Journal of Multidisciplinary in Social Sciences

Vol. 17 No. 2 May - August 2021

Journal of Multidisciplinary in Social Sciences

Research and Development Institute
http://jmss.dusit.ac.th

ISSN 2673-0235

JMSS
Journal of Multidisciplinary
in Social Sciences

Journal of Multidisciplinary in Social Sciences

Vol. 17 No. 2

May – August 2021

ISSN 2673-0235

Copyright Research and Development Institute, Suan Dusit University
295 Nakhon Ratchasima Road, Dusit, Bangkok, Thailand 10300
Phone: +662 244 5801-2 Fax: +662 668 7460

Printing Graphicsite
295 Nakhon Ratchasima Road, Dusit, Bangkok, Thailand 10300
Phone: +662 244 5080-2 Fax: +662 243 9113

Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences is an academic journal with the aim to publish original article, review articles and book review about the integration of the multidisciplinary knowledge to develop into new valuable and useful knowledge in the field of Humanities and Social Sciences and other related field such as Education, Communication Art, Business and Tourism. The Journal is published triannually, with the first issue covering the months of January to April, the second issue covers May to August, and the third issue covers September to December. The journal is published online (http://research.dusit.ac.th). Those who are interest can submit the manuscripts via ScholarOne system.

All the manuscripts submitted to the Journal of Multidisciplinary in Social Sciences must be plagiarism free and has never been published or submitted elsewhere unless the manuscript was published in another language and has permission from the journal. Before being published, the manuscripts must be peer reviewed by at least 2 specialized reviewers via double blinded review system. All manuscripts accepted for publication are copyrighted by Suan Dusit University; reproduction, in whole or in part, requires written approval from Suan Dusit Unversity. Excluding errors incurred during the printing process, all content contained within articles is the author's responsibility.

Journal of Multidisciplinary in Social Sciences

Vol. 17 No. 2 May - August 2021 ISSN 2673-0235

Peer Reviewers

Assoc.Prof. Dr. Chanongkorn Kuntonbutr	Rajamangala University of Technology Thanyaburi, Thailand
Assoc.Prof.Dr. Cholvit Jearajit	Srinakharinwirot University, Thailand
Assoc. Prof. Dr. Nitaya Praphruitkit	Phetchaburi Rajabhat University, Thailand
Assoc. Prof. Dr. Oraphin Choochom	Srinakharinwirot University, Thailand
Assoc. Prof. Dr. Praphaphan Un-ob	Mahidol University, Thailand
Assoc. Prof. Dr. Rungnapa Tangchitcharoenkhul	Suan Dusit University, Thailand
Assoc. Prof. Dr. Sasilak Khayankij	Chulalongkorn University, Thailand
Assoc. Prof. Dr. Sujaritlak Deepadung	Mahidol University, Thailand
Assoc.Prof. Dr. Suthinan Pomsuwan	Bangkok University, Thailand
Assoc.Prof. Dr. Worawan Hemchayart	Chulalongkorn University, Thailand
Assoc. Prof. Dr. Yothin Sawangdee	Mahidol University, Thailand
Asst. Prof. Dr. Anyanitha Distanont	Thammasat University, Thailand
Asst. Prof. Dr. Aunkrisa Sangchumnon	Suan Dusit University, Thailand
Asst.Prof.Dr. Nuttawut Rojniruttikul	King Mongkut's Institute of Technology Ladkrabang, Thailand
Asst.Prof.Dr. Parinya Meesuk	Rajamangala University of Technology Thanyaburi, Thailand
Asst. Prof. Dr. Pimmada Wichasin	Suan Dusit University, Thailand
Asst. Prof. Dr. Phornthip Nithithanawiwat	Bansomdejchaopraya Rajabhat University, Thailand
Asst. Prof. Dr. Premvadee Na Nakornpanom	Suan Sunandha Rajabhat University
Asst. Prof. Dr. Ratiwan Watanasin	Suan Dusit University, Thailand
Asst. Prof. Dr. Wilailak Langka	Srinakharinwirot University, Thailand
Dr. Nakarin Thangthong	Sripatum University, Thailand
Dr. Suchada Koomsalud	Suan Dusit University, Thailand
Dr. Surasak Kao-Iean	Chulalongkorn University, Thailand

Content

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

Behaviours of Thai People Amid Covid-19 Pandemic

Sirote Pholpuntin[a], Sukhum Chaleysub[b], Nongluck Chotevithayathanin[b] & Pornpan Buathong[b]*

[a] *Faculty of education, Suan Dusit University, Bangkok, 10300 Thailand*
[b] *Suan Dusit Poll, Suan Dusit University, Bangkok, 10300 Thailand*

Article info

Article history:
Received: 19 July 2021
Revised: 16 August 2021
Accepted: 27 August 2021

Keywords:
Public opinion poll, Behaviours of thais, Covid-19 pandemic

Abstract

Amid the pandemic of Coronavirus 19 or Covid-19 in 2021, Suan Dusit Poll, Suan Dusit University has conducted opinion surveys on Thai people from April to June 2021 encompassing 13 topics and 24,846 samples. The survey results have reflected on the behaviours of Thai people amid the Covid-19 pandemic into 3 dimensions, namely, (1) emotion and feeling towards Covid-19 situation – Thais think the third wave of Covid-19 pandemic rapidly spread in various areas, it is scared than the two previous pandemics leading to feeling stressed, worried, anxious, worse, and despairing, (2) social and way of life – Thais cling into more social media; however, they choose to trust television media more than other media. The more they addict to the news, the more they feel anxious and stressed. They spend a lot on surgical masks and alcohol, focus on cooking and eating at their home, and love to work from home and the workplace equally. Also, they think online learning for their kids are not ready, and (3) Thai economy – Thai people do not spend their money more even though the Thai government has provided monetary compensation to assist under various kinds of projects and measurements.

Introduction

For 30 years, Suan Dusit Poll, Suan Dusit University has conducted opinion surveys on Thai people continually more than 1,500 topics, covering various issues such as politics, economy, society, education, sports, public health, and etc. Amid the pandemic of Coronavirus 19 or Covid-19, Suan Dusit Poll, Suan Dusit University has conducted opinion surveys on Thai people from April to June 2021 encompassing 13 topics and 24,846 samples. The survey results have reflected on the behavior of Thai people amid Covid-19 pandemic into 3 dimensions as follows: (1) emotion and feeling towards Covid-19 situation – Thais think the third wave of Covid- 19 pandemic rapidly spread in various areas. People are scared more than the two previous pandemics. They get stressed, anxious, terrible and desperate, (2) society and way of life-Thais are likely to cling into social media. However, they choose to trust television media more than other media. The more they addict to the news, the more they get anxious and stressed. They have a lot of expenses on medical masks and alcohol. They focus on cooking and eating at their homes. They love to work at home and office equally. They think online learning for their kids are not ready, (3) Thai economy – Although the Thai government has provided financial assistance under various kinds of

* Corresponding Author
e-mail: pornpan_bua@dusit.ac.th

projects and measurements, people still have the same expenses. For example, they expected to spend money approximately 4,183 baht during Songkran festival. They believe that many holidays will impact their works and incomes. Special holidays can boost economy. And it is impossible to open up the country within 120 days but it will make Thailand's economic move on and Thai people earn their living.

