency of the employees in Amarin Book Center Company Limited and analyze the problems from the said factors. The content presented in this article includes relevant elements, including an environment related to supervisors and relationships with colleagues and the welfare received and work safety. Found that the work environment was at a medium level, job security factors were at a medium level, the wage and compensation factors were at a low level, job characteristics were at a medium level and interpersonal relations factors were at medium level. In this research, a guideline was proposed to increase the efficiency of each factor. Work environment factors should be safe at work in terms of wages, compensation. The performance should be evaluated fairly and transparently and the remuneration should be paid. Supervisors should trust in their work and build teamwork to help each other in their working style, providing opportunities to use their talents to accomplish tasks and relationships with colleagues should build a relationship between colleagues. In addition, information can be used within the organization to increase employee productivity, motivate employees and provide management guidance between the various components that will improve the quality of work..

Keywords: Performance, Motivation, Relationship, Compensation

INTRODUCTION

Giving importance to the people in the organization is very important. In order to motivate employees to work according to the organization's strategic plan efficiently Therefore is the duty of the management In understanding and appreciating the importance of employee expectations If receiving those expectations from the organization This will be an important driving force for employees to work at full efficiency, with the organization having a fair and motivated compensation system, a transparent performance evaluation system, a clear career progression system, appropriate responsibilities and the environment. That is hygienic and safe. Promote activities to strengthen relationships in the organization. Counseling to solve problems. Important aspects of Which these factors result in personnel working happily With intention to work Have a work plan or job priority Clearly before-after With job analysis Resulting in effective work to be successful Quality work Create a good image for the company. Impress customers And resulting in improved company profits As for work efficiency, it is caused by the satisfaction of the work of the personnel in the organization as well, which affects the success of the work and the organization as well as the happiness of the workers. Satisfied with work may be one reason that makes work and work ineffective, resulting in decreased quality of work and adversely affecting the organization, causing work risk. And disciplinary lost cause problems, too On the other hand, if an organization has personnel who are satisfied with their work, it will have a positive impact on their operations. It is also a reflection of the efficiency of their operations and the leadership of the organization's executives. If any department recognizes the importance of work efficiency to happen to the personnel in their department and has an understanding of the factors or components that affect the efficiency Both realized that the feelings are always eager to work can be changed at any time by the state or by time. (Priyaphon Wong Anutarot 2005, Nor. 142)

Frederick Hirschberg's Two-Factor Theory (Frederick Hirschberg Cited in Net Panpanaya Wirarat 2009, p. 166) If sanitation needs are a theory that is important to assess the level of operational needs of personnel in the organization and to mention humans in their full response, humans will sometimes become dissatisfied. Strikes But even though it has been fully responded Humans are still not fully satisfied. And feeling dormant. If you have received too many hygiene needs, you will feel good. However, if hygiene needs are not met at all, then problems will arise. Therefore, responding to human hygiene requirements is a condition to remove dissatisfaction at work only, but can not make humans. At the same time, if motivation needs are fully fulfilled, humans will feel satisfied and act with love for their devotional duties. the work

RESEARCH OBJECTIVE

1. To study personal factors that affect the operational efficiency of staff of Amarin Book Center Co., Ltd.
2. In order to study the operational factors which have an effect on increasing the operational efficiency of the employees of Amarin Book Center Co., Ltd.

LITERATURE REVIEW

Research topics "Increasing the operational efficiency of warehouse staff. Case study: Amarin Book Center Co., Ltd." This time, the researcher has specified the issue of document review and related research to be used as a concept and create a conceptual line in the research. The review is as follows

Environmental factors mean the things that surround the people working in an organization. Is a reflection of how people feel about work. And colleagues The working environment may be a factor that causes pressure. And resulting in fatigue While working, it may be people such as supervisors or coworkers - things such as machinery, mechanical equipment and tools, chemicals, energy, such as breathing air, light, sound, heat, and the cause of psychological and social factors such as working hours. The working environment refers to the things around them that enable people to work more efficiently. One important part is the physical environment such as work equipment, workplace, light, sound, temperature and socioeconomic environment which are relationships with supervisors. Command Compensation And other environments

Relationship factors Human relations is considered necessary in every society and profession, because no matter what work we humans do Must use excellent human relations as an element Human relations are considered both science and art to foster good relationships. To achieve affection, respect, cooperation, loyalty And success Because it is considered a process of motivating people to live happily with others And is a factor Importantly, it is important to create cooperation in work and to create results and make everyone happy. Regarding that human relations We must understand the basic principles of every human being that Everyone must understand the dignity of people. Because everyone needs equal respect and dignity Especially the behavior and motivation that determines the person in each group, expression, grouping, human relations About traditions, culture, social values of individuals and groups

When having to be in a large group With different people from different locations, different bases, different social backgrounds Everyone must try to understand the nature of humans in various matters as well in order to be able to live together happily. Whole working life Or even personal matters Which is based on the important following as follows

1. Humans are the same and are different.

Which means that all human beings have similar physical characteristics Have similar natural needs but on the other hand they are Differences in interests, abilities, social needs, potential, intellect, emotions, habits, etc., which we have to live in that society or organization. Must try to understand and improve certain behaviors to suit most people

2. Humans have their own needs.

Which means that everyone has both physical and mental needs Physical needs are considered basic needs in life such as 4 factors, including sexual desire. For psychological needs is If the needs of The body has responded sufficiently. Will begin to seek the desire to meet more psychologically Which is considered a new demand created later This type of demand is often hidden. Causing sometimes to show clearly Sometimes it shows sham. So we have to learn

3. Knowing oneself

Meaning that before establishing relationships with other people We should know ourselves first. Know your ability, brain and personality for self-improvement. Understand their habits and abilities Including knowing your own shortcomings in order to improve your self-esteem, reconciliation, and reasoning in order to work smoothly and smoothly with others. Because getting to know oneself is important in creating human relationships. Because people who don't know themselves will not be able to truly understand others And only those who know themselves will be able to improve themselves very well.

4. Communication

Is a way to transfer news and Understand to other people Communication can be done by speaking, listening, using language, gestures, body language, or communicating as Written with official documents People with good communication skills will lead to cooperation in working and having the right behavior. How to communicate well, the messenger must choose the correct way to target. Meaning that we will also communicate And the message sent must be correct for the recipient that we want to communicate with, so both parties must try to understand And respect the things that are communicated with respect, not insulting, blaming, and choosing the right time to communicate Including cooperation in communication for Understand each other well

5. Building relationships with other people

Because people who have good relationships with other people Both at the level of subordinates Commanding colleagues will make the job achieve its goals quickly. Because of being a person who pampered him to pay attention to us Recognize, respect and respect the rights of others Respect the decisions or opinions of others will easily win the hearts of colleagues. How to create good relationships with other people. We must understand how to contact. Communication and motivation methods In order for the friendship to go as desired

6. Motivation

In order to build relationships with other people Until it creates behavior in the form that we want to be motivated by motivation, so it is important In order to stimulate Resulting in greater response To achieve success To accept The motivation for the change we want should be motivated by the motivation.

7. The administration of incentives may be accomplished through appropriate arrangements.

To work together as a team Decentralization Responsibilities People with good human relations can be more easily motivated. Because he is someone who is accepted more than others already on the other hand Those who know how to motivate and use them in their administration instead of giving orders or punishing can also create better human relations.

The compensation and welfare factor means the reward that a person will receive. From being an employee of an organization contain with Basic compensation Special remuneration and indirect compensation or welfare The organization should have a compensation system that is appropriate for the obligations and responsibilities of the employees. Especially employees with skills and abilities

Compensation here doesn't just mean salaries or wages. But including other incentives That an organization needs to compete with other organizations to maintain valuable human resources to remain with the organization for as long as possible. Bind to benefits and services To provide compensation and benefits consistent and Mutual support

Financial compensation means money paid to employees in the form of salaries. Special remuneration Annual prize money medical fee And provident fund Returns in the form of money that the organization can pay. In return for the performance of personnel Additional funds the company pays to employees as incentives According to the company's performance for the whole year

Non-financial compensation refers to items, benefits, and services provided by the organization to personnel to facilitate their work. Welfare or service or activities that government agencies and private organizations provide for civil servants Staff or workers in that organization Get comfortable at work. Career stability There is a surety in living or receiving any benefits other than regular salary or wages, which is an incentive for the workers to have good morale. In order to fully utilize his physical strength and intelligence in his work No need to worry about both personal and family problems. Resulting in job satisfaction, love for work, and determination to work for as long as possible For that perfect welfare Would mean welfare for employees. Both while working After hours but still at work Off work In addition, it must not be given to only employees. But must include the family as well

Security factor The development of an organization to grow strong and intense requires improvement and promotion of the quality of working life of personnel. Which is considered an important resource in operations Improving and promoting the quality of working life to make the workers satisfied and willing to perform their duties with damage. Which will cause the organization to carry out activities to achieve the goals set

Occupational stability is a working condition that gives operators confidence that they will be able to pursue that career for a specified period of time or to meet the needs, along with various benefits that create satisfaction for themselves

Career advancement means an employee has the opportunity to take responsibility for an important job. Was promoted to a higher position Or have a promotion for a higher salary Including being encouraged to receive training for self-development to have knowledge. Ability and skills in operations The employment that most people value as a career that is stable and progressive is a civil service and state enterprise employees. Due to the following working conditions

1. Good job characteristics are routine work that is in accordance with government policies. Systematic There is a chain of command by position and sequence of work procedures. Which is determined in accordance with the responsible framework
2. Have welfare ready Workers will receive compensation on a regular basis with a living expenses, medical expenses. Child education expenses, bonus funds, various funds
3. There are clear rules and regulations, including work regulations, leave, leave, to ensure that By following the regulations, they will be able to work until they reach retirement age. For employment as a company employee or employee If it is a public company or a partnership with a large business Will have the characteristics of welfare and regulations that are similar to civil service But will vary in some cases, such as medical expenses Employees will receive in the form of health insurance. Annual bonuses. In addition, some types of employment are not stable and Career advancement Since working as an employee depends primarily on the satisfaction of the employer or the owner of the business, however, security and career advancement are not just dependent on working conditions. But will mainly depend on the knowledge and ability of the professional People with a lot of professional knowledge have long working experience. And having good work habits will help to create stability and career advancement for yourself

RESEARCH METHODOLOGY

This research is quantitative research and data collection using questionnaires. Is a questionnaire that the researcher created and developed To study the factors that affect the work efficiency of warehouse employees, a case study of Amarin Book Center Co., Ltd. The questionnaire is divided into 3 sections as follows: 1) Personal factors of the respondents 2) Employee working factors 3) Efficiency In operation

Tools creation process

- Study and research concepts and theories And various research documents Related by considering various details to cover the objectives of the research.
- proceed to build tools according to the relevant theoretical framework
- Create a draft questionnaire To the advisor To consider, examine, correct, and improve to suit the research objectives
- Present the questionnaires to 3 experts to check the accuracy of the language and content validity. The consistency index is 0.93 which is acceptable for more than 0.50
- Find the confidence coefficient of the questionnaire to work with experimental groups that have similar characteristics. Before collecting the actual data in order to find the confidence value of the questionnaire By using the alpha coefficient formula According to Cronbach's concept (Chronbach, 1970 p, 161), the reliability of the questionnaires is greater than 0.70.
- Improve and correct questionnaires before collecting data

RESEARCH RESULT

From the study, it can be concluded that Factors affecting the efficiency of work are Stability and career progression Employees are not only focusing on personal satisfaction and financial compensation. But still aiming and wishing to be stable Especially the stability that will be received when elderly Or stability when work efficiency decreases due to disability to the point of not being able to work Financial stability is very important, while all employees have the desire to receive mental security, meaning having the opportunity to know the extent of their financial capabilities. To be sure to receive continuously As well as being able to adapt to various problems that may occur while still working or after retirement.

RECOMMENDATIONS

From this study It was found that there are other factors other than those studied which have influence on the efficiency of the operation. In the next study, appropriate factors should be studied. In line with the organizational context and economic conditions

REFERENCES

- Phitak.M, (2011), "*Opinions on Factors Affecting Work Efficiency of Employees. Under the university office Chulalongkorn University* "Master of Business Administration Thesis Phra Nakhon Si Ayutthaya Rajabhat University
- Inthawong.N, (2013), *Employee Welfare Requirement*, Rajamangala University of Eastern Studies Bang Phra District, Chon Buri Province, (2013), Reterived from: http://digital_collect.lib.buu.ac.th/dcms/files/54930148.pdf
- Office of the Library, (2016), *job security in the opinion of government officials Ministry of Labor* in central
- Pruksri.P (2014), *Compensation Factors Affecting the Performance of the Company Siam Makro Public Company Limited*
- Phitchaya Kaewsansaiphun-Archa Roongrote, (2017), *Relationship between Working factors Stress and work efficiency Of real estate company employees in Bangkok, Thailand* Reterived from: <https://www.tci-thaijo.org/index.php/Veridian-E-Journal/article/view/88358>
- Siam HRM.com, (2014), *definition and scope The word welfare* is searched from <https://www.siamhrm.com/?name=chapter&file=read&max=223>
- Saengphet.W, (2015), *personal factors Motivation to work And the environment*, searched from http://dspace.bu.ac.th/bitstream/123456789/2496/1/yiwat_sang.pdf
- Yuthakraiwan. (2011), *Research for Industrial Management Bangkok*, Bangkok Media Center

- This article does not have any appendix. –

Marketing Mix Factors Affecting Customer Satisfaction of the Bangkok Mass Transit Authority (BMTA) in Bangkok

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Abstract: The purposes of this research are 1) to studying the marketing mix factors affecting customer satisfaction of the Bangkok Mass Transit Authority (BMTA) in Bangkok 2) to know the customer's behavior of the Bangkok Mass Transit Authority (BMTA) in Bangkok 3) to know decision's making of customer's using the Bangkok Mass Transit Authority (BMTA) in Bangkok 4) to understanding the relationship between behavior and personal factor of customer's using the Bangkok Mass Transit Authority (BMTA) in Bangkok. This research uses secondary and primary data from both open and closed questionnaires from a sample of 400 peoples from customer who have used the Bangkok Mass Transit Authority's (BMTA) in Bangkok. For collection data analysis, statistics by frequency, percentage, arithmetic mean standard deviation. Hypothesis testing will set the statistical significance level at 0.05 to enable the Bangkok Mass Transit Authority (BMTA) in Bangkok to use the results of the studies to improve develop and plan service provision in order to be in line with the needs of the customer appropriately and sustainably.

Keywords: Marketing Mix, Customer Satisfaction, Bangkok Mass Transit Authority (BMTA)

INTRODUCTION

The Bangkok Mass Transit Authority (BMTA) in Bangkok was established as a government organization under the Royal Decree on 1 October 1976, which is a state enterprise in the category of the public utility business. Under the Ministry of Transport, it has a mission and scope of responsibility in providing passenger bus transportation in Bangkok. In addition, it has duties in other operations relating to or continuing with human transport operations, since bus operations are considered a type of public utility that primarily provides services to low- and middle-income people. The operation, therefore, responds to the government's policy of providing assistance to low-income people with non-profits. The fare collection rate is, therefore, lower than the cost as the government has set up the policy of the Bangkok Mass Transit Authority (BMTA) in Bangkok, focusing on convenience, speed, safety, saving the cost of traveling of passengers mainly. The Executive Committee on Organization Affairs is committed to the Bangkok Mass Transit Authority (BMTA) in Bangkok. Management is accepting; build trust for the public and social. Under the principles of good corporate governance, adhering to the morality, values, ethics, ethics, responsible to the customer who use the service and operate with transparency, honesty and verifiable, able to develop towards sustainability in accordance with the vision of the Bangkok Mass Transit Authority (BMTA) in Bangkok, Public service agencies business need to know the satisfaction of customers in order to be a way to improve the quality of services to be accepted and an important KPI as a basis for receiving budget support from relevant agencies. The Bangkok Mass Transit Authority (BMTA) in Bangkok is the main agency for public transportation in Bangkok. In the fiscal year 2017, there were a total of 584,997 customers who used the services of the Bangkok Mass Transit Authority (BMTA) in Bangkok. This can be divided into 192,923 customers in air-conditioned buses, 124,667 customers in regular buses and 267,407 customers in free buses funded from the taxes. 1) The number of buses totaled 14,127 as follows: - the Bangkok Mass Transit Authority (BMTA) in Bangkok buses: 2,671 buses, or 18.91 percent. Of this number, there are 1,543 regular buses, 1,011 air-conditioned buses, and 117 PBC vehicles - Private joint buses 11,456 buses, or 81.09 percent. Of this number, there are 3,444 big buses (24.38 percent), 937 minibusses (6.63 percent), 2,125 shuttles in sois (15.04 percent), 4,824 air-conditioned minibuses (34.15 percent) and 126 Suvarnabhumi Airport connection minibuses (0.89 percent). Buses in each category will have different services, the Bangkok Mass Transit Authority (BMTA) in Bangkok have to policy regulatory and control buses of all types to ensure the availability to the public. Both fares convenient and secure manner of service of the staff, total number of bus routes in all categories, totaling 460 routes, divided into 118 routes of the Bangkok Mass Transit Authority (BMTA) in Bangkok, 94 private route joint services (large buses), 101 small-route driving routes in the alley (Category 4 cars), Car routes (Including CNG vans) Total 139 routes, 8 van routes connecting Suvarnabhumi Airport. When considering the proportion of bus routes that provide service in Bangkok classified by each type, then found that the air-conditioned customer car routes have a large proportion. The highest is 30.22 percent and the second is the Bangkok Mass Transit Authority (BMTA) in Bangkok route, which is equivalent to 25.65 percent. Currently, the Thai government policy is energy-saving fuel and reducing air pollution and thus encourages the use of buses using natural gas (NGV) customer services. In response to such a policy organization has purchased buses using natural gas (NGV) to replace the existing locomotive fleet of 489 vehicles. Most people travel in the city is especially public transport because it has routes throughout Bangkok and can also connect to other forms of transportation, such as MRT subway, BTS sky train, Airport Rail Link, taxi and motorbike. But at present, the service still faces service problems such as rushing to pick up passengers, drive at speed, traffic jams and most of the buses are old buses that have a life of 20 years, using diesel fuel as fuel, causing air pollution as well. Therefore, in order to know the level of satisfaction of the customer, including development issues

and the sequence of problems, suggestions and the needs, expectations from customers as well as guidelines for creating relationships, maintaining and persuading the use of the Bangkok Mass Transit Authority (BMTA) in Bangkok. With the nature of the operation of The Bangkok Mass Transit Authority (BMTA) in Bangkok that operates the public transport service, the researcher is interested to study the operation of the public transport system based on the concept of the service marketing mix, the needs and expectations of customers, ways to build relationships, maintain and convince them to use the service again.

RESEARCH OBJECTIVE

- 1) To studying the marketing mix factors affecting customer satisfaction of the Bangkok Mass Transit Authority (BMTA) in Bangkok.
- 2) To know the customer's behavior of the Bangkok Mass Transit Authority (BMTA) in Bangkok.
- 3) To know the decision's making of customer's using the Bangkok Mass Transit Authority (BMTA) in Bangkok.
- 4) To understanding the relationship between behavior and personal factor of customer's using the Bangkok Mass Transit Authority (BMTA) in Bangkok.

LITERATURE REVIEW

Reviews of relevant documents and literature, the objective is to gather information that is useful for determination of research methods and achieve by dividing the following details;

The Marketing Mix

Each customer's different in many ways as a result of different physical and environmental conditions. Therefore, service providers are responsible for selecting and procuring good services through service marketing mixes in order to answer the needs of consumers / customers. This study is necessary to gather information related to the service marketing mix because the Bangkok Mass Transit Authority (BMTA) in Bangkok has an important role and duty in providing customer services. The customers' buying decision processes will go through a 7-step process. Service providers should use Marketing Mix's or 7Ps to create satisfaction. Satisfied customers such as products, prices, distribution channels, marketing promotions, personnel, physical features and service processes. (Siriwan et al. 1998) The details are as follows 1) Products means things that can meet the needs and requirements of the customer 2) Price refers to the value of a product in monetary form 3) Place mean the initial service location 4) Promotion is the data communication between service providers and customers 5) People or Employees means employees who provide services 6) Physical characteristics refer to public appearances in order to create value for customers 7) Process means service process in order to deliver the quality of service to impress customers and speed (Customer Satisfaction). Service Marketing Mix is a tool or controllable marketing factors Businesses need to use it together to meet their needs and to satisfy their target customers or to motivate their target customers to demand their products and services. Which is a factor in marketing planning in products or services, will have 4 factors which are product, price, place and promotion. But the service marketing ingredients will be different from the marketing ingredients of conventional products due to the need for staff emphasis. Providing services in various processes and the physical environment these three factors are the combination of the delivery of the service for the market, the service business will market in 3 additional marketing mix factors is the service provider (people), the service (process) and the service environment (physical evidence). The marketing mix for the service market is an activity that responds to the needs of the customer to maximize customer satisfaction. It can be seen that before the purchase, the buyer must try to lay down rules regarding quality and benefits that will get from the service that will be received, the seller must build confidence by trying to find collateral to allow the buyer to make decisions faster.



Figure 1: Extended Marketing Mix

Meaning of satisfaction

Satisfaction or positive feelings when receiving needs after using the service, this study is necessary to gather information related to the meaning of satisfaction because the Bangkok Mass Transit Authority (BMTA) in Bangkok has an important role and duty in providing bus customer services. The researcher has created mutual understanding summarized the meaning and importance of satisfaction from various researches. The motivation is an incentive to meet needs or goals, the satisfaction is the feeling when the desire gets response and motivation is an incentive for satisfaction. (Siriwan et al. 1996) The satisfaction is the feeling of human beings divided into two categories: 1) positive feelings 2) negative feelings, by positive feelings are feelings that result in happiness, which is different from other feelings. In other words, feelings that have a reverse system, happiness can cause more positive feelings, as can be seen that happiness is a complex feeling and happiness affects more people than other positive feelings. (Shelly. 1975) Satisfying is an inner feeling that an individual compares between opinions about what they want or expect or feel they deserve, whether it is satisfaction or dissatisfaction is an individual decision. The customer's satisfaction means that the service provider succeeds in balancing the client's value with the client's expectations and that their experience meets expectations. (Wanee. 2005) The satisfaction of each person will vary according to the experience received, will be related to the given environment, causing feelings such as satisfaction, dissatisfaction and the feelings of each person may vary according to situation. (Prakong. 2010) From all of the meanings, the meaning of satisfaction can be summarized as it is a person's feelings that are positive, pleasing, comfortable, happy in many aspects of the environment, or satisfied in the sense of liking, comfort, and a feeling of fulfillment.