Behavior of thai people amid Covid-19 pandemic

From the Table 1, the survey results of Thai people's opinion amid the pandemic of Coronavirus 19 or Covid-19 in Thailand from April to June 2021 can be concluded into 3 dimensions as follows: (1) emotion and feeling towards Covid-19 situation are separated into 5 topics: the third wave of Covid-19, Thai people VS how to win Covid-19, Covid-19 vaccination, mental conditions of Thai people in Covid-19 era, the confidence of Thai people against Covid-19 vaccination, (2) Society and way of life – there are 6 topics as follows: Songkran festival in Covid-19 era, Thai holidays, Thai foods in Covid-19 era, Thai people's behavior on working from home (Work from home), news and information in Covid-19 era, and emotion of the teachers, the parents and the students against online learning, and (3) Thai economy – there are 2 topics as follows: economy boosting (tourism) in Covid-19 era and to open the country within 120 days. The details of the survey results and the analysis of each dimension are as follows:

Table 1 The breakdown of the survey topics of Suan Dusit Poll from April to June 2021

Dimensions	Survey topics
Emotion and feeling towards Covid-19	The third wave of Covid-19 Thai people VS how to win Covid-19 Covid-19 vaccination Mental conditions of Thai people in Covid-19 era The confidence of Thai people against Covid-19 vaccination
Society and way of life	Songkran festival in Covid-19 era Thai holidays Thai foods in Covid-19 era Thai people's behaviour on working from home (Work from home) News and information in Covid-19 era Emotion of the teachers, the parents and the students against online learning
Thai economy	Economy boosting (tourism) in Covid-19 era To open up the country within 120 days

Source: Dusit Poll (2021, https://suandusitpoll.dusit.ac.th/WEB/)

1. Emotion and feeling towards Covid-19 situation

The opinion survey of "Thai people vs the third wave of Covid-19" from 2,082 samples on 16 – 22 April 2021, 74.29% thought the third Covid-19 wave had rapidly spread in various areas. 68.40% were panic and worried more than the previous waves; 70.51% thought the third wave is the most severity; 83.90% would protect themselves by wearing medical masks and often washing hands; 39.19% thought the government was likely to cope with Covid-19; 50.58% anticipated that the situation would be better after 3 months; 58.89% thought the Covid-19 fourth wave might occur. Buathong (2021) analysed that although the people were used to the situation but they were still worried about the infection and its effect. Thai government was supposed to enhance the active measurements, conduct the Covid-19 test all over the country, and accelerate to get people vaccinated with effective vaccines. If the government delayed to handle it, the people were concerned about the Covid-19 fourth wave. Choedchoo (2021) said that the Covid-19 fourth wave from UK was more severe and easy to get infection. The investors and the foreign travellers chose to go to and invest in the countries which people mostly got vaccinated. Mass vaccination will lead to herd immunity. They did not select the country with less infectious people. Wichunphas (2021) supposed that the best way for people to get immunity was to be vaccinated. But he wondered how people can reach vaccination because there were much more demand than supply. Corresponding to Pithukpakorn (2021), he said that to get vaccinated was only way to achieve herd immunity and reduce the risk of severe and acute infection. The vaccines should be the effective ones. People agreed that the vaccines was inadequate both types and quantities, comparing with all population throughout Thailand.

The opinion survey of "Thai people VS how to win Covid-19" from 1,894 samples on 3 – 7 May 2021, 46.04% who addicted to the news felt anxious and stressed more; 83.94% have spent a lot of money for the medical masks since the Covid-19 pandemic; 83.32% would not go to the risk places; 92.12% would always wear the medical masks. Buathong (2021) analysed that Thai people got worried more in a meantime. It was partly from the news, the Covid-19 getting more critical. Thai government was supposed to create the understanding and the confidence to people instantly. Chai-ngam (2021) had an opinion that the assistant measurements from the government was pretty delayed either diagnosis or admittance of the patients. There were limited of the medical personnel and resources. Thus, it had to rely on all sections' cooperation. People had to take care of themselves, especially for the vulnerable groups such as the elderly, the children, the pregnant women and the persons who had medical conditions. Corresponding to Thai Health Promotion Foundation office (2021), the elderly was indicated to have chance to die if getting infection from Covid-19 more than other groups because of unhealthiness, low immunity and medical conditions. It could be concluded that older adults were more likely to die from Covid-19 infection. Matchim (2021) was of opinion that to win Covid-19, Thai people not only protect themselves and their families but also operate actively to deter the infectious spreading, cooperate on home isolation measurement and not scorn when the person in community getting stuck on home isolation.

The opinion survey of “Covid-19 vaccination” from 2,644 samples on 17 – 20 May 2021, 57.41% had knowledge about Covid-19 vaccination; 56.49% have registered the vaccination for themselves or their families; 31.02% believed that the most reliable sources were the Ministry of Public Health, the village volunteers and the government agencies; 75.11% trusted Pfizer; 72.14% trusted Moderna; 59.64% worried about the side-effects of vaccination; 64.39% decided to get vaccinated. Buathong (2021) was of an opinion that people were interested in vaccination more because the number of infected people got higher and the death rate has increased than the previous pandemic. Satsin (2021) said people had some knowledge and understanding about Covid-19 vaccine because they probably reached online information via television, as well as researches and academic contents, etc. Yuyen (2021) analysed that 75.96% of students were still doubtful if they should get vaccinated the vaccine provided by the government agencies, which higher than 35.61% of people in the same issue. It was correspondent to the information of the Department of Disease Control, indicating that people got the information of undesired symptoms from Covid-19 vaccines and commented more about the vaccine brands. It made people be worried more about getting vaccinated. (Health Literacy, 2021) Srion (2021) had an opinion that it was important to make people realize, understand and be willing to get vaccinated as well as acknowledge about its side-effects. Thus, the people should be given the trust to get vaccinated throughout the country.

The opinion survey of “Mental conditions of Thai people in Covid-19 era” from 1,713 samples on 24 -27 May 2021. It was found that 75.35% got the most stressed and anxious; 88.33% thought that the more severe Covid-19 was, the worse their mental conditions were; 91.03% thought that how to take care of their mental conditions were to be careful and be conscious about spending their life; 74.96% wanted the government/ the government sectors/ private sectors to help the most by accelerating people to get vaccinated; 60.52% wanted economy to be healed. Buathong (2021) analysed that 3.79% of people felt “most discouraged/ unmanageable”. 4 from 100 persons thought they couldn’t handle with it. Since Covid-19 has spread, suicide rate got higher. It was like Tom Yum Kung Crisis. Korlertvorapong (2021) said from Covid-19 situation, people got more stressed and anxious. It resulted in various kinds of mental health. The factors impacting to the stress and anxiety were from social and environmental factors. For example, the new wave of pandemic, economy and unemployment rate which being prone to be higher. It was correspondent with Decharin (2021). He said Covid-19 pandemic caused the impact against people’s mental conditions inevitably. Since it spread rapidly and severely. In addition, people were afraid that their families would get infectious unintentionally. The government adjusted its policy to cope with the everyday situation when people got more infection. Furthermore, when people have heard about their infected friends, they were scared, anxious, stressed, panic. And finally they got mental health effect. Mekkhachoorn (2021) was of an opinion that besides vaccination healing sickness, the mental condition should also be cured by “mental vaccine”. It would reinforce the people’s hope and encouragement in this situation.

The opinion survey of “The confidence of Thai people against Covid-19 vaccination” from 1,450 samples on 7-10 June 2021. 66.87% wanted vaccination to be set as the national agenda that could be done urgently; 36.36% barely believed in vaccination management of the government; 57.61% supposed that the goal setting to have 50 people vaccinated totaling 100 doses within 2021 would not be achieved; 77.87% thought the problems of vaccination were that vaccines were not enough and not many types; 78.74% wanted more vaccines to be imported; 34% did not agree with the alternative vaccines to be paid by citizens. From the mentioned poll, Buathong (2021) revealed that people all over the world have been vaccinated for 2 billion doses. Thai people were totaling vaccinated for 5.67 million doses, approximately 1.52 million persons or 2.2% of all Thai citizens. Despite it was announced vaccination to be the national agenda, people still did not believe in vaccination management. They did not think that the government could have people vaccinated as the setting goal as well. The information from the Department of Mental Health, Ministry of Public Health (2021) found that from the vaccination data report of Thailand, it was found that the vaccination was operated only 2.26 million doses or 2.2% of the setting goal. Sukonket (2021) thought that the prescription of vaccination to be set as the national agenda was the best solution since it would create the herd immunity to the majority of people in the country. But that the vaccination would meet the goal or not depended on the ability of the government to gather enough vaccines in time, distributing vaccines to the target group in various areas, and preparation for vaccination, follow-up plan of the government regarding side effects of vaccination, as well as the preliminarily financial assistance for vaccination's effects. These would increase much more confidence of vaccination. Chuakul (2021) was of an opinion that people should be able to reserve all kinds of vaccines such as Pfizer, Moderna, Johnson & Johnson, and Sputnik etc. The vaccines should be urgently imported into the country to recover the depressed economy in 2021.