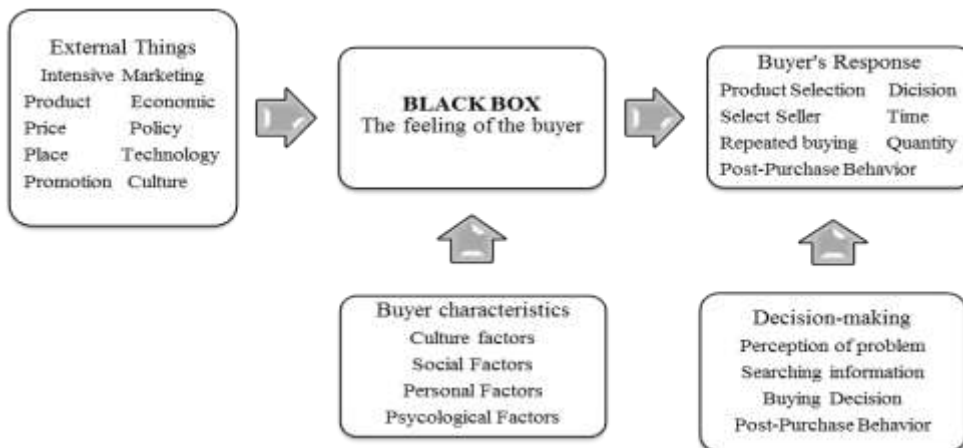
Customer's Behavior

The customer's behavior in the decision to purchase goods and services consists of 7 steps are, 1) spotting the problem or recognizing the need 2) searching for information 3) evaluating alternatives before buying 4) buying 5) consuming or Necessities, 6) evaluation of options after purchase and 7) management of waste. (Teerayon. 2005) The customer's behavior is that customer's express, search for, buy, use, evaluate the consumption of products, use of services and various concepts that expect to be able to meet their needs. It is a study of the decision of consumers in using resources that are money, time and energy to consume various products and services (Schiffman & Kanuk (1987) and act of a person directly related to the procurement and use of goods and services, includes pre-existing decision-making processes, which are involved in the determination of such actions. (Engel Kollat & Blackwell. 1968) It acts by humans unconsciously expressed by the expression or action by human nature can influence marketing. A group of people or households who buy or need products or services for personal consumption or consumer behavior, decisions, actions related to the purchase and use product services to meet needs. To study of consumer behavior is the study of the behavior of the customers in making the decision to purchase goods and services in order to receive the maximum satisfaction from the limited budget. Human actions, occur from internal stimuli such as ideas, attitudes and values. In addition, the expression may come from the impact of external factors such as culture and society. The behavior of the purchase, use, evaluation, search for information about products or services according to the needs or expectations of customers. Second, is the reaction of the person in the process to get the product or service according to their needs, the process that involves searching for information, buying, using, and evaluating products or services, or consumer behavior, referring to buying, using, evaluating and eliminating final consumer goods and services. (Kamonphop. 2012)

Figure 2: Black Box Model

Factors affecting

- 1) The price of the product that customers want to buy. In general, the more expensive the normal product. The quantity of products that customers want to buy will be even less. The cheaper the product, the more the quantity of products that customers want to buy, but if it is Giffen Goods the price and quantity changes have the same direction.
- 2) Average customer income in general when the average customer's income increases, the demand for products and services increases. On the contrary, when the average income of the customers decreases, the demand for goods and



services will decrease. In the case of Inferior Goods, it will find that if the average income of the customers is higher, demand for goods and services will decrease, and when the average income of customer's decreases, demand for goods and services will increase. 3) The taste of the customer is related to the feeling of momentarily, in some ways it has changed dramatically. The customer's taste preferences include age, gender, education, beliefs, and advertising influences. 4) The number of consumers in the market normally, the population increases Will result in an increase in demand for goods and services, but those populations must also have purchasing power. 5) The price of the product that can be combined with the product that the customer wants to buy, in which consumption some products must be consumed together with other commodities. 6) The price of the replacement product is the product that the customer wants, if the product type is higher, the customer will go to buy the replacement product more. 7) Other relevant factors such as advertising season.

RESEARCH METHODOLOGY

Data used in the study 1) Primary data on the study of factors affecting the decision to use regular bus services, the route under the supervision of the Bangkok Mass Transit Authority (BMTA) in Bangkok will be collect by issuing questionnaires from a sample group customers that uses regular bus services. The route under the supervision of the Bangkok Mass Transit Authority (BMTA) in Bangkok. 2) The secondary data will be collected from the academic documents, internet, data and related research. Sampling technique will use to collect 5 samples from 50 districts in Bangkok by using the simple Random sampling method. Under the assumption that each population in district of Bangkok, the sample are collect by quota sampling method by sampling 80 samples per 1 area, then use the convenience sampling method to collect data from the questionnaire of 400 sets of data. The analysis is based on the percentage of the arithmetic mean. The standard deviation and the chi square are statistically significant at 0.05 by dividing the research results into 5 parts.

art 1) the characteristics of samples of customers under the supervision of the Bangkok Mass Transit Authority (BMTA) in Bangkok.

Part 2) the behavior of customers using under the supervision of the Bangkok Mass Transit Authority (BMTA) in Bangkok.

Part 3) the importance level of the marketing mix that affects the decision to use under the supervision of the Bangkok Mass Transit Authority (BMTA) in Bangkok

Part 4) Relationship of using behaviors operations are under the supervision of the Bangkok Mass Transit Authority (BMTA) in Bangkok with personal factors.

Part 5) Relationship between use behaviors operations are under the supervision of the Bangkok Mass Transit Authority (BMTA) in Bangkok and giving priority to marketing mix factors affecting the decision to use the service.

The research "Marketing Mix Factors Affecting Customer Satisfaction of the Bangkok Mass Transit Authority (BMTA) in Bangkok" is a research to determine the level of satisfaction of users, problems, marketing mix factors affecting customer satisfaction and order of importance of problems. Including needs and expectations, as well as guidelines for establishing relationships, maintaining and attracted to use the services.

EXPECTED BENEFITS

1) To enable the Bangkok Mass Transit Authority (BMTA) in Bangkok organization to use the results of their studies to improve, develop, and plan services to meet the needs of customers.

2) To use the process Marketing Mix for communication and providing information to customers, especially the development of processes and service personnel because the quality service process can create trust for customers and personnel, can directly create satisfaction for customer services.

3) To determine the direction of Bangkok Mass Transit Authority (BMTA) in Bangkok operations and can respond to the needs of users and users of tangible information. The concrete may be through surveys of opinions and needs, as well as receiving suggestions from customers in order, to be informed and understand the needs of customers and can also be used as important information. It is important to plan and define the operational plan, objectives and goals of the company to be successful.

REFERENCES

- Engel, James F. Kollat, David T. Blackwell, Roger D. (1968). *Consumer Behavior*. New York: NY Holt, Rinehart and Winston, Inc.
- Thippayapa. K,(2012). *the decision process of consumers in Thailand Chiang Mai district in the purchase of a digital single-lens reflex camera. Independent research* (Master of Business Administration (Marketing). Graduate School. Chiang Mai University.
- Rompho.N (2011). *Evaluation of Organization Performance. Pimluck*. Bangkok, Thailand: Thammasat University Press
- Phanitchakun.P, (2010). Thai tourist satisfaction with information services at the northern region office. *Tourism in thailand*
- Schiffman, L.G., & Kanuk, L. L. (1987). *Consumer Behavior* (3th Ed.). New Jersey: NJ Prentice Hall
- Siriwan Serirat et al. (1998). *Modern marketing management*. Bangkok: Thira Film and Sitex Company Limited.
- Siriwan Serirat et al. (1996). *Consumer behavior*. Bangkok: Educational development.
- Shelly, Manynard W. (1975). *Responding to Social Chang*. Pensylvania Dowden: Hautchiason Press. Inc.
- Teerayon Parnklang. (2005). *Factors Affecting Using Behavior on Bus of Bangkok Mass Transit of Authority (BMTA) in Bangkok Metropolis*. Business economics. Kasetsart University.
- Transport Company Limited. About Transport Company Ltd. from <http://home.transport.co.th/>
- Wanee Thongsew, T. (2005). *Satisfaction of users of Kuakarun College of Nursing Library*. Bangkok: Kuakarun College of Nursing.

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Women's Bag Design with Dyed Canvas Fabric from Dried Teak Leaves

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Abstract: The study on “Women’s Bag Designs from Canvas Fabric Dyed with Dried Teak leaves” had the objectives 1) to investigate the dyeing process of canvas fabric with dried teak leave colorant, 2) to design women’s bags made of dyed canvas fabric with dried Teak leave colorant, and 3) to survey the satisfaction of the respondents towards the women’s bags made of dyed canvas fabric with dried Teak leave colorant. The investigation was divided into 3 stages including (1) dyeing process by using dried Teak leave colorant, (2) designing three different prototypes of women’s bags including clutch bags, handbags, and shoulder bags, and (3) surveying the satisfaction of the respondents towards the bags made of dyed canvas fabric with dried Teak leave colorant. There were 120 respondents for the survey, selected by using Purposive Sampling across from the female students and staff in the Faculty of Home Economics Technology, Rajamangala University of Technology Phra Nakhon, in Bangkok. A five-point rating scale questionnaire was used as the survey tool. Data analysis was performed by using frequency, percentage, mean, and S.D. The findings were as follows: For the process of canvas fabric dyeing with dried Teak leave colorant, alum mineral was used as a fixative or mordant. Concentration rate was set at a five gram/liter ratio. The liquid color turned to be dark brown closest to the color extracted from the dried Teak leaves. When the concentration was increased, the fabric color turned brighter. To conclude, primary raw material was the dyed canvas. Alum was a fixative agent used at the concentration ratio of five to ten gram per liter, in order to help the dye fixed and blended well into the fabric. Synthetic leather, and leather tassels were used as decorative accessories of the bags. The satisfaction result towards the designed bags revealed a high level overall in all models (Mean = 4.46). Ranked from the first to the third places, the first place was the bag no. 4 (Mean = 4.53), followed by the bag no. 3 and the bag no. 5 with the result of same score (Mean = 4.51), respectively. Further recommendation was to provide internal small pouch bags for keeping cards and coins.

Keywords: Dried Teak Leaves, Women’s Bags, Canvas Fabric

INTRODUCTION

Product design contains key elements such as colors, shapes, forms, patterns, etc., through designers’ concepts and imagination, so as to bring about the products that best fit to the customers. It is a significant task for a fashion designer to work in achieving the customers’ basic demands and satisfaction, especially towards their feelings. Well-designed products always help escalate the customers’ confidence, and improve their personality. Nowadays, the products that are created from natural materials turn to be in an increasing public attention and awareness of those who have environmental concerns. Taking bag products into a focus in this study, they are considered the most popular choices having been seen everywhere and a must-carried-on item for everyone. Normally, the structures of a bag product can be designed either in a rigid, non-rigid, or semi-rigid form. Several types of the bags are created based on the purposes of utilities, for example, wristlets or clutches, purses, shoulder bags, etc. Materials used for a production of bags can be varied such as vinyl, plastic, leather, fabric, etc. A design of bags usually relies on its utility and the attractiveness of its appeal. That is the reason why it remains as a classic item for people of all ages at all time. To be more specific on fabric information, especially canvas, it is a fabric kind made of cotton threads. It is in plain weave, extremely sturdy and durable, with medium thick, in warp or weft (from single or plied yarns), in heavy weight, and with rough texture. The canvas fabric has commonly been found as calico fabric, or dyed in brown or chartreuse green colors. For designing it as a decoration, the fabric is sometimes softened or stiffened with starch. It is often used for making tents, marquees, backpacks, and other products for which sturdiness and durability are required. The material is also often used by artists for painting or designing a variety of fashion products such as bags, electronic devices containers, shoes, etc., (Boonla, 2010; Thailand Institute of Fashion Research, 2012). It can be washable, dry-cleaned, bleached, or cleaned by any kinds of laundry detergents. At present, fabric products with natural dyes gain more attention from fabric manufacturers and general consumers. Plenty of resources as natural dyes are available and found from parts of plants (e.g., barks, roots, inner trunk, leaves, fruits, and seeds), animals (e.g., lac insects, and shellfish), and soils or minerals (e.g., red soil, laterite, and mud). The most common used colors are derived from plant dyes, for example, fresh leaves for green dyes, inner trunk of trees for yellow and brown dyes, flowers and fruits for the dyes of the same colors as seen. However, the colors dyed from flowers and leaves are less durable than those derived from barks, inner trunks of trees, and roots (Srihonggul and Akkaramas, 2013). The degrees of freshness or dryness of an identical specimen from plant can differ the color intensity or even the pigments. In addition, dyeing different fibers, or dyeing by using different ratios of fixatives can result in the different pigments as well.

Teak (*Tectona grandis*) is one of the kinds of large deciduous trees occurring in tropical forest. Fresh Teak leaves are put forth from branches or small stems of young Teak trees. The leaves grow in pairs and each pair is located crosswise. The leaves in young Teak trees are very broad. Each of them can be 40 cm. wide and 80 cm. long. Fresh Teak leaves usually are in reddish brown with soft hair on the lower surface. When fresh teak leaves are crushed, it can produce red dye (deep red) that is extracted from the natural chemical substance inside such leaves. The colors of Teak foliage are changing through seasons from yellow, brown to red during November to December. When January to March comes, the Teak trees will shed their leaves and stayed dormant. The trees turn alive again and put forth new

fresh leaves in April to May (Tonpan, 2013). There are 2 ways for the extractions of natural dyes from plants which include (1) fermenting (called cold extraction): the fermentation process begins with chopping the leaves into small pieces and then smashing or crushing, and finally leaving them to ferment for a few days, (2) boiling (called hot extraction): the process starts by boiling the extracted parts for approximately 2 hours. Then, the fluid will be ready for dyeing. The drawback of natural dyes is that the dyes contain less concentration of pigments, and they look not so bright, and even worse when the cloth is exposed to sun light as the strong sun light can fade the color away. It is also difficult to dye the cloth to get the exact same color as it was dyed before. The advantages of the natural dyes are that the color is softer, it looks gentler than the chemical dyes, and it is considered more valuable (Saithong, 2012).