2. Society and way of life

The opinion survey of "Songkran festival in Covid-19 era" from 1,324 samples on 3 – 9 April 2021, 43.88% would not attend Songkran festival during Covid-19 pandemic; 64.82% would abide by the traditional practice, namely, they would pour water on elderly' hands in the Covid-19 period; 57.63% anticipated that they would spend the expenses during Songkran festival approximately 4,183 baht and paid intention to Songkran festival as usual during Covid-19 pandemic. Buathong (2021) analyzed that despite of Covid-19 situation, Songkran day was still the festival that people paid attention. They would spend their times with the families and poured water to the Buddha statue and the elderly's hands because it was Thai tradition abode by people for a long time. Although there would have many holidays this year but people anticipated not to spend much money because of economic depression and fluctuation from Covid-19 situation. It is correspondent with Jearajit (2021). He supposed that purchasing power indicated the effect which society must accept. The government sectors had to prepare compensation plan and management to make people understand about cooperating to stop Covid-19. The society would move on worthily in the future. Vessoontorntep (2021) thought that as to Songkran festival in 2021, Thai people still watched out on Covid-19 pandemic. People in overall still went back to their hometown. This would help a little circular economy. In order to preserve Songkran tradition, they were still making merit at the temples and pouring water to Buddha statue. There were the measurements against Covid-19 strictly in each temple such as physical distance, hand washing, and various measurements. Corresponding to The Secretariat of Prime Minister, Government House (2021), the government had campaigned for adjusting the activities during Songkran festival under the concept "New way of Songkran, Reserve Thai tradition". They set the key guidelines and measurements, namely, the activities must be complied with D-M-H- T measurement (D: Distance, M: Mask Wearing, H: Hand Washing and T: Testing). Yuyen (2021) proposed that the government sectors were supposed to increase the measurement in public relation for D-M-H-T measurement. Thus people could comply with the measurement appropriately. In addition, the elderly in families and the people in various areas would be protected from Covid-19.

The opinion survey of "Thai holidays" from 1,447 samples on 6 – 15 April 2021, 53.28% was of an opinion that the numbers of Thai holidays were reasonable; 81.30% thought that New Year's day was the most important day; 73.39% supposed that the activity they would do in holidays was taking a rest; 70.69% stayed with their families; 58.95% thought that the activity which used to do but changing during Covid-19 situation was travelling; 79.78% has an opinion that the benefit of having many holidays was to take a rest at home; 58.36% thought that the drawback of having many holidays was the impact against works and incomes; 62.34% was of an opinion that the majority of people agreed with the announcement of special holidays for boosting economy. According to the Labour Protection Act (No 7), B.E. 2562 (2019) stipulated that the holidays for Thai people were divided into 2 types. Public holiday, mostly related to "national day" such as history day or religion day, etc. Another type of holiday was holiday according to the Labour Protection Act which were stable for 19 days. Buathong (2021) analyzed that the holidays not only gave people a rest but also made them spend more. Therefore, the measurement increasing holidays would be beneficial for some groups of people. Boonprawes (2021) said that the popular activity and the advantage of having many holidays was "to take a rest". Thai people got stressed and anxious from Covid-19 situation. But many holidays had disadvantage as well because it impacted to their works and incomes. However, in general, she still agreed with the announcement of special holidays. People could plan more about several activities. Furthermore, it could boost economy. Jariyarangsiroge (2021) had an opinion that for long holidays, it worths for people to plan their activities. For example, they got more time to go back to their hometowns or to do activities with their families. In Covid-19 situation, most of Thai labour coming to work in Bangkok could not go back home. They had to watch out the spread of the disease in limited areas. Thus, currently holidays meant nothing to the labour.

The opinion survey of "Thai foods in Covid-19 era" from 1,192 samples on 26-29 April 2021, 70.94% paid intention to the foods more, comparing with the previous day before Covid-19 situation; 75.81% changed their behaviour by cooking the foods themselves at home; 47.53% believed that Thai foods could resist Covid-19; 55.09% thought that foods with herbs could resist Covid-19; 32.23% thought that their popular menu or the menu they frequently cooked themselves the most was basil leaves fried menu; 39.42% spent more about the foods, approximately 226 baht per day. Buathong (2021) analysed that one way to boost immunity to protect themselves from Covid-19 was that choosing the food to eat. Saengrungruang (2021) has an opinion that Covid-19 had an impact on not only Thai people but also people throughout the world. They had to adapt the way of life, preparing to confront this crisis. The important thing was that people must take responsibility for society, be healthy, eat good foods in suitable quantities and good nutrition appropriately which being compatible with their ages. As same as Sampawthong (2021), she supposed that the changed behaviour resulted in people choosing the foods likely to strengthen their immunity to protect themselves from Covid-19. It was correspondent with Pitiporn, Kwankao, Chaocharoen, Termtemwong, Maimun, Suwan, & Booncherd (2020), she said most of Thai foods had medicinal properties and helped developing immunity and healthiness. They also protected and fought with disease.

The opinion survey of "News and information in Covid-19 era" from 1,213 samples on 31 May-3 June 2021, 74.81%, a majority of people, followed news mostly through social media; 52.24% thought the information at present provided the new aspects of knowledge, having in-depth analysis; 78.32% was of an opinion that the reliable information must obviously designate sources and references; 85.24% supposed that the media people believed the most was television; 78.71% wanted "journalists" to report news the truth, not distorting; 76.24% wanted journalists to have morality. From the poll results, Buathong (2021) analysed that nowadays the news was reported in more various aspects. There was more fake news as well. Sometimes the fake news occurred to shield the other news. Journalists was supposed to do their jobs appropriately and to insist on their morality. Ruangsakul (2021) said people wanted the journalists to change the way of thinking, to examine the news before reporting, and to have high ideal and ethic as journalists. Some news should be seriously scrutinized and filtered. They should conduct more about investigative reporting, data journalism, or data analytics. Corresponding with Prasert (2021), he had an opinion that the journalists should perform their jobs by doing research and search the information relating the fact in the occurred situation by investigating the background of the news until finding reliable fact and truth. There must be evidences which could be proved and scrutinized. They should work systematically and then reported and presented the news through communication tools or mass media by various platform to the public.

The opinion survey of "Thai people's behavior on working from home (Work From Home)" from 1,553 samples on 10-13 May 2021, 42.72% worked from home; 88.33% thought its advantage was to decrease the spread of disease; 65.80% supposed the disadvantage was that they had more expenses; 70.33% thought that their works, from working at home, were successful; 37.17% preferred both working at home and working at office. Thailand Institute of Occupational Safety and Health Bureau (Public Organization) (2020) stated that Work From Home current arose when the Ministry of Health announced that Covid-19 was dangerous disease according to Communicable Disease Act B.E. 2558 (2015). Kitlert (2021) thought that people should separate their times into work time and personal time, so working from home would then be effective. About working hours and its success, the organization should set the policy obviously as to working from home. Technology should be used for benefit. As same as Thananithichot (2021), he proposed that working from home would literally be the new way of life. People had to adjust their mindset towards working from home. They should unlock the limitation of the old regulations and organizational culture. It would lead to the new system management and the new working process, not to be the burden to the workers.

The opinion survey of "Emotion of the teachers, the parents and the students against online learning" from 3,749 samples on 14-17 June 2021, 63.30% thought that Thai education has not been prepared for online learning; 65.80% believed that the online learners would have not enough concentration; 62.22% wanted the government agencies/ educational institutes to help supporting the tools and equipment for online learning; 35.57% was of an opinion that for online learning, the primary students would have the most impact; and 68.52% thought that online learning would make Thai education get worse. Office of the Basic Education Commission, Ministry of Education (2021) rearranged the new types of learning and teaching by prescribed various measurement pertaining to the context, grade and location of educational institute. Buathong (2021) analysed that when online learning was alternative but some educational institutes, some parents and some students were not ready. Thus, online learning then made more educational inequality because of economic conditions and inequality to reach technology. Janthon (2021) thought that online learning in the new way of life should be the chance and challenge, not obstacle for learning. Everybody who involved with it should adapt digital mindset to think, use, understand and open up mind, and should use the available digital technology to be the best benefit. The government, educators, teachers and parents must cooperate and create belief and surrounding to be appropriate for learning, both internet network and computers thoroughly and equally. It was correspondent to Songkram (2021). She had an opinion that the parents must prepare to handle with online learning and online communicating. They must adapt their attitude and open up their mind to communicate with the teachers in case of doubt. The schools and teachers had to give feedback and report the learners' progression periodically.