The substance used as a fixative is an agent to stimulate the chemical reaction for dyeing, in which the cloth can easily absorb the color. It helps maintain the color to be more durable and creates more choices of colors that can be developed from the base colors. Different fixatives can change the color's intensity or even alter to other new colors under the same shades. Some kinds of fixatives can enhance the color to be more vibrant such as alum. Alum can help in getting vibrant color for the fabric and the final color looks as naturally bright as the color of the plants (Prajonsant *et al.*, 2002). With the idea in bringing cotton fiber canvas (medium thick) to dye with dried Teak leaves that fell off from trees as waste, women's bags were designed in non-rigid form and into several fashionable and multi-utility models. The products are created as alternatives for conservative consumers who prefer natural dyes. It is also a way to make more use of the dried Teak leaves by recycling.

OBJECTIVES

1. To investigate the dyeing process of canvas fabric with dried teak leave colorant
2. To design women's bags made of dyed canvas fabric with dried Teak leave colorant
3. To survey the satisfaction of the respondents towards the women's bags made of dyed canvas fabric with dried Teak leave colorant

METHODS

Dyeing Process of Canvas with Dried Teak Leaves

In extracting the dye, 60 grams of the dried Teak leave (excluding the leaves' stems) were used. Firstly, the leaves were torn into small pieces and later boiled in 4 liters of water for 30 minutes at 100 °C temperature. After boiling finished, a cheesecloth was used to strain the water off so as to get the pure brown dye liquid.

The process of dyeing the canvas (medium thick) started by (1) washing the fabric in warm water for 2-3 times, (2) drying it until it's almost dried, and then (3) boiling it in the dye solution at (LR) 1:40 ratio of water and mixed substance. Alum was used as a fixative agent (at a range of the concentration ratios of 5, 10 and 15 grams/liter). The boiling temperature was at 100 °C for a duration of 30 minutes. While boiling it, the fabric needed to be stirred frequently. Once dyeing has been completed, the final process was to wash the fabric in water until the washing water appeared to be clear (to ensure no more contaminated color left) and finally to air dry the fabric.

Design of Women's Bags from Canvas Fabric Dyed with Dried Teak Leaves.

The designs of the women's bags are in non-rigid form, and in 3 different types including clutch bags, handbags, and shoulder bags. Each type of bags were created in 6 models, and totaled about 18 models altogether. A panel of 5 experts in the fields of fashion design and apparel were asked to evaluate and choose the best two models of each type: 6 models selected in total. Those models were taken in for cutting to be the women's bag prototypes.

Satisfaction of the Consumers towards the Bags Designed by Using Canvas Fabric Dyed with Dried Teak Leaves

A group of 120 samples was purposively chosen across from female students and staff in the Faculty of Home Economics Technology, Rajamangala University of Technology Phra Nakhon, in Bangkok. Questionnaire was used as the tool for data collection, consisting of 2 parts: part I was related to general information of the respondents, designed in multiple-choice format, and Part II is for satisfaction survey towards the designed bags, designed in form of five-point rating scale. Data were analyzed by using frequency, percentage, mean, and S.D.

Criteria for Score Interpretation of the Satisfaction Levels (Srisa-Ard, 2013)

- Mean score between 4.51 - 5.00 indicates the highest level of satisfaction
- Mean score between 3.51 - 4.50 indicates high level of satisfaction
- Mean score between 2.51 - 3.50 indicates moderate level of satisfaction
- Mean score between 1.51 - 2.50 indicates low level of satisfaction
- Mean score between 1.00 - 1.50 indicates the lowest level of satisfaction

CONCLUSIONS

The Result of Dyeing Canvas Fabric with Dried Teak Leaves

The results of dyeing canvas fabric with dried teak leaves, using alum mineral as the fixative agent at different ratios were as follows: the 5 grams/ liter ratio turned the dye into yellowish brown color, the 10 grams/ liter ratio turned the dye into light brown color, and the 15 grams/liter ratio turned the dye to be light to almost bright brown color. According to the above results, the researcher decided to use the 5 grams/liter ratio in this study as the primary material for the product development, because the color from the ratio solution appeared to be closest to the

color of the dye liquid extracted from the dried Teak leaves. The 10 grams/liter ratio was used as the secondary material, whereas the 15 grams/liter ratio solution was excluded for the design because of that ratio created too bright color.

The Result of Women’s Bags Design from the Canvas Fabric Dyed with Dried Teak Leaves

There were 3 types of bags that were designed and developed in this study. The model drawings were initially proposed to the experts for a selection and an approval. Figure 1 showed the models that were selected by the experts. Figure 2 presented the prototypes that were produced from the list of the selection, and all were made of the canvas fabric dyed with dried Teak leaves. Synthetic leather and tassels were used as decorations. The respondents’ satisfaction towards the bag designs was finally surveyed with the sample groups by using a questionnaire as the tool.

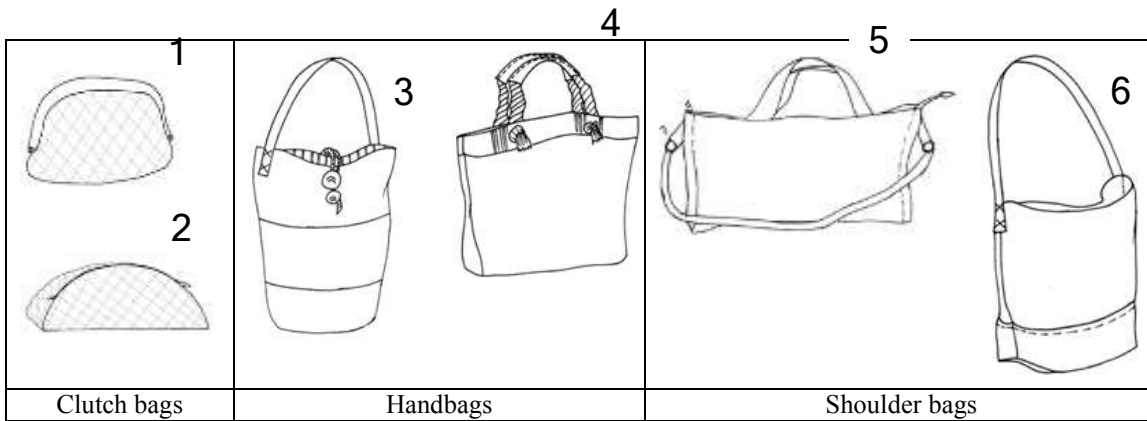


Figure 1: Drafts of the Women’s Bag Prototypes Screened and Selected by Experts



Figure 2: Women’s Bags Made of the Canvas Fabric Dyed with Dried Teak Leaves

The Result of Respondents’ Satisfaction towards the Bag Designs.

The satisfaction survey towards the bag designs that were created from the canvas fabric dyed with dried Teak leaves was conducted with 120 respondents. They were chosen across from female students and staff from Faculty of Home Economics Technology, Rajamangala University of Technology Phra Nakhon. The result revealed that most of the respondents were at age of 25 (92.50%), single (93.33), with a bachelor degree of education (80.00%), and with a minimum income lower than 5,000 Baht (57.50%).

The overall satisfaction level towards the bag designs was at a high level (Mean = 4.46). Ranked the bag list within the highest level range, the first place was the bag no. 4, followed by the bag no 3., and the bag no 5 with the same mean score (Mean = 4.46).

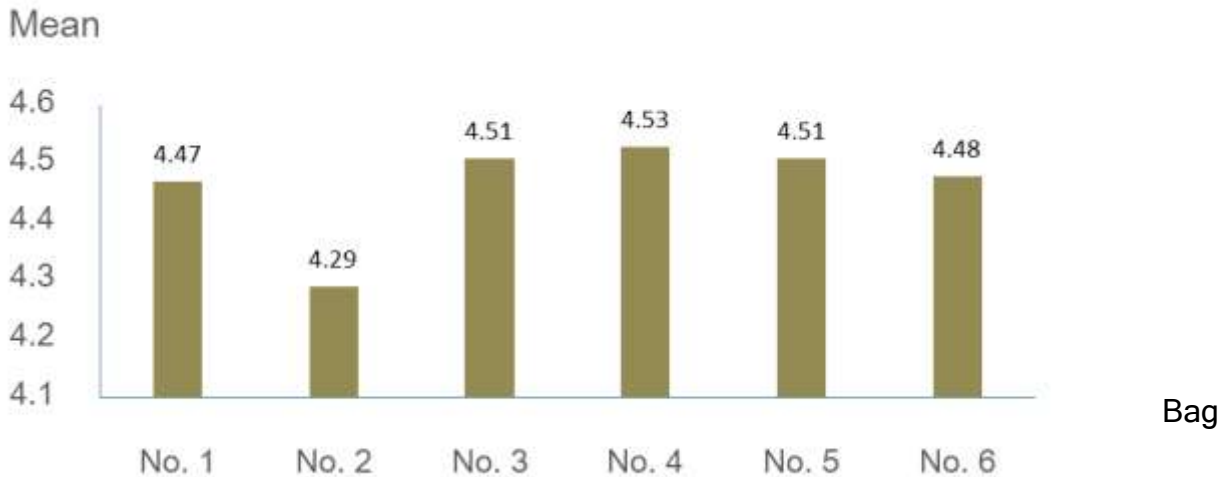


Figure 3: Mean Scores of the Satisfaction Survey towards the Women’s Bag Designs by Using the Canvas Fabric Dyed with Dried Teak Leaves

When taking each aspect into consideration, figure 4 illustrated that all aspects were rated at the highest level range. Sorted in descending order, the results were as follows: cutting and sewing quality (61.94 %), overall appearance of the bags (57.08%), practicality and utility (56.81%), shapes and sizes of the bags (50.97%), colors extracted from dried Teak leaves, materials used for the designs (equal at 49.44 %), and decorations of the bags (48.75%), respectively. Further recommendation was to provide internal small pouch bags for keeping cards and coins.

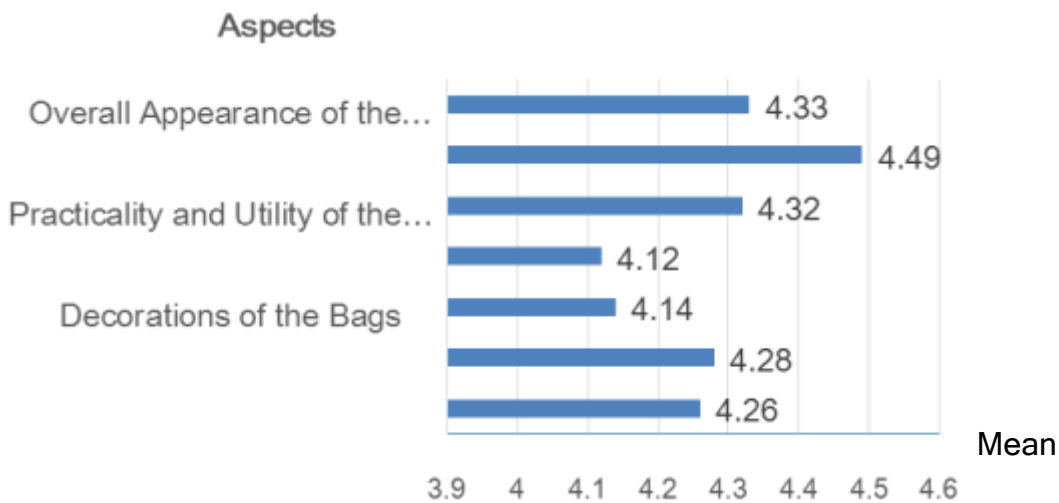


Figure 4: Mean Scores of the Satisfaction Rated towards Each Specific Aspects

DISCUSSION AND RECOMMENDATIONS

The extraction of the dyes from dried Teak leaves was performed by using 4 liters of water and boiling for 30 minutes at 100 °C temperature, to create a brown dye. More time of extraction was required for the fabric to get darker or more intense color. According to Qadariyah, Mahfud, Sulistiawati and Swastika (2018), they clearly mentioned that a color extraction duration could affect the color intensity of the liquid. More time used could produce more intense color. Comparing extraction of the dye between using water and 60% ethanol as dissolving agents, the water could generate higher level of the pigment. When considering pH scale of the solution, low pH scale could create higher level of the pigment. Besides, Asiong, Facto, Nidau and Gebe (2017) also added that the extraction of the dye from young leaves could gain more dye uptake than that from old leaves. The colors of the dyes extracted from the dried Teak leaves could be varied from the kinds of fabric and fixative agents used in dyeing process.

In dyeing the canvas fabric with dried Teak leaves, it was discovered that high concentration of alum used as a fixative could turn the dye into light to almost bright brown color. The main reason was that the alum was commonly used and worked well as the fixative agent in some groups of natural dyes including brown, yellow, and green. It could stimulate adhesion of colors in dyed threads and enhance the dyes to create brighter colors (Chankonghom, Eksaphang and Wattanasin, 2011). Therefore, an increase of alum concentration would result in the brighter the color in dyeing.

The result from the satisfaction survey towards the designs of the bags revealed that the most popular models were handbags and shoulder bags that could be convertible to a handbag by adjusting the length of the strap. The reasons were that the models were trendy, and the bags were wide open for ease of using, and also they had large storage room. With this regard, Poencharoen (2003) reaffirmed that the utility of a designed product should meet its original purposes. Nowadays, not only how fascinating appearance of the product was taken as a factor for consideration, but also utilities of the products that could contribute to consumers plays important roles towards their buying decisions.

RECOMMENDATIONS

Recommendations for further studies were placed on more exploration on the extraction of natural dyes from other kinds of plants in both fresh and dried forms. Furthermore, design of innovative fabric products should be featured more by using other creative techniques such as mixed coloring, tie-dyes, etc. Additionally, there should be more studies on the color durability of different types of dyes so that consumers could be more informative about appropriate use of their clothes and how to manage the clothing care.

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REFERENCES

- Asiong, J. B., Facto, S. A., Nidau, J. O., & Gebe, A. N. (2017). Development of an alternative natural dye from Philippine Teak leaves (*Tectona philippinensis*). *Journal of BIMP-EAGA Regional Development*, 2, 30-39.
- Boonla, S. (2010). *Weaving Knowledge*. Thailand Textile Institute, Bangkok.
- Chankonghom, W., Eksaphang, U. and Wattanasin, W. (2011). A study of dyestuff production for cloth and yarn dyeing by villagers' groups in Songkhla Province. *Inthaninthaksin Journal*, 6(1), 219-231.
- Poencharoen, R. (2003). *Line and Idea for Product Design*. Bangkok, Thailand: Technology Promotion Association (Thailand-Japan).
- Prajonsant, S. et al. (2002). *Research Report of Case Study on Silk Product, Na Pho District, Buriram Province*. Buriram Rajabhat Institute.
- Qadariyah, L., Mahfud, M., Sulistiawati, E. & Swastika, P. (2018). Natural dye extraction from Teak leaves (*Tectona Grandis*) using ultrasound assisted extraction method for dyeing on cotton fabric. *MATEC Web of Conferences*, 156. <https://doi.org/10.1051/mateconf/201815605004>
- Saithong, Y. (2012). *Tie dye and Textile Design*. Bangkok, Thailand: O S Printing House.
- Srisa-Ard, B. (2013). *Introduction to Research* (9th. Ed). Bangkok, Thailand: Suweeriyasan Co., Ltd.
- Srithonggul, S., & Akkaramas, S. (2013). *Tie-dyde*. Bangkok, Thailand: M. I. S. Printing.
- Thailand Institute of Fashion Research. (2012). *Fashion English-Thai Dictionary*. Thailand Productivity Institute and Thai Garment Development Foundation, Bangkok, Thailand.
- Tonpan, P. (2013). *Teak*. Retrieved from <http://www.sites.com>

The Impact of Board Director Characteristic on Accounting Conservatism of Thai Listed Companies

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Abstract: This research aimed to examine the impacts of board director characteristic on unconditional accounting conservatism of Thai listed companies. The research sample were the listed companies on the Stock Exchange of Thailand during 2016-2018, except financial sector. The secondary data were obtained from annual financial reports and the SET Market Analysis. The statistical analysis were used descriptive statistics and multiple regression. The major findings showed that board size was positively related to unconditional accounting conservatism at the 5% significance level. While, board leadership and board independent provided insignificantly impact on unconditional accounting conservatism. Firm size also was positively related to unconditional accounting conservatism at the 5% significance level, whilst financial leverage provided insignificantly impact on unconditional accounting conservatism of Thai Listed Companies.

Keywords: Board Director Characteristic, Accounting Conservatism, Thai Listed Companies

INTRODUCTION

The research corporate governance of accounting conservatism. The corporate governance is a significant determinant of firm unconditional accounting conservatism. The accounting standard a financial report of management in choosing method and accounting estimation. The uncertain business could potentially lead management in the decision making under conditions of management apply conservatism. Is one of the principles which management of tendency accountants a higher level conservatism. (Basu, 1997). Accounting conservatism is not anticipated profit earned, but anticipate all potential losses that occurred (Watts, 2003a). Under conditions of conservatism to prevent opportunistic behavior from managers (Watts, 2003b). Pros and cons of the conservatism accounting to the economic consequences. The conservatism of into unconditional and conditional ones. Unconditional conservatism is measured as the non-operating accruals divided by last year's total assets (Givoly and Hayn 2000; Krishnan and Visvanthan, 2008; Zhang and Wang, 2013) the regression results significantly. Furthermore, the board independence, board size, board leadership by the principles of good corporate governance. The implement of company's policies, In essence the position of independent directors is a mechanism to provide guidance and direction as well as the mechanism for overseeing the company's operations. Board of director characteristics the supervisory functions and served as a center for the company's success and operations. Agency theory explain are alignment effect. The effect that can strengthen relationships board of director characteristics. The motivation of this paper is accounting conservatism applied in the listed firms can effectively constrain. The applying conservatism in accounting can be one of the most important principles in accounting framework. The board independence, board size, board leadership by the principles of good corporate governance. Although many previous researches have emphasized on the relationship between conservatism and accrual-based, very few papers investigate the association between accounting conservatism on unconditional accounting conservatism. This paper tries to fill in the research gap. Research Objective to investigate the impact of board director characteristic of accounting conservatism. This paper fills in this gap; this study employ, the research describes a more detail picture about the impact of board director characteristic, accounting conservatism.

LITERATURE REVIEW

The corporate governance for financial information to Increase transparency. Is Internal external systems used to Inspect Investigate the relationship between a board of director characteristics and accounting conservatism that proxy for board size, board independence and board leadership a number of prior studies examine the relation between board characteristics and the financial reporting quality, Beekes et al. (2004), the board independence Characteristics and conservatism accounting and positive relation for a sample of UK firms using the measure of accounting conservatism. The effects of board size. Jensen (1993) the larger boards are less than smaller boards of difficulties in coordination. The larger boards as board of management (Duellman, 2006). The large board of expertise and information. Larger boards may have more external linkage. The funding to performance (Pearce and Zahra, 1992; Pfeffer, 1987). Duellman (2006) the larger board allow directors to specialize and monitoring board. Lipton and Lorsch (1992) Recommend board size of between eight and nine directors. Hermalin and Weisbush (2003) the relationship between board size and firm value. Xie et al. (2003) and Peasnell et al. (2001) that having a larger board is associated with fewer earnings management. The results by Haniffa and Hudaib (2006) that large boards are less effective in monitoring performance. Rahman and Ali (2006) significant positive relationship between board size and earnings management, implying that larger boards were difficult to control.

Board of directors may use conservative accounting to reduce agency costs (Watts, 2003; Ahmed and Duellman, 2007). Outside directors will corporate governance of control the effectiveness of the board of Independence (Fama and Jensen, 1983). Therefore, to encourage more conservative in financial reporting (Beekes et al., 2004; Bushman et al., 2004; Ahmed and Duellman, 2007) board independence high making the board less effective. The situation, management may compromise of quality of financial reporting in conservative accounting. Board leadership (Jensen, 1993). The separation of the CEO is important and chairperson positions for the functioning of the board effective. The CEO of abilities and board provide greater opportunities for managerial. (Dechow et al. 1995; Klein, 2002; Rahman and Haniffa, 2005) the relationship between CEO and accounting conservatism. Ahmed and Duellman (2007) find that CEO duality is unrelated to the accounting conservatism of financial reporting in earnings. Krishnan and Vivianathan (2008) and Lim (2011). The separation of the CEO's and chairperson's roles, the indicator of good governance, is positively related to accounting conservatism. Givoly and Hayn (2000) another method to measure the degree of conservatism and of accumulated accruals and means accruals of unconditional conservatism of means that the recognized book values of the net asset are their expected market values. Most academic researchers pay more attention to studying unconditional conservatism. Although there are many paper researching conditional conservatism and unconditional conservatism. (Kohansal et al 2017, Beaver and Ryan 2005, Gassen et al. 2006 and Iatridis 2011), unconditional conservatism is studied or any relevant research investigating why this kind of difference happens, a great topic to investigate further in the future.

The accounting conservatism and variables definitions measurements. The proxy for unconditional conservatism (Givoly and Hayn, 2000; Krishnan and Visvanthan, 2008; Zhang and Wang, 2013). In this research, is defined as non-operating accruals divided by the last year's total assets (TA_i, t-1 means the last year's total assets.)The negative symbol in this equation fits for the change of conservatism. The measure of the conservatism firms. In other words, the higher of this ratio, the more conservatism would be in the financial reporting. Financial leverage and variables definitions measurement. Lafond & Roychowdhury, (2008). A higher leverage means that there is relatively more debt, and limits excess cash. Leverage is said to be decreasing the tendency of managers to overinvest .Financial Leverage of means the total debt divided by total assets at the end of the fiscal year. And Firm size and variables definitions measurements (Watts and Zimmerman, 1978). Ahmed et al. (2002) by the control for profitability as Ahmed at al. (2002) the profitable firms tend to use more conservative accounting by total assets measurements as a proxy for profitability of firm size.

Then, researchers aimed to examine the impact of boards of director characteristics on accounting conservatism of Thai listed companies. The research framework was conducted as shown in figure 1 below.

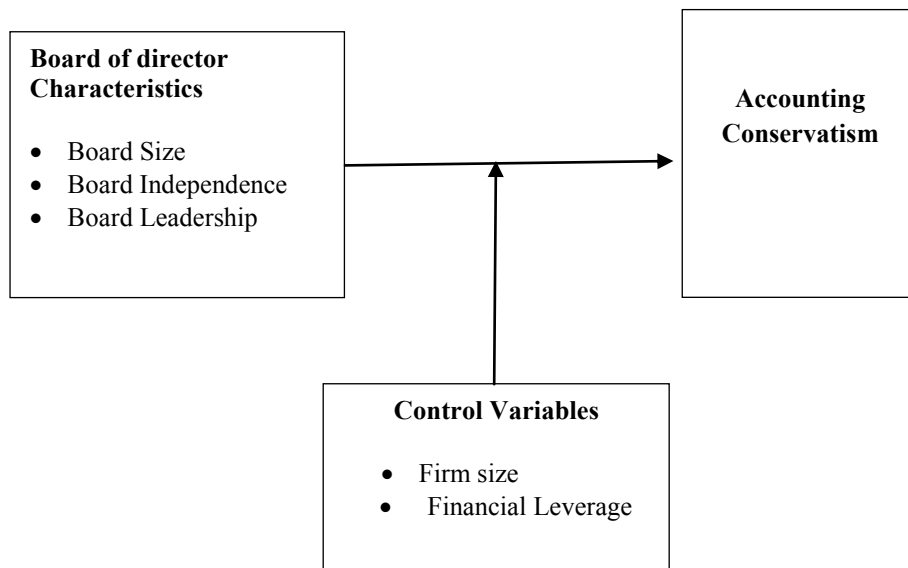


Figure 1: A Conceptual Model

DATA AND METHODOLOGY

DATA

This research employed panel data. The data were companies listed on the Stock Exchange of Thailand (SET) during 2016 – 2018, except finance sector. The data were of annual basis, obtained from the SET Market Analysis and annual financial reports. Delist and new list companies were excluded because of unavailable data. As a result, the samples of this study consisted of 7 industries as Agro & Food Industry, Resources, Technology, Service, Industrials, Consumer Products, Property and Construction. All samples were 368, providing 1,084 observations. The study employed one dependent variable as accounting conservatism, three explanatory variables as board size, board independence and

board leadership, including two control variable as firm size and financial leverage. The mnemonic, definitions and measurement of each variable were presented in table 1 below.