3. Thai economy dimension

Suan Dusit Poll (2021) disclosed the results of the opinion survey of "Economy boosting (tourism) in Covid-19 era" from 1,265 samples on 29 March-1 April 2021, 39.37% thought that before Covid-19 situation, people went travelling about 2-3 times per month, but no travelling after that; 37.94% said after traveling measurement, people travelled about 2-3 times per month; 43.87% said after receiving aid money from the government, they still spent money the same; 80.74% thought the most pleasant measurement in boosting tourism sector was increasing special holidays; 63.40% had an opinion that the best factor making people want to travel were the families and the people themselves; 48.93% thought the second factor was the long holidays; 47.89% said because of decreasing of Covid-19 infectors; 75.18% thought people agreed with the measurement in boosting tourism sector. Rueanthip & Laosumrit (2020) stated that tourism business was always the primary revenue and was important to the economy in Thailand. The revenue of traveling business in 2019 was 16% of GDP (Gross Domestic Product). Buathong (2021) analysed that although the boosting measurement caused Thai people to travel more but they did not spend more money. They were still anxious about economy. The government sectors should accelerate to solve economic problem, together with the good public health measurement to make people be confident to travel and spend more money to make cashflow in the country. Sangchumnong (2021) said when Thailand reached the point of no tourist from April 2020, it impacted 70% of Thai people immediately. To boost tourism economy was good for relieving the stress. It also enhanced liquidity for economy in another way. Wattanakul (Poll talk, 2021, p.12) has an opinion that the measurements or policies operation should be adjusted from passive to active policy implementation. In addition, they must pay attention to strategy to achieve various measurements or policies. The entrepreneurs in industrial management sectors and all levels of educational institutes must adapt themselves as well. As the same as Nonthapot (2021), he proposed that the government sector should apply the policy to make people in the country be safe in order to make tourism realize about safety in Thailand.

The opinion survey of "To open up the country within 120 days" from 3,320 samples on 21-24 June 2021, 39.88% thought it was impossible; 84.04% stated that the advantage was to make economy move on and to make people earn their living; Phongpradist (2021) stated that to open up the country would make the economy move on. The people could earn their living. To open up the country, everyone must help each other. The government had to administrate and manage orderly and reviewed the suitability periodically. Corresponding to Yuyen (2021), he stated that to open up the country, the government must accelerate to make people believe in various measurement such as accelerating people to get vaccinated the first vaccine, increasing measurement in controlling the spread situation, protecting the neighbours crossing the country boundary, controlling the risky areas and labour movement, and watching out the risky group to spread infection, as well as rendering policy to provide varieties of vaccines. Bunyawanich (2021) said that the people were still anxious about the government policy to open up the country within 120 days because the government has still not provided the qualified vaccine to them. It was correspondent to Sagarik (2021). He said that the government set regulations or conditions to open up the country within 120 days. It had the risk and made people get confused and not to be confident from society. If the government could not control or decrease the new infectors or could not increase vaccination for people, to open up the country and economic activities may cause the people to get anxious so much.

The results of the opinion survey of the people from the foreign media

The opinion survey of Suan Dusit Poll about “Covid-19 vaccination” between 17-20 May 2021 has found that the foreign media use the poll consequences to be a part of the news in many countries. The main reasons that foreign media use this poll because its result is correspondent to the YouGov Co., Ltd’s survey. This company is the market researching and data analytic firm on international internet of England which its head quarter locating in UK. This company has run its business in Europe, North America, Middle East and Asia Pacific (Wikipedia, 2021). YouGov has found that as to the survey in January 2021, 83% of Thai people wanted to get vaccinated. As to the next survey of YouGov in May 2021, it was found that 63% of Thai people decreasingly wanted to get vaccinated. In the meanwhile, the survey result of Suan Dusit Poll found that 64.39% of Thai people wanted to get vaccinated. The foreign media using the poll results are Zawya in England, Channel New Asia (CAN) in Singapore, the Rappler in Philippines, the Japan Times in Japan, the Star Online in Malaysia, the Bloomberg in USA, and the South China Morning Post in Hongkong. (Bloomberg, 2021; Zawya, 2021; The Star Online 2021; The Rappler 2021; The Japan Times, 2021; South China Morning Post, 2021; Channel News Asia, 2021).

The events in Thailand about economy, Thai foods, and especially Covid-19 greatly affect not only Thai people, but also the foreigners in Thailand. Particularly Japanese media, they translate Suan Dusit Poll from Thai language to Japanese language for many topics. The Japanese media such as Asia Travel Note translates the poll into Japanese language. There are many topics that they translate, for example, boosting (tourism) economy in Covid-19 era, Thai people VS how to win Covid-19, Covid-19 vaccination, Mental conditions of Thai people in Covid-19 era, News and information in Covid-19 era, and Thai foods in Covid-19 era.

In addition, there are media from China (Xinyang Daily and G-News), Norway (Thainytts Supertilbud), Vietnam (Vietnam Plus), United States of America (eTurboNews-eTN) and Spain (Sequence Magazine-SEQMAG). (Vietnam Plus, 2021); Thainytts Supertilbud (2021); Sequence Magazine (2021); G-News (2021); eTurboNews (2021); These media are interested in opinion surveys of people from Suan Dusit Poll relating to education and Covid-19 as well. They are interested in the following topics: Emotion of the teachers, the parents and the students against online learning, Thai people VS how to win Covid-19, and News and information in Covid-19 era.

Conclusion

Amid the pandemic of Coronavirus 19 or Covid-19, Suan Dusit Poll, Suan Dusit University has conducted opinion surveys on Thai people from April to June 2021 encompassing 13 topics and 24,846 samples. The survey results have reflected on the behavior of Thai people amid Covid-19 pandemic into 3 dimensions as follows: (1) emotion and feeling towards Covid-19 situation-Thais think the third wave of Covid-19 pandemic rapidly spread in various areas. People are scared more than the two previous pandemics. They get stressed, worried, terrible and desperate, (2) society and way of life-Thais are likely to cling into social media. However, they choose to trust television media more than other media. The more they addict to the news, the more they get anxious and stressed. They have a lot of expenses on medical masks and alcohol. They focus on cooking and eating at their homes. They love to work at home and work at the office equally. They think online learning for their kids are not ready, (3) Thai economy -Although the Thai government has provided financial assistance under various kinds of projects and measurements, people still have the same expenses. For example, they expected to spend the expenses approximately 4,183 baht during Songkran festival. They believe that long holidays will impact their works and incomes. Special holidays will boost economy. And it is impossible to open up the country within 120 days but it will support Thailand’s economic to move on and Thai people for earning a living.

It is found that during surveying, people feel that Covid-19 pandemic situation affects the country's economy and people's way of life continually. People can do only preparing themselves to confront and solve their problems by wearing medical masks, washing hands and bringing alcohol gel. But people are still anxious. They will feel confident and relieve the anxiety more if the government manages the Covid-19 situation better than this, provides the effective vaccines, gives people the correct knowledge and understanding, prepares the public health, and has measurements for controlling and protection together with assistant measurement appropriately. If the government operates it urgently, Thailand will get over it sooner. And it will certainly reflect through the next opinion survey of people.

References

Bloomberg. (2021, July 1). *Anti-Vaxxer propaganda spreads in Asia, endangering millions.* Retrieved August 20, 2021, from https://www.bloomberg.com/news/articles/2021-06-30/anti-vaxxer-disinformation-spreads-in-asia-endangering-millions

Boonprawes, S. (2021). *Thai holidays.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *Covid-19 vaccination.* Bangkok: Suan Dusit Poll.

Buathong P. (2021). *Economy boosting (travelling) in Covid-19 era.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *Emotion of the teachers, the parents and the students against online learning.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *Mental conditions of Thai people in Covid-19 era.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *News and information in Covid-19 era.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *Songkran festival in Covid-19 era.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *Thai foods in Covid-19 era.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *Thai holidays.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *Thai people VS how to win Covid-19.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *The third wave of Covid-19.* Bangkok: Suan Dusit Poll.

Buathong, P. (2021). *The confidence of Thai people against Covid-19 vaccination.* Bangkok: Suan Dusit Poll.

Bunyawanich, S. (2021). *Open up the country within 120 days.* Bangkok: Suan Dusit Poll.