Table 1 The mnemonic, definitions and measurement of each variable

Variables	Mnemonic	Definitions	Measurements
Dependent variable			
1. Accounting conservatism	CON-ACC	Unconditional accounting conservatism	Net income minus operating cash flows divide total assets
Independent variable			
1. Board Size	BS	The number of directors.	The number of directors.
2. Board Independence	BI	The number of independent directors	The number of independent directors.
3. Board Leadership	BL	The same person serves as both CEO and chairperson	A dummy variable, equal to 1 if the same person serves as both CEO and chairperson
Control variable			
1. Finance leverage	FL	Financial leverage	Total debt / total assets
2. Firm size	FS	Total assets	Log(total assets)

RESULTS AND DISCUSSION

Prior to conducting multiple regressions, data multicollinearity was analyzed by using the Pearson correlation and Variance Inflation Factor (VIF). The bivariate analysis of correlation procedure is subject to a two-tailed test of statistical significance at $p < 0.05, 0.01$. The results showed in Table 2 below.

Table 2 Correlation coefficient between variable

VIF			Board Size (BS)	Board Independence (BI)	Board Leadership (BL)	Accounting Conservatism (CON-ACC)	Financial Leverage (FL)	Firm size (FS)
1.54	Board Size (BS)	Pearson Correlation Sig. (2-tailed)	1					
1.68	Board Independence (BI)	Pearson Correlation Sig. (2-tailed)	.550**	1				
1.09	Board Leadership (BL)	Pearson Correlation Sig. (2-tailed)	-.059	.150**	1			
	Accounting Conservatism (CON-ACC)	Pearson Correlation Sig. (2-tailed)	.066*	.031	.033	1		
1.13	Financial Leverage (FL)	Pearson Correlation Sig. (2-tailed)	.076*	.043	.043	.032	1	
			.012	.157	.155	.295		

1.36	Firm size (FS)	Pearson Correlation	.251**	.309**	.018	-.042	.289**	1
		Sig. (2-tailed)	.000	.000	.556	.164	.000	
		N	1084	1084	1084	1084	1084	1084

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed)

The results in Table 2 showed that no explanatory variables provided VIFs above 10.0 and Pearson correlation above 0.8. As a result, these variables were able to be included in multiple regression model.

DESCRIPTIVE STATISTICS OF VARIABLES

Then, descriptive statistic of variables were employed. The results were shown in Table 3 below.

Table 3 Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
Board Size (BS)	5.000	21.000	10.300	2.430
Board Independence(BI)	3.000	12.000	4.120	1.220
Board Leadership (BL)	0.000	1.000	0.510	0.500
Accounting Conservatism (CON-ACC)	- 0.800	0.481	0.024	0.105
Financial Leverage (FL)	0.000	2.126	0.412	0.242
Firm size (FS)	8.249	12.372	9.781	0.661

Table 3 presents an overview of the preliminary data analysis results from 1,084 data in seven industry groups in terms of minimum, maximum, mean and standard deviation. The findings show the means of board size, board independence and board leadership were 10.300, 4.12 and 0.51 respectively. While, control variable as financial leverage and firm size provided the mean of 0.412 and 9.781 respectively. Accounting Conservatism provided the mean of 0.0224.

Then multiple regression model was employed below and the results were showed in Table 4.

$$CON-ACC = \beta_0 + \beta_1 BS + \beta_2 BI + \beta_3 BL + \beta_4 FL + \beta_5 FS + \varepsilon$$

Table 3 multiple regression model

Model		B	Sig.
Dependence Independence	Accounting Conservatism (CON-ACC)	.100	.044
	Board Size (BS)	.003	.038*
	Board Independence(BI)	-.001	.770
Control variables	Board Leadership (BL)	.007	.294
	Financial Leverage (FL)	.022	.104
	Firm size (FS)	-.012	.038*
R Square		0.031	
Adjusted R Square		0.022	
Durbin - Watson		1.711	

* Means 5% significance level

As presented in Table, the results showed R Square and adjusted R Square were 0.031 and 0.022 respectively. The findings showed that board size was positively related to accounting conservatism at the 5% significance level. This implied that larger number of board size may increase unconditional accounting conservatism. This was associated with Xie, Davidson, and DaDalt (2003) and Rashidah and Fairuzana (2006), who indicated that the larger board is associated levels of discretionary current accruals and the larger boards size show a net profit that is too low. The accounting conservatism confirming in monitoring such accruals than a smaller board.

However, board independent were not provided significant impact on unconditional accounting conservatism. Board independence had a negative relationship with unconditional accounting conservatism. The results show that the regression coefficient board independence, is negative cant with accounting conservatism for all models ($p < 0.005$), not supported with the board independence not's associated with accounting conservatism. Therefore, the model shows

that board independence has negative significant impact on accounting conservatism of at 0.770. This means board independence numbers. That higher board independence does not align with accounting conservatism. The independent executive directors do actually have the power of independence higher whit conservatism on higher. Consistent with studies. Beekes et al. (2004)

The regression analysis linkages between boards of leadership in terms of board leadership who jointly serve as board chairs, the proportion of expert on the board leadership of board is associated with lower levels of voluntary corporate disclosures. The findings showed that the board leadership association with accounting conservatism was negative related to accounting conservatism at the models ($p < 0.294$) significance level. This implied that larger number board leadership may increase unconditional accounting conservatism. This was associated with Eng and Mak, (2003) and Rechner & Dalton, D. R. 1991. More interestingly, we find that association between board leadership that larger number board leadership may increase unconditional accounting conservatism high. Krishnan and Vivanathan (2008) and Lim (2011). Krishnan and Vivanathan (2008) and Lim (2011) find that the CEO's and chairperson's as of good governance is positively associated with accounting conservatism. In regard to control variable, only firm size was positively related to accounting conservatism at the 5% significance level.

CONCLUSION

The results showed that conservatism relationship between by the board size. The findings showed that board size was positively related to accounting conservatism at the significance level. The accounting conservatism of unconditional accounting conservatism on negative relationship between of relationship board leadership and board Independent. The board leadership and board Independent needs for regulatory compliance regardless of the function that should. In addition, the results also showed of accounting conservatism becomes weaken in the presence of financial and firm size as a control variable. Results of this study proved entrenchment effect that occurs in the board size, board leadership and board Independent listed on the Stock Exchange. The High control rights motivated the majority board Independent this research board of directors. Improved control of majority board of directors characteristics of wealth on the other side However, this thesis found that accounting conservatism was a useful tool in monitoring the board director characteristic to apply accounting conservative financial reports of measures of conservatism; accrual-based conservatism unconditional conservatism, it was revealed that inside conservatism. Since accrual-based accounting conservatism is an income statement measure. Further, this thesis concludes did not explain Ownership structure in proportion on the board led to higher or lowed of accounting conservatism but led to lower conservatism if were on the board director characteristic and real earnings.

REFERENCES

- Ahmad, R. A. R., & Kamarudin, K. A. (2003, June). Audit delay and the timeliness of corporate reporting: Malaysian evidence. In *Communication Hawaii International Conference on Business*. University of Hawaii-West Oahu.
- Ahmed, A. S., & Duellman, S. (2007). Accounting conservatism and board of director characteristics: An empirical analysis. *Journal of Accounting and Economics*, 43(2-3), 411-437
- Ahmed, K., & Henry, D. (2012). Accounting conservatism and voluntary corporate governance mechanisms by Australian firms. *Accounting & Finance*, 52(3), 631-662
- Ajinkya, B. B., & Gift, M. J. (1984). Corporate managers' earnings forecasts and symmetrical adjustments of market expectations. *Journal of Accounting Research*, 425-444.
- Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics*, 39(1), 83-128.
- Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings¹. *Journal of Accounting and Economics*, 24(1), 3-37.
- Beaver, W. H., & Ryan, S. G. (2005). Conditional and unconditional conservatism: Concepts and modeling. *Review of Accounting Studies*, 10(2-3), 269-30.
- Beekes, W., Pope, P., & Young, S. (2004). The link between earnings timeliness, earnings conservatism and board composition: evidence from the UK. *Corporate Governance: An International Review*, 12(1), 47-59.
- Brennan, N. M., & Solomon, J. (2008). Corporate governance, accountability and mechanisms of accountability: an overview. *Accounting, Auditing & Accountability Journal*, 21(7), 885-906.
- Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics*, 18(1), 3-42.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting Review*, 193-225.
- Eisenberg, T., Sundgren, S., & Wells, M. T. (1998). Larger board size and decreasing firm value in small firms. *Journal of Financial Economics*, 48(1), 35-54.
- Gassen, J., Uwe Fülbier, R., & Sellhorn, T. (2006). International differences in conditional conservatism—the role of unconditional conservatism and income smoothing. *European Accounting Review*, 15(4), 527-564.
- Givoly, D., & Hayn, C. (2000). The changing time-series properties of earnings, cash flows and accruals: Has financial reporting become more conservative? *Journal of Accounting and Economics*, 29(3), 287-320.
- Hermalin, B. E., & Weisbach, M. S. (2001). *Boards of directors as an endogenously determined institution: A survey of the economic literature* (No. w8161). National Bureau of Economic Research.
- Iatridis, G. E. (2011). Accounting disclosures, accounting quality and conditional and unconditional conservatism. *International Review of Financial Analysis*, 20(2), 88-102.
- Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance*, 48(3), 831-880.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, 33(3), 375-400.
- McNichols, M. (1988). A comparison of the skewness of stock return distributions at earnings and non-earnings announcement dates. *Journal of Accounting and Economics*, 10(3), 239-273.
- McNichols, M. F., & Stubben, S. R. (2008). Does earnings management affect firms' investment decisions?. *The Accounting Review*, 83(6), 1571-1603.
- Rahman, R. A., & Haniffa, R. M. (2005). The effect of role duality on corporate performance in Malaysia. *Corporate Ownership and Control*, 2(2), 40-47.
- Roychowdhury, S., & Watts, R. L. (2006). *Asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting*.
- Vafeas, N. (1999). Board meeting frequency and firm performance. *Journal of Financial Economics*, 53(1), 113-142.
- Xie, B., Davidson III, W. N., & DaDalt, P. J. (2003). Earnings management and corporate governance: the role of the board and the audit committee. *Journal of Corporate Finance*, 9(3), 295-316
- Yatim, P., Kent, P., & Clarkson, P. (2006). Governance structures, ethnicity, and audit fees of Malaysian listed firms. *Managerial Auditing Journal*, 21(7), 757-782.
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2), 185-211.

Study of the Satisfaction of the Service of Thai AirAsia Airline

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Abstract: This research is aimed at 1) to learn more about the performance of Thai AirAsia. Classified by personal fundamental factor 2) to learn more about the effectiveness of Thai AirAsia service. 3) To learn more about the effectiveness of Thai AirAsia service. Marketing aspects for aviation business 50 people using a query is a tool to collect data and analyze statistics, including the average frequency, the standard deviation percent, t-test and ANOVA. The results of the analysis showed that the users of the Thai AirAsia airline mainly found that the majority of Thai AirAsia Airways users are between the age of 21 – 30 years. The level of education is at a bachelor's degree, with a profession of a private company and an average monthly income of 20,001 – 40,000 baht per month. There is a frequency of the use of Thai AirAsia 1 – 3 times/year, 32 to 64.0 percent, with a purpose of tourism, 38 to 76.00 percent, using international routes to use 27% of the 54.00 percent, which is the average price of the ticket per flight under 10,000 baht, which is 76.00 percent, using the channel to buy tickets via Thai AirAsia website. 38 Total of 26 persons 52.0 percent. And check-in at the check-in counter of 31 persons 62.0, respectively. Hypothesis Testing Researchers test the difference between three or more independent variable averages using one-way analysis (One – Way Analysis of Variance: ANOVA) and when encountering statistically significant differences at level 0.05, where the hypothesis test results are found in the research results section..

Keywords: Key words: Satisfaction / Service / Airline

INTRODUCTION

Nowadays, there is higher competition in the aviation industry, allowing passengers to have a more diverse choice and the ability to choose to use the flight services that they have the most confidence for their travel needs. In addition, the accident of aircraft accidents may make sure passengers' travel is reduced and negatively impact on the aviation industry. The preliminary effects incurred include security costs and increased insurance and a decrease in the number of passengers and the unit revenue due to barriers. Lower global air travel and may increase the cost of the aviation industry, such as fuel for aircraft or insurance costs. In addition, the outbreak of any infectious disease that has the potential for epidemic or measures in which the Government of the countries affected by the outbreak is used to cope with potential risks and may interfere with the business.

OBJECTIVE

1. To learn more about the effectiveness of Thai AirAsia service. Classified by a personal fundamental factor.
2. To learn more about the effectiveness of Thai AirAsia service. By airline behavior.
3. To learn more about the effectiveness of Thai AirAsia service. Marketing aspects for aviation business.

METHODOLOGY

Population and sample groups

The population is a passenger who uses the Thai AirAsia service. Both domestic and international A sample of 100 people and a total of 100 questionnaires by storing the questionnaire. 50 people at the terminal at Don Mueang International Airport, Bangkok. Departure Area 1, 2nd Floor and 2nd Floor 2 at Thai AirAsia check-in counter.

The research tools

In this research, researchers have used a query as a tool to collect data, which the questionnaires created are divided into 3 sections:

Part 1 Personal information for respondents It has a closed-end style (Close-Ended Response Question), consisting of questions related to gender, age, education, profession, income, and all 5 service categories.

Part 2 inquiries about the Thai AirAsia behavior The Close-Ended Response Question is composed of 6 related questions.

Part 3 The satisfaction of the Thai AirAsia service Classified by marketing mix for service business. The question looks like a closed-end query (Close-Ended Response Question) with a number of 38 elements.

Part 4 Comparing the satisfaction of Thai AirAsia airlines There are five aspects of the service, including price services, marketing promotional distribution, airline employee's external appearance, in the management process.

RESULTS

The result of data collection, the subject query Thai AirAsia's service satisfaction study Data is summarized by objective. As follows:

1. This research has studied the personal information of those who have responded to the questionnaire. The majority of Thai AirAsia's users are in the age of 21 – 30 years, with education in the undergraduate level, with a profession of a private company and an average monthly income of 20,001 – 40,000 baht per month.
2. This research has studied the behavior of the people's Thai AirAsia service, who answered the questionnaire. The results of the analysis showed that the 50 respondents had the frequency of using Thai AirAsia 1 – 3 times/year, 32 percent of 64.0, with a purpose of tourism of 38 percent of 76.00. The international route for use of 27 services is 54.00 percent, which is the average price of the ticket per flight under 10,000 baht, which is 76.00 percent, using the channel to buy tickets via the Thai AirAsia website. 38 The total number of 26 persons is 52.0 percent and the check-in counter is over a total of 31 to 62.0 percent.
3. The researchers will test with the t-Test value to compare the average of the two independent variables, including assumptions 1, 8, 11, Assumption 2, 3, 4, 5, 6, 7, 9, 10 The researchers will test the difference between the average of three or more independent variables using one-way analysis (One – Way Analysis of Variance: ANOVA) and when encountering statistically significant differences at level 0.05, which results in hypothesis testing.

Classified by gender

Males, We are satisfied with the service of Thai AirAsia airlines. Found that the overview is very high (Mean = 3.94) when considered as a top-level list. The average is between 3.80 – 4.15, the top-most average is the service side (Mean = 4.15). The least average section is the side of the market promotion (Mean = 3.80).

Female is satisfied with the service of Thai AirAsia airlines. Found that the overview is very high (Mean = 4.04) when considered as a top-level list. The average is between 3.96 – 4.19, the most average side is the airline's job (Mean = 4.19). The least average section is the side of marketing promotion (Mean = 3.96).

Classification by age

Find the comparison of Thai AirAsia's satisfaction of service. Classified by gender Considering the fact that education is different, the service is satisfied with the Thai AirAsia airline. There are no different types of marketing campaigns (Sig. = .696), airline staff (Sig. = .542), the management process side (Sig. = .434), Side price (Sig. = .343), the external appearance of the airline (Sig. = .312), the distribution (Sig. = .233), service side (Sig. = .122), statistically significant at level 0.05.

Classified by education level

Find the comparison of Thai AirAsia's satisfaction of service. Classified by education level Considering the fact that education is different, the service is satisfied with the Thai AirAsia airline. There are no different types of service (Sig. = .971), the process side management (Sig. = .897), the external appearance of the airline (Sig. = .687), airline staff (Sig. = .625), Side price (Sig. = .508), marketing promotion (Sig. = .340), the distribution side (Sig. = .167) Statistically significant at level 0.05.

Classified by profession

Find the comparison of Thai AirAsia's satisfaction of service. Classified by profession Considering the fact that education is different, the service is satisfied with the Thai AirAsia airline. There are no different types of service (Sig. = .996), the distribution side (Sig. = .918), price (Sig. = .846), side of the market promotion (Sig. = .760), the management process side (Sig. = .606), the external appearance of the airline (Sig. = .495), airline staff (Sig. = .458) Statistically significant at level 0.05.

Classified by Revenue

Find the comparison of Thai AirAsia's satisfaction of service. Classified by Revenue Considering the fact that education is different, the service is satisfied with the Thai AirAsia airline. There are no different types of marketing campaigns (Sig. = .762), Side price (Sig. = .589), the distribution side (sig. = .557), service side (Sig. = .401), airline staff (sig. = .249), side of the airline's external appearance (sig. = .204), the management process side (sig. = .068), a statistical significance at level 0.05.

Classified by frequency of service

Find the comparison of Thai AirAsia's satisfaction of service. Classified by frequency of service Considering the fact that education is different, the service is satisfied with the Thai AirAsia airline. Not different including distribution side (Sig. = .312), Staff of airline (Sig. = .281), service side (Sig. = .256), side-appearance of airlines (Sig. = .227), side of the market promotion (sig. = .222), the management process side (Sig. = .089), Price side (Sig. = .020), statistically significant at 0.05 level.

Classified by Travel purpose

Find the comparison of Thai AirAsia's satisfaction of service. Classified by Travel purpose Considering the fact that education is different, the service is satisfied with the Thai AirAsia airline. It is not different as the side management process (Sig. = .943), side-promotion marketing (Sig. = .677), the external appearance of the airline (sig. = .677), service side (sig. = .611) 709, the price side (Sig. = .575), the distribution (Sig. = .451), airline staff (Sig. = .170) Statistically significant at 0.05 level.

By Flight route

We found that the satisfaction of Thai AirAsia service. The following is a list of flight routes.

Domestic We are satisfied with the service of Thai AirAsia airlines. Found that the overview is very high (Mean = 3.99) When considered as a top-level list. The average is between 3.86 – 4.08, the top-most average is the service side (Mean = 4.08). The smallest section is the outer appearance of the airline (Mean = 3.86).

International We are satisfied with the service of Thai AirAsia airlines. Found that the overview is very high (Mean = 4.01) when considered as a top-level list. The average is between 3.86 – 4.24, the most average side is the airline's job (Mean = 4.24). The least average section is the side of marketing promotion (Mean = 3.86).

This is based on the average ticket price per flight.

Find the comparison of Thai AirAsia's satisfaction of service. This is based on the average ticket price per flight. Considering the fact that education is different, the service is satisfied with the Thai AirAsia airline. There are no different types of marketing campaigns (Sig. = .920), the distribution (Sig. = .917), airline staff (Sig. = .248), side-appearance of airlines (Sig. = .167), the management process side (Sig. = .091), Price side (Sig. = .087), service side (Sig. = .077) statistically significant at 0.05 level.

By Channel for purchasing tickets

Find the comparison of Thai AirAsia's satisfaction of service. By Channel for purchasing tickets Considering the fact that education is different, the service is satisfied with the Thai AirAsia airline. There is no difference: the external appearance of the airline (Sig. = .311), employee airline (Sig. = .297), service side (Sig. = .134), the distribution (Sig. = .077), Side of marketing promotion (Sig. = .057), Price side (Sig. = .056), the process side management (Sig. = .045), statistically significant at 0.05 level.

Classification by check-in channels

We found that the satisfaction of Thai AirAsia service. The details of check-in channels are as follows:

Check-in counters We are satisfied with the service of Thai AirAsia airlines. Found that the overview is very high (Mean = 3.87) when considered as a top-level list. The average is between 3.56 – 4.08, the highest average side is the airline employee (Mean = 4.08). The least average section is the management process side (Mean = 3.56). Internet

check-in We are satisfied with the service of Thai AirAsia airlines. Found that the overview is very high (Mean = 4.15) when considered as a top-level list. The average is between 4.06 – 4.27, the most average side is the employee airline (Mean = 4.27), the least average section is the side of marketing promotion (Mean = 4.06).

CONCLUSION AND FUTURE WORK

1. The service side found that serving food and drinks on the aircraft is fast and accurate with the speed of support and service to the customers. Thai AirAsia minimum should be adjusted to facilitate To provide fast and accurate food and beverage service to the aircraft. By practicing the staff to be more professional.
2. Marketing Promotion Find out more about airline projects and special events. Therefore, the airline should organize activities or projects to the users to participate in the activities to impress those who use the service and create a good image for the airline.
3. The staff showed that the staff cared for the passengers as well as the minimum, so there was a training development, personality, and service training to be the great care of the family in order to ensure that the passengers were impressed with the service.
4. The management process found that baggage delivery is fast and not lost. Min. The airline should focus on the highest standards of property safety, check baggage and equipment, avoid damage or damage to ensure travel confidence.

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Study of the Satisfaction of the Service

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REFERENCE

- Jittangwattana, B. (2005). *Airline business*. Bangkok, Thailand: Place&Dising.
- Kankeaw, K. (2012). *Expectations and satisfaction of passengers with airline services The case study is a full service airline in Thailand* (Master thesis). Suan Sunandha Rajabhat University.
- Karaiwan, Y. (2000). *Research basics*. Bangkok, Thailand. Suweyasan.
- Manutpeerapan, W. (2009). *Satisfaction with the service market factors of airline users Thai Air Asia for Thai tourists* (Master thesis). Bangkok University.
- Meejindha, P. (2010). *Consumer behaviour*. Bangkok, Thailand: Thammasart.
- Meenanan, C. (2004). *Passenger satisfaction per Thai Airways International Flight Service Co., Ltd.* (Master thesis). Kasetsart University.
- Rattanaphuk. K. (2002). *Market service* (Bachelor thesis). Chiang Mai University.
- Wanitbancha, K. (2012). *Using SPSS for Windows to analyze data*. Bangkok, Thailand: Chulalongkorn University book center.

Factors for Decision Choosing Air-Conditioned Passenger Van Services Bangkok-Ayutthaya Route

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Abstract: This research is quantitative research aims to study 1) customer services that affect the decision choosing air-conditioned passenger van services Bangkok-Ayutthaya route 2) quick response that affects the decision choosing air-conditioned passenger van services Bangkok-Ayutthaya route 3) pricing that affects the decision choosing air-conditioned passenger van services Bangkok-Ayutthaya route and 4) organization services that affect the decision choosing air-conditioned passenger van services Bangkok-Ayutthaya route. The instrument used in the research was a questionnaire. The sample consisted of 400 air-conditioned passenger van users by using Taro Yamane's table finished, statistics used for data analysis were frequency, percentage, mean, and standard deviation. When considered in each aspect, it was found that every aspect affecting the decision was at a high level, price affecting (Mean = 3.86, S.D. = 0.79), organization services (Mean = 3.84, S.D. = 0.77), quick response (Mean = 3.78, S.D. = 0.78), and customer services (Mean = 3.74, S.D. = 0.88) respectively..

Keywords: Decision, Choosing, Passenger Van Services, Bangkok-Ayutthaya Route

INTRODUCTION

Bangkok is a city that is growing rapidly. Is the administrative center Economy and trade Is a modern city Therefore causing many people to come to live and come to pursue careers Can be observed from the number of buses in Bangkok That increases every year and nowadays, traveling with various types of public systems has come to play a role in facilitating and being important for life. But the most popular way for people to travel is by public land system such as passenger vans, buses, trains etc. because of the convenience Combined with various driving routes However, the majority of the people traveling today have chosen to travel by using more passenger vans Because the public transport system of the government that is currently not enough to meet the needs of the people. And still not responding to user needs Causing travel delays and economic losses.