Chai-ngam, N. (2021). *Thai people VS how to win Covid-19.* Bangkok: Suan Dusit Poll.

Channel News Asia. (2021, May 25). *Vaccine hesitancy grows ahead of Thailand's mass inoculation rollout.* Retrieved August 20, 2021, from https://www.channelnewsasia.com/news/asia/thailand-covid-19-mass-inoculation- rollout-vaccine-hesitancy-14882232

Choedchoo, K. (2021). The third wave of Covid-19. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.31- 38). Bangkok: Graphic Site, Media and Printing Solutions.

Chuakul W. (2021). The confidence of Thai people against Covid-19 vaccination. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.93-99). Bangkok: Graphic Site, Media and Printing Solutions.

Decharin, P. (2021). *Covid-19 pandemic VS the impact of mental health.* Retrieved August 20, 2021, from https://www.bangkokbiznews.com/news/detail/935343

Department of Mental Health, Ministry of Public Health. (2021). *Dr. Yong said it's okay if young people do not get a fever after get vaccinated of AstraZeneca. Don't worry.* Retrieved August 20, 2021, from https://www.dmh.go.th/news-dmh/view.asp?id=30772

eTurboNews. (2021, July 21). *Tourists find Phuket nightlife ends promptly at 9.* Retrieved August 20, 2021, from https://eturbonews.com/2998763/tourists-find-phuket-nightlife-ends-promptly-at-9/

G-News. (2021, July 4). *泰國民眾呼籲政府引進高質量疫苗 劍指中共"科興"?.* Retrieved August 20, 2021, from https://gnews.org/zh-hant/1371123/

Health Literacy. (2021). *Disclosure of the survey results of desiring and anxiety in Covid-19 vaccination.* Retrieved August 20, 2021, from https://www.hfocus.org/content/2021/05/21616

Janthon, U. (2021). *Emotion of the teachers, the parents and the students against online learning.* Bangkok: Suan Dusit Poll.

Jariyarangsiroge, A. (2021). Thai holidays. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.23-29). Bangkok: Graphic Site, Media and Printing Solutions.

Jearajit, C. (2021). Songkran festival in Covid-19 era. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.15- 21). Bangkok: Graphic Site, Media and Printing Solutions.

Kitlert, T. (2021). *Thai people's behaviours on working from home (Work from home).* Bangkok: Suan Dusit Poll.

Korlertyorapong, P. (2021). *Mental conditions of Thai people in Covid-19 era.* Bangkok: Suan Dusit Poll.

Labour Protection Act (No. 7), B.E. 2562. (2019). *Government Garzette.* No. 136 Section 43 A. page 21-28.

Matchim, Y. (2021). Thai people VS how to win Covid-19. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.49-55). Bangkok: Graphic Site, Media and Printing Solutions.

Mekkhachoorn, N. (2021). Mental conditions of Thai people in Covid-19 era. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.75-81). Bangkok: Graphic Site, Media and Printing Solutions.

Nonthapot, S. (2021). Economy boosting (travelling) in Covid-19 era. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.5-13). Bangkok: Graphic Site, Media and Printing Solutions.

Office of the Basic Education Commission, Ministry of Education. (2021). *OBEC explains that the students are able to choose other ways to learn if they are not ready for online learning.* Retrieved August 20, 2021, from https://www.obec.go.th/archives/377135

Phongpradist, P. (2021). *Open up the country within 120 days.* Bangkok: Suan Dusit Poll.

Pithukpakorn, M. (2021). *Alternative vaccine, the survival way of Thailand.* Retrieved August 20, 2021, from https://www.the101.world/manop-pithukpakorn-covid19-vaccine/

Pitiporn, S., Kwankao, P., Chaocharoen, A., Termtemwong, N., Maimun, B., Suwan, J., & Booncherd, T. (2020). *Herbal foods enhance immunity during Covid-19 pandemic.* Prachinburi. Abhaibhubejhr Hospital.

Prasert, S. (2021). News and information in Covid-19 era. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.83-90). Bangkok: Graphic Site, Media and Printing Solutions.

Ruangsakul, A. (2021). *News and information in Covid-19 era.* Bangkok: Suan Dusit Poll.

Rueanthip, K., & Laosumrit, J. (2020). *Krungthai COMPASS has evaluated "We Travel Together" boosting Thai tourism for 30.6 – 60.2 billion baht.* Retrieved August 20, 2021, from https://krungthai.com/Download/economy resources/EconomyResourcesDownload_579Research_Note_20_07_63.pdf

Sagarik, D. (2021). Open up the country within 120 days. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.109-115). Bangkok: Graphic Site, Media and Printing Solutions.

Saengrungruang, T. (2021). *Thai foods in Covid-19 era.* Bangkok: Suan Dusit Poll.

Sampawthong, L. (2021). Thai foods in Covid-19 era. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.41- 47). Bangkok: Graphic Site, Media and Printing Solutions.

Sangchumnong, A. (2021). *Economy boosting (travelling) in Covid-19 era.* Bangkok: Suan Dusit Poll.

Satsin, T. (2021). *Covid-19 vaccination.* Bangkok: Suan Dusit Poll.

Sequence Magazine. (2021, July 25). *La información sobre la eficacia y los efectos secundarios de las vacunas es lo que más interesa a la gente: Encuesta de Suan Dusit.* Retrieved August 20, 2021, from https://seqmag.com/la-informacion-sobre-la-eficacia-y-los-efectos-secundarios-de-las-vacunas-es-lo-que-mas-interesa-a-la-gente-encuesta-de-suan-dusit/

Songkram, N. (2021). Emotion of the teachers, the parents and the students against online learning. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.75-81). Bangkok: Graphic Site, Media and Printing Solutions.

South China Morning Post. (2021, August 7). *Thailand needs a better Covid-19 strategy if it wants tourists to return.* Retrieved August 20, 2021, from https://www.scmp.com/comment/opinion/article/3143826/thailand-needs-better-covid-19-strategy-if-it-wants-tourists-return

Srion, J. (2021). Covid-19 vaccination. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.67-73). Bangkok: Graphic Site, Media and Printing Solutions.

Sukonket, T. (2021). The confidence of Thai people against Covid-19 vaccination. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.93-99). Bangkok: Graphic Site, Media and Printing Solutions.

Thai Health Promotion Foundation Office. (2021). *The elderly having high risk of Covid-19 and Thai elderly over 70 years are 4.7 million persons.* Retrieved August 20, 2021, from https://pdpa.thaihealth.or.th/consent/acceptt/ FmJCvP6VFoji5iXYDz3wlw5c9lrS-pp VaSdRL_L_l9fsaracmCDa9QMpeP3571NpIvU_DXl9NO lyqoSclC771Ql5BTkMhbFNqR8UtIT2E OqtyjhHAwZS_YSS5UMBkECWX2E7dLyuICm Zofz59rf ZYeEACMd-3B5HQBdAYRO1JMqJ hEBsRAIpBnbpNpgqyQ-mjz77gwzilVuegxJIVaw VHY5 GD6R7pOV7Qg8lsg_BjeeY2z2fVzaQDzLx UEY3InNI

Thailand Institute of Occupational Safety and Health (Public Organization). (2020). *Announcement/Measurement.* Retrieved August 20, 2021, from https://www.tosh.or.th/covid-19/index.php/announce

Thainytts Supertilbud. (2021, June 21). *Skoler, studenter, foreldre: – Vi er ikke klare for online-undervisning.* Retrieved August 20, 2021, from http://www.thainytt.no/supertilbud/index.php?id=6483825244 54723252

Thananithichot, S. (2021). Thai people's behaviours on working from home (Work from home). In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.57-64). Bangkok: Graphic Site, Media and Printing Solutions.

The Japan Times. (2021, July 1). *Vaccine disinformation spreads in Asia, endangering millions.* Retrieve from: https://www.japantimes.co.jp/news/2021/07/01/asia-pacific/asia-vaccine- disinformation/

The Rappler. (2021, June 2). *FAST FACTS: COVID-19 vaccination willingness in Southeast Asian countries.* Retrieved August 20, 2021, from https://www.rappler.com/newsbreak/iq/things-to-know-covid-19-vaccination- willingness-countries-southeast-asia

The Secretariat of the Prime Ministry, Government House. (2021). *Summary of the cabinet meeting news.* Retrieved August 20, 2021, from https://www.thaigov.go.th/news/contents/details/40260?fbclid=IwAR1 rK6rQ903 WSV8%20co1olSr5tlX_onvfU7zFnfv TsACNkA-FTuj2k_bXj5B4.

The Star Online. (2021, July 2). *Swayed by disinformation.* Retrieved August 20, 2021, from https://www.thestar.com.my/aseanplus/aseanplus-news/2021/07/02/swayed-by-disinformation

Vessoontorntep, W. (2021). *Songkran festival in Covid-19 era.* Bangkok: Suan Dusit Poll.

Vietnam Plus. (2021, July 21). *COVID-19 pandemic worsens in Thailand, Singapore, Malaysia.* Retrieved August 20, 2021, from https://en.vietnamplus.vn/covid19-pandemic-worsens-in-thailand-singapore-malaysia/204866.vnp

Wattanakul, T. (2021). Economy boosting (travelling) in Covid-19 era. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.5-13). Bangkok: Graphic Site, Media and Printing Solutions.

Wichunphas, P. (2021). The third wave of Covid-19. In S. Pholpuntin, *Poll talk 2 by Suan Dusit Poll* (pp.31- 38). Bangkok: Graphic Site, Media and Printing Solutions.

Wikipedia. (2021). *YouGov.* Retrieved August 20, 2021, from https://en.wikipedia.org/wiki/YouGov Xinyang Daily. (2021, June 21). 大多数人认为在线学习会降低教育质量. Retrieve from: https://www.xytest.com/guonei/2021062140770.html

Yuyen, Y. (2021). *Insight poll Open up the country within 120 days*. Bangkok: Graphic Site, Media and Printing Solutions.

Yuyen, Y. (2021). *Insight poll Songkran festival in Covid-19 era*. Bangkok: Graphic Site, Media and Printing Solutions.

Yuyen, Y. (2021). *Insight poll Thai foods in Covid-19 era.* Bangkok: Graphic Site, Media and Printing Solutions.

Zawya. (2021, May 25). *Vaccine hesitancy grows ahead of Thailand's mass inoculation rollout.* Retrieved August 20, 2021, from https://www.zawya.com/mena/en/life/story/Vaccine_hesitancy_grows_ahead_of_Thailands_mass_inocul

Journal of Multidisciplinary in Social Sciences (May - August 2021), 17(2): 11-17

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

Univariate Modelling for Forecasting Residential Electricity Consumption under the Responsibility of the Metropolitan Electricity Authority (MEA)

Saran Kumjinda[a*] & Pattama Kidroub[b]

[a] *72 Nawamin 74 (3-12), Khunnayao/Ramintra, Nawamin Road, Bangkok, 10230 Thailand*
[b] *1635, Mukmontri Road, Nai Mueang Subdistrict, Mueang District, Nakhon Ratchasima, 30000 Thailand*

Article info

Article history:
Received: 19 March 2021
Revised: 18 June 2021
Accepted: 30 June 2021

Keywords:
Residential sector, Forecasting electricity consumption, Univariate modelling, Metropolitan electricity authority (MEA)

Abstract

Univariate modelling is employed in this study to forecast the electricity consumption of the residential sector under the responsibility of the Metropolitan Electricity Authority (MEA) over the five-year period from 2021 to 2025 based on time series data and by examining and comparing the effectiveness of three forecasting models. The three models under study are the Holt-Winters' exponential smoothing, Brown exponential smoothing and Damped trend exponential smoothing. The Mean Absolute Percentage Error (MAPE = 2.35) is used to determine the most suitable and effective model, and the comparative results reveal the Damped trend model to be the most suitable for forecasting electricity consumption in the residential sector. Total electricity consumption from 2021 to 2025 for the residential sector is projected to continuously increase. The annual residential electricity capacity of the MEA shows a continuous decrease when compared to total electricity consumption between 2021 and 2025, with the distributed volume being 1,319.06, 1,004.56, 690.16, 375.85, and 61.64 million kWh, respectively. Due to the continuous decrease in electricity sales will significantly impact the management of electricity production and distribution. Consequently, in the future, the MEA may not have sufficient electricity capacity to meet the consumption demand of the residential sector.

Introduction

Electrical energy is fundamental to the daily lives of the global population and economies. In Thailand, the procurement and distribution of electrical energy require a great deal of investment. The International Energy Agency estimates that from 2011 to 2030, investment in electrical energy for production and distribution in China, India, and the ASEAN countries will increase by up to 32% (International Energy Agency, 2014). As a developing country, it is undeniable that energy plays a critical role in driving Thailand's economic growth and improving competitiveness. It is also important for illumination and cooking. The provision of energy is a critical part of the infrastructure and economic activities of Thailand since it can help to foster growth as well as social and economic development. However, electrical

* Corresponding Author
e-mail: littleyooyee@gmail.com

energy cannot be quarantined, and demand varies at different times. Therefore, the relevant authorities have a key role to play in efficient electrical energy management and the provision of sufficient supplies to meet consumption demand. Such authorities include the Electricity Generating Authority of Thailand (EGAT), the Metropolitan Electricity Authority (MEA), and the Provincial Electricity Authority (PEA). However, the MEA is responsible for providing services to three of the 77 provinces most crucial to Thailand's economy, namely Bangkok, Nonthaburi, and Samut Prakarn. Specifically, in the residential sector, there are about 3,654,363 electrical energy users with the average consumption showing an increase in similar annual proportions. In 2020, the total annual usage was 14,495.32 GWh or 14,495.32 million kWh; an increase of 3.52% from the previous year (Power Economic Department, 2021; Metropolitan Electricity Authority, 2020).

It is clear from the foregoing that electrical energy consumption in the three provinces is continuously increasing. Meanwhile, the investment process and service expansion of the MEA is expected to take at least four to five years per electricity production and distribution station from the start of the construction process (Metropolitan Electricity Authority, 2021). Since current electricity consumption is increasing, these three provinces need to take the necessary steps to ensure the adequate production and distribution of electrical energy. If the current situation is allowed to continue, it could result in an electrical energy crisis.

Therefore, it is necessary to undertake a thorough study of the development or expansion of electrical energy and its availability to meet all economic activity requirements in the residential sector, for which the MEA is responsible. The organisation is under an obligation to purchase electrical energy from EGAT, which produces some of its own electrical energy to cover residential users and the area concerned. Thus, MEA and EGAT play an essential role in electrical energy security of three urban areas and the service extension in remote urban areas has not yet been fully completed. Ultimately, this may lead to insufficient electrical energy being imported to these three provinces to meet the consumption demand of users in the residential sector.

Objectives

According to the previously mentioned restrictions, the objectives of this study are:

1. To compare three forecasting methods to identify the most effective using time series data on the residential sector.

2. To study and forecast the level of electrical energy consumption of MEA in the residential sector for the five years from 2021 to 2025.

Conceptual framework

This study focuses on the forecasting of electricity consumption in the residential sector under the responsibility of MEA. The forecasting is based on univariate modelling and time series data, by using information relating to the electrical energy consumption of the residential sector. Comparisons are subsequently made between the total predicted electrical energy consumption and total electricity capacity of MEA. In this study, three provinces are examined to forecast the long-term electricity consumption of the residential sector. The framework for forecasting the electricity consumption under the responsibility of MEA is shown in Figure 1.

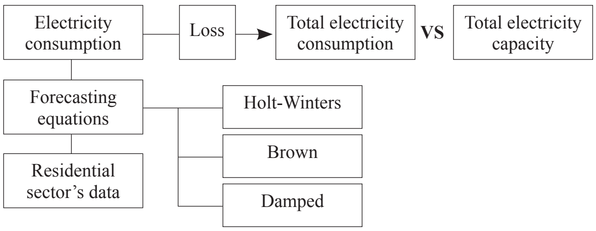


Figure 1 Conceptual framework

Figure 1 demonstrates the difference between this research and previous studies. The strength of this study is that it forecasts the electricity consumption in the residential sector for three provinces under the responsibility of MEA. The results of the total electricity consumption and total electricity capacity are then compared, and a detailed explanation provided, in contrast to previous studies which only involve forecasting. In addition, this study covers three important areas of Thailand, and the results can be used by MEA in the planning of electricity production and distribution as well as capacity expansion to support electricity consumption in the future.