As mentioned above, about the problem of using the van service between Bangkok-Ayutthaya. Which is the route that passes through educational institutions and various government offices. In the year 2018, the number of passengers using the air-conditioned van in the amount of 532,309 (Bangkok Mass Transit Authority, 2018) but because of the travel time of the Bangkok-Ayutthaya line Which is the main line used by many people, especially during the morning and evening hours Causing the van to waste time and cause the car to run out of traffic Customers have to wait for the passenger van for a long time. Therefore, the researcher is interested to study about the factors in deciding to use the air-conditioned van service route: Bangkok-Ayutthaya route In order to know the factors that have an influence on the choice of air-conditioned van service on the route: Bangkok-Ayutthaya route So that business operators providing air-conditioned van services understand the factors in choosing to use the service And the true needs of the target customers To lead the organization's strategic planning that will help to increase work efficiency And create maximum satisfaction for customers Which will lead to a competitive advantage in providing transportation services.

RESEARCH OBJECTIVE

1. To study customer service that affects the decision to choose an air-conditioned van service route: Bangkok-Ayutthaya route
2. To study the rapid response that will affect the decision to choose an air-conditioned van service route: Bangkok-Ayutthaya route
3. To study the prices that affect the decision to choose an air-conditioned passenger van service route: Bangkok-Ayutthaya route
4. To study the organizational characteristics of users that affect the decision to choose an air-conditioned van service route: Bangkok - Ayutthaya route

RESEARCH SCOPE

The researcher used quantitative research. By choosing to use survey methods with the questionnaire created and the scope of the research has been defined as follows: 1) Population boundaries are air-conditioned van users on the route: Bangkok-Ayutthaya route 2) Scope of sample use Choose from the sample population. By convenient sampling method Specify the sample size according to Yamane formula. Sample size is 400 samples. 3) Content Scope The content used to study the structure of variables. Questionnaire construction Data Analysis and the discussion of the study results Obtained from the concept search Theory and research involved is customer service. Quick response, price, service provider organization characteristics and consumer decisions. 4) Variable boundary consisting of

independent variables, namely travel-related factors, 4 aspects of customer service The rapid response, price, characteristics of the service organization according to the variables are the decision to choose the air-conditioned van service on the route: Bangkok - Ayutthaya route. 5) Scope of study Starting from the month January - April 2019.

EXPECTED BENEFITS

1. Know the level of opinions of users about the decision to use the air-conditioned van service route: Bangkok-Ayutthaya route.
2. Know the users' problems regarding the decision to use the air-conditioned van service route: Bangkok-Ayutthaya route
3. The results of the study can be used to upgrade the standard of air-conditioned passenger van services on the route: Bangkok-Ayutthaya route. and used as basic information for further research on other related topics.

LITERATURE REVIEW

In research on Factors for deciding to use the air-conditioned passenger van service on the route: Bangkok-Ayutthaya route. The researcher has studied the concepts, theories and related research as follows

1. Transportation concepts

Pongsaada Chalermklin (2017) has given the meaning of transportation means that transportation can be considered as a type of service industry that is very important to daily life.

2. Service concepts

Sumana Yupho (2012) said that service means activities, benefits, or satisfaction. Which was offered for sale or activities that are organized together to sell services

Nilubon Pengpanich (2015) described public services as a process that moves in a dynamic manner. In this regard, good service systems can occur only when the responsible department uses resources and produces services as planned.

3. Concept of quick response

Siriwan Serirat and Others (2013) Fast response means being flexible to respond to customers' needs.

4. Price concept

Kulika Watthasuwakul (2012) said that pricing and pricing strategies Every organization must study the cost of products. Rival Market Price in order to be used in the analysis to determine the primary price of the product in the organization in that pricing.

5. Concepts and theories about the organization's characteristics of service providers

Alvesson (1987) states that organizational characteristics are important: 1) behaviors that are consistently observed, such as the use of language in communication, formalities, and behavior patterns accepted by people in the organization. 2) norms. 3) values Popular with outstanding features. 4) have the corporate philosophy. 5) have rules and regulations. 6) have the atmosphere of the organization.

6. Conceptual decisions

Jinnawat Patakotang (2010) states that the theory of organizational management in one era has given importance to the administrative process, including organizational management planning. Personnel management Directing and controlling

7. Knowledge about the qualifications of passenger vans

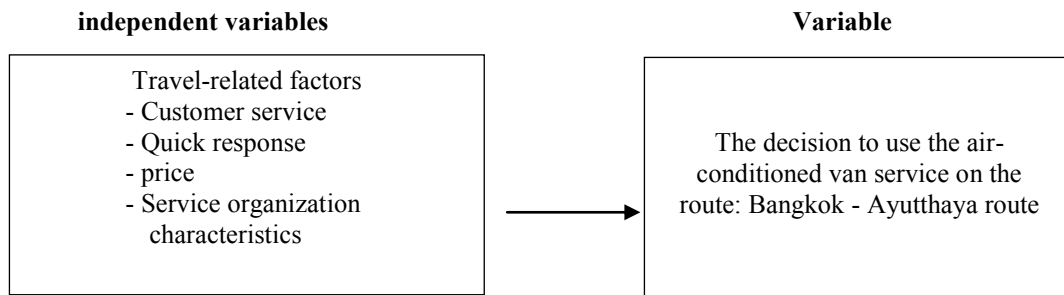
The government empowers by virtue of Article 44 of the Constitution of the Kingdom of Thailand. (Temporary version) B.E. 2557 (2014) The head of the National Council for Peace and Order, with the approval of the National Council for Peace and Order, therefore issued a law on passenger vans. And measures to increase safety.

8. Related research

Suratchanee Tantawetyanont (2015) studied the factors that affect the behavior of decision to use air-conditioned bus service class 1: a case study of Ratchaburi Group 76 Company Limited, the objective is to study the personal factors that affect the decision-making behavior in The use of first class air-conditioned buses and the relationship of marketing mix and decision making behavior in using the first class air-conditioned buses of Ratchaburi Group 76 Company Limited.

Paphitchaya Tanprasarn (2014) studied the decision to use public van services for passengers. Victory Monument Van Terminal The objective of this study is to study the differences of personal factors and behaviors of using public van services that influence the decision to use public van services of passengers at the Victory Monument Van Terminal. And to study the relationship of the service van's marketing mix towards the decision to use the public van service of passengers at the Victory Monument Van Terminal.

9. Conceptual framework



METHODOLOGY

This research study is quantitative research. The samples used in this study were 400 air-conditioned passenger van users on the route: Bangkok - Ayutthaya route, using questionnaires as a research tool. Data was collected through research, data collection, academic textbooks, research papers, and data collection from questionnaires and analyzed for data using software packages. The statistics used for data analysis were frequency, percentage, mean, and standard deviation.

RESEARCH RESULT

1. Personal information of the air conditioned passenger van service on the route: Bangkok - Ayutthaya route

It was found that 400 air-conditioned passenger vans using the route: Bangkok - Ayutthaya route, most of them are female more than males. Between 20 - 30 years old, have a bachelor's degree Having an income below 15,000 baht, single status and a student career.

2. Travel factor information

It was found that 400 air-conditioned passenger van service routes: Bangkok - Ayutthaya route, most of the 400 people use the van service for personal errands. There is frequent frequency of using the van service, there is a period of using the van service from late morning to afternoon (09.01 - 15.00 hrs.) There is a waiting period for the van before getting on the bus for about 6 - 10 minutes.

3. Factors that influence the decision to use the air-conditioned van service route: Bangkok - Ayutthaya route

Found that the factors that affect the decision to choose the air-conditioned van service route: Bangkok - Ayutthaya route Overall, it affects the decision at a high level (Mean = 3.81, S.D. = 0.81) when considering in each aspect Found that it affects the decision at a high level in all aspects. In descending order, namely price (Mean = 3.86, SD = 0.79), organization characteristics of the service providers (Mean = 3.84, SD = 0.77), quick response (Mean = 3.78, SD = 0.78) and Customer service (Mean = 3.74, SD = 0.88) respectively.

DISCUSSION

From research studies on Factors for deciding to use the air-conditioned passenger van service on the route: Bangkok-Ayutthaya route. There are issues to be discussed as follows

1. he study of personal factors shows that 400 air-conditioned passenger van service on the route: Bangkok-Ayutthaya route, mostly 400 females, more than male Between 20 - 30 years old, have a bachelor's degree Those with incomes below 15,000 baht are single and have a student / student consistent with the moderate level (2015) that studies factors affecting bus usage behavior under the supervision of the Bangkok Mass Transit Authority. In Bangkok, most of the respondents are single women with average monthly income between 5,000 - 9,999 baht.

2. The study of travel-related factors shows that 400 air-conditioned passenger van service routes: Bangkok - Ayutthaya route, most of the 400 people use the van service for personal errands. The frequency of using the van service infrequently, there is a period of using the van service from late to afternoon (09.01 - 15.00 hrs.) There is a waiting period for the van before getting on the bus for about 6 - 10 minutes, in accordance with Pitchaya Tanprasarn (2014) who studied about the decision to use public vans for passengers Victory Monument Van Terminal Found that the period chosen to use the service between morning and late and the average duration of waiting between 6-10 minutes

3. Factors affecting the decision to use the air-conditioned vans on the route: Bangkok - Ayutthaya route It is found that the factors that affect the decision to use the air conditioned vans on the route: Bangkok - Ayutthaya line. Overall, it affects the decision making at a high level. When considering in each aspect Found that it affects the decision at a high level in all aspects. In descending order, namely price, organization characteristics of service providers Quick Response and customer service respectively, in accordance with Kanittha Kerdrat (2017), which studies the behavior and needs of using public transport for Japanese tourists. Found that the level of demand for public transport of Japanese tourists The overall picture in all 4 aspects is at a high level, which are Regarding the convenience of using

public transportation Quality and safety of public transport services as for the price of using public transportation and the driver or service provider side.

SUGGESTION

ACTION RECOMMENDATIONS

From the research results obtained from data analysis of the sample, there are additional issues as follows

1. Entrepreneurs should have action to meet the satisfaction of users, such as most users are students / students. May give special privileges or discounts for users who are students.
2. Operators should control the intensity of the bus driver. To work carefully and strictly obey traffic rules, such as driving at a suitable speed Turn on the headlights when driving in areas with poor visibility. Do not drive carelessly Don't play phone while driving to prevent accidents
3. Operators should give importance to service personnel such as personality care. Dressing clean, polite, timely, performing duties willingly, smiling, in order to impress customers.
4. Operators should pay attention to standardized services. Have a definite timetable with clear and standardized prices

SUGGESTIONS FOR CONDUCTING FUTURE RESEARCH

1. should study the satisfaction of the air-conditioned van users in many directions in order to be informed and compared for use in marketing promotion planning.
2. There should be a comparative study of the air-conditioned van service in many routes in order to evaluate the strategy for managing transportation problems.
3. There should be studies on other aspects, such as the quality of service. Air-conditioned passenger van
4. There should be a study on the safety awareness of air-conditioned van services.
5. There should be research and research about transportation routes. As transportation, logistics is very important for business operations. Which there is a lot of competition by studying the above issues, they will understand more about the perception and needs of clients.

REFERENCE

- Alvesson, M. (1987). Organization, Culture and Ideology. *International Studies of Management and Organization*, 17, 4-18.
- Chalermklin, P. (2017). *Business quality management*. Nakhon Pathom: Nakhon Pathom Rajabhat University.
- Pakakoe, J. (2010). *Management Techniques*. Ubon Ratchathani: Siritham Offset.
- Pengpanich, N. (2015). *People Satisfaction with Bangkok System and Service Process: A Case Study of Phayathai District Office* (Master thesis). Faculty of Social Development National Institute of Development Administration.
- Serirat, S. et al. (2013). *Marketing strategy and marketing management*. Bangkok, Thailand: Thira Film and Cytex co., ltd.
- Tanprasan, P. (2014). Decision on the use of public van services of the Victory Monument van line. *Journal of Finance, Investment, Marketing and Business Administration*, 4(2), 612-626.
- Tantawetyanont, S. (2015). *Factors Affecting the Decision Making Behavior of Air Conditioner Bus Service Level 1: A Case Study of Ratchaburi Group 76 Company Limited* (Master thesis). Management Program, Faculty of Business Administration, Khon Kaen University.
- Wattasuwakun, K. (2012). *Marketing mix factors influencing buying behavior and satisfaction. And repeat purchase intention of customers A case study of Watsons' drug department* (Master Thesis) Srinakharinwirot University, Faculty of Business Administration, Program in Marketing.
- Yopho, S. (2012). *Service Market*. Bangkok, Thailand: Big Four Press.