Research methodology

This study involves the collection of historical time series data on yearly electricity consumption from the Power Economic Department of the MEA, 2021.

Time series data was collected by using kilowatt hour (kWh) as the variable. For the residential sector, time series data between 2000 and 2020 was investigated under 21 observations as shown in Table 1.

In addition, this study also used the data for the estimation of the historical time series data on the 1electricity capacity of the MEA between 2021 and 2025, which was collected from the Power Economics Department of the MEA in 2021. Moreover, the electricity loss was calculated using a non-technical loss method. Following a review of recent studies, one freehand method to analyze time series data, which is also regarded as the graphic method in the sense that the trend line is determined by inspecting a graph of the series, and three forecasting methods were chosen to predict the electricity consumption of the residential sector under the responsibility of the MEA: Holt-Winters' exponential smoothing, Brown exponential smoothing and damped trend exponential smoothing. The performance of each of these three forecasting methods was compared and evaluated using the MAPE criteria. Details of the time series data analysis are presented as follows:

1 Total electricity capacity of residential sector collected from (Metopolitan Electricity Authority, 2021), there are 21 observations between 2000 and 2020. And predictive in order to find total electricity capacity between 2021 and 2025 by using Holt-Winters' method.

Table 1 Historical time series data on electricity consumption of residential sector

Unit: Kilowatt hour (kWh)

Observations	Years	Electricity consumption
1	2000	6,881,908,033.00
2	2001	7,295,701,261.00
3	2002	7,626,883,090.00
4	2003	7,998,774,284.00
5	2004	8,334,626,018.00
6	2005	8,637,373,070.00
7	2006	9,079,156,247.00
8	2007	9,230,433,889.00
9	2008	9,381,418,282.00
10	2009	9,779,260,850.00
11	2010	10,713,240,272.00
12	2011	10,124,804,736.00
13	2012	11,398,924,725.00
14	2013	11,420,399,902.00
15	2014	11,694,752,582.00
16	2015	12,369,389,109.00
17	2016	12,998,215,026.00
18	2017	13,041,399,249.00
19	2018	13,133,862,609.00
20	2019	14,296,360,836.00
21	2020	15,693,736,927.00

Source: The Power Economic Department of the MEA, 2021

1. Freehand method

The freehand method involves time series data analysis and is also referred to as the graphic method in the sense that the trend line is determined by inspecting a graph of the series. In this method, the trend values are determined by drawing a freehand straight line through the time series data judged by the analyst to adequately represent the long-term movement in the series and explain the trend of historical time series data (Srivastava, Shenoy, & Sharma,1989).

2. Holt-Winters' exponential smoothing

This forecasting method is used to fix the problem of the moving average (MA) since exponential smoothing emphasises the importance of current data. Older data is marked as less important, according to its relevant timeframe. The data is altered and adjusted according to the trend, smoothing it for a more accurate result. Another parameter is added to α (alpha) alone, to create α and δ (delta). This helps to reduce the number of random factors or variables as in Equation 1 (Suttichaimethee, 2010).

$$F_{t+m} = F_t + T_t(m) \qquad (1)$$

When: $F_{(t+m)}$ is the forecast for the next period, F_t is the forecast for the current period, F_t is the slope of time series data, and m is the future forecast period.

Where: F_t is $\alpha Y_t + (1\text{-}\alpha).\ (F_{t-1} + T_{t-1})$ and T_t is $(F_t - F_{t-1}) + (1 - \delta).\ T_{t-1}$.

3. Brown exponential smoothing

This forecasting method is appropriate for trending time series data. It can correct the deficiencies of the double moving average method, and it can be said that this type of forecast is an extension of the linear exponential smoothing, which can predict turning points well as the trend characteristics of the data are more quadratic than linear. It uses the equations involved in forecasting as seen in Equation 2 (Suttichaimethee, 2010).

$$F_{t-m} = A_t + B_t m + \tfrac{1}{2} C_t m^2 \qquad (2)$$

Where: $F_{(t+m)}$ is the forecast for the next period, F''_t is the forecast for the current period, F_t is the double exponential smoothing, F'''_t is the triple exponential smoothing, A_t is the intercept, A_t is $3F''_t - 3F_t + F'''_t$, B_t is an additional adjustment factor, C_t is $\frac{\alpha^2}{(1-\alpha)^2}$ $[F_t - 2F''_t + F'''_t]$, α is the weight , $(o < \alpha < 1)$ m is the time period used to make predictions in the next period, and F'''_t is always $F''_1 = F_1 = X_1$.

4. Damped trend exponential smoothing

This forecasting method is another appropriate method for trending time series data. It utilizes smoothing with the damped linear trend, which is appropriate for the time series data with a straight-line trend and no seasonal variations and is consistent with Holt-Winters. However, the damped trend has a slower rate of change, including a slope that will also decrease with time, which is forecasted as in Equation 3 (Manmin, 2006).

$$\hat{Y}_{t+m} = a_t = b_t \Sigma^m_{i=1} ø^i \qquad (3)$$

Where: $\hat{Y}_{t+m}$ is the forecast for the next period, A_t is the intercept, and B_t is an additional adjustment factor.

When: $a_t = \alpha Y_t + (1 - \alpha). (a_{t-1} + øb_{t-1})$ and

$$b_t = \gamma(a_t - a_{t-1}) + (1 - \gamma)øb_{t-1}.$$

5. Modelling Performance Evaluation

The criteria used to determine the effectiveness of the four forecasting methods are designed to establish the most appropriate or closest model to the actual situation. The criteria values for determining the efficiency of the model is the MAPE as equation 4 (Klimberg, Sillup, Boyle, & Tavva, 2010).

$$\text{MAPE} = \frac{\Sigma^n_{t=1} \frac{|e_t|}{Y_t}}{n} \qquad (4)$$

Where: t is the time period, n is the number of periods forecast, e_t is the forecast error in time period t, and Y_t is the forecasting value.

Accordingly, all analysis methods mentioned in this study have been used to forecast electricity consumption in the residential sector and the electricity capacity of the MEA in the residential sector in order to respond to the two objectives of this study. The details of the results and a discussion of the methods are described in the next section.

Results

This section presents the results and discusses the residential forecasting electricity consumption under the responsibility of the MEA, divided into three sections are analysis of primary historical time series data, the suitable model detail, forecasting the results using the most suitable model, and the results of forecasting electricity consumption in residential sector.

1. Analysis of primary historical time series data

The analysis results for the historical electricity consumption time series data between 2000 and 2020 in the residential sector using freehand reveals that the movement of time series data incorporates the trend component without seasonal influences and with no errors as shown in Figure 2. Therefore, it is possible to use time series data for the residential sector as the default method for further forecasting.

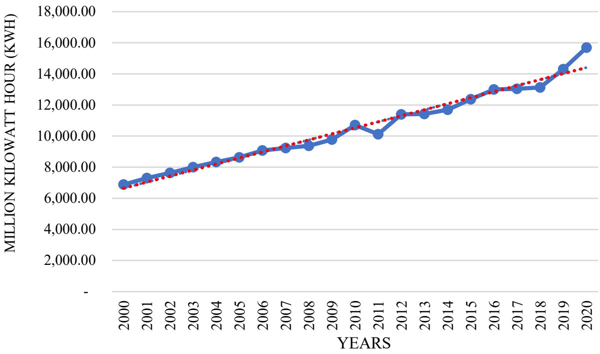


Figure 2 Analysis of primary historical time series data for residential sector

2. The suitable method details

This section presents the most reliable and effective models for forecasting electricity consumption of residential sector based on MAPE; the details of which is shown in Table 2.

Table 2 Method performance evaluation of three forecasting methods for residential sector

Sector	Mean Absolute Percentage Error (MAPE)		
	Holt-Winters	Brown	Damped trend
Residential sector	2.40	3.42	2.35*

Note * is the most reliable and effective forecasting models.
Source: Author's calculation

The results in Table 2 indicate that the most reliable and effective method for forecasting electrical energy consumption in the residential sector is the Damped trend. The details of three forecasting methods are presented in the following section.

2.1 Parameter estimation and diagnostic checking of Holt-Winters, Brown and Damped trend methods

Parameter estimation and diagnostic checking of all three methods for the residential sector are shown in Table 3. Diagnostic checking of the model are based on the Ljung-Box (Q-statistic).

Table 3 Parameter estimation and diagnostic checking of Holt-Winters, Brown and Damped trend methods

Methods	Parameter	Estimate	SE	t	P-value	Q-statistic
Holt-Winters	Level (α)	0.16	0.09	1.77	0.09	0.95
	Trend (δ)	1.00	0.60	1.70	0.11	
Brown	Level (α)	0.51	0.11	4.45	0.00	0.91
Damped trend	Level (α)	0.17	0.11	1.44	0.17	0.92
	Trend (δ)	0.91	0.90	1.01	0.33	
	Trend damping (ø)	1.00	0.05	20.77	0.00	

Source: Author's calculation

Forecasting equations:

According to, parameter estimation and diagnostic checking can be developed as following equations:

Holt-Winters : $F_{21+5} = [0.16y_t + (1 - 0.16)] + [(1 - 1.00).\ T_{t-1}]$ (5)

Brown : $F_{21+5} = 15{,}597.77 + 109.83(5) + \frac{1}{2}15.97_t(5)^2$ (6)

Damped trend : $\hat{Y}_{21+5} = (0.140456) + (0.140456)\ \Sigma_{i=1}^{5}\ 1.00^i$ (7)

3. Results

According to, equation 5, 6 and 7 are applied to forecasting for electrical energy consumption in residential sector for the next five years and shown in the following Table 4 and Figure 3.

Table 4 Result of forecasting for electricity consumption in residential sector using Holt-Winters, Brown, Damped trend methods

Unit: Kilowatt hour (kWh)

Forecasting period	Holt-Winters	Brown	Damped trend
2021	15,331,368,017.79	16,204,233,581.11	15,330,813,136.78
2022	15,980,765,855.43	16,978,831,069.48	15,977,755,501.17
2023	16,630,163,693.06	17,753,428,557.85	16,624,603,910.89
2024	17,279,561,530.70	18,528,026,046.21	17,271,358,379.60
2025	17,928,959368,34	19,302,623,534.58	17,918,018,920.92
Total	**83,150,818,465.32**	**88,767,142,789.23**	**83,122,549,849.36**

Source: Author's calculation from equation 5, 6, and 7

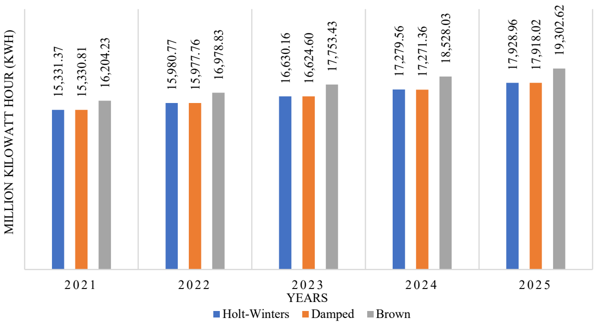


Figure 3 Result of forecasting for electricity consumption in residential sector using Holt-Winters, Brown and Damped trend methods

Based on the appropriate and effective forecasting equation in residential sector (Damped trend mehtod), when such equation is applied to residential sector for the next five years, the results indicate an increased consumption for electricity from 2021 to 2025. The results are shown in Figure 4.

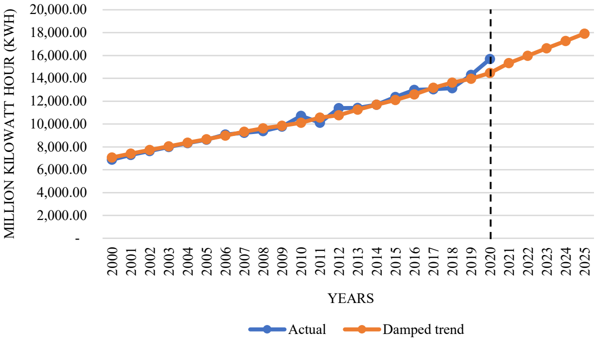


Figure 4 Forecasting electricity consumption graph for residential sector

After forecasting electricity consumption for residential sector, the results of electricity consumption and [2]electricity loss between 2021 and 2025 are summarised to obtain total forecasting electricity consumption. In other words, total electricity consumption covers loss incurred during distribution to users in residential sector as shown in the following equation:

$$Y = R + Loss \qquad (8)$$

Where: Y is total electricity consumption, R is residential electricity consumption, Loss is electricity loss.

The above equation shows that the total forecasting electrical energy consumption also covers electricity loss during the period from 2021 to 2025 and forecasting electricity consumption of residential sector is likely to increase continuously as presented in Table 5.

Table 5 Summary of the projected total electricity consumption in residential sector

Unit: Kilowatt hour (kWh)

Forecast periods	Residential Sector		
	Damped trend	Loss (%)	Total electricity consumption
2021	15,330,813,136.78	2.40	15,698,752,652.06
2022	15,977,755,501.17	2.40	16,361,221,633.20
2023	16,624,603,910.89	2.40	17,023,594,404.75
2024	17,271,358,379.60	2.40	17,685,870,980.71
2025	17,918,018,920.92	2.40	18,348,051,375.02

According to Table 5, when total electricity consumption in the residential sector is compared with total electricity capacity of the MEA between 2021 and 2025 based on economics of electricity supply theory by Attavanich (2014) found that the results can be used to plot the decreasing residential electricity capacity of the MEA as shown in Table 6 and Figure 5.

Electricity loss or loss refers to units lost in electrical energy distribution systems. The two calculation methods for electricity loss are technical loss and non-technical loss (Power Economic Department, 2021). This study uses the non-technical loss calculation in the form of average value and based on economics of electricity supply theory which stated that demand equal to supply by Attavanich (2014).

Table 6 Comparison of the projected total electricity consumption and total electricity capacity in residential sector under the responsibility of the MEA

Unit: Kilowatt hour (kWh)

Years	Residential Sector		
	Total electricity consumption	**Total electricity capacity**	**Excess electricity capacity**
2021	15,698,752,652.06	17,017,816,328.18	1,319,063,676.12
2022	16,361,221,633.20	17,365,783,922.36	1,004,562,289.16
2023	17,023,594,404.75	17,713,751,516.54	690,157,111.79
2024	17,685,870,980.71	18,061,719,110.72	375,848,130.01
2025	18,348,051,375.02	18,409,686,704.91	61,635,329.89

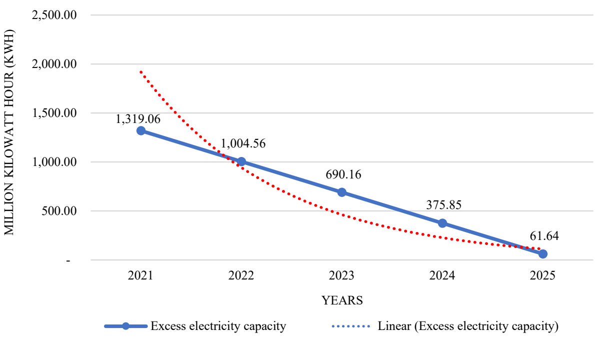


Figure 5 Annual comparison of the projected total electricity consumption and total electricity capacity in residential sector under the responsibility of the MEA (excess electricity capacity)

Electricity consumption in the residential sector is forecast to increase continuously until it approaches the electricity capacity in residential sector of the MEA, whereas the excess electricity capacity between 2021 and 2025 is equal to 1,319.06, 1,004.56, 690.16, 375.85, and 61.64 million kWh, respectively. Indicating that although there is currently enough for electrical energy to satisfy consumption, the trend indicates that the future consumption is likely to be close to capacity.

However, this situation may affect electricity capacity as consumption catches up and the volume decreases steadily. This may have a direct impact on the electrical energy security of the MEA area in the future. Therefore, forecasting it is necessary in order to provide guidelines for the production and distribution of sufficient and timely electrical energy capacity policy to meet the increased electricity energy consumption in accordance with current and future economic and social changes.

Discussion

In forecasting electricity consumption under the responsibility of the MEA in residential sector, MAPE models were found to be the most suitable for the residential sector, therefore, the Damped trend model was applied, the results of forecasting electricity consumption for the next five years in residential sector shows an increasing continuous trend from 2021 to 2025. When considering the forecasting electricity consumption results of residential sector from 2021 to 2025, indicating that the total annual electricity consumption is projected to increase.

When the total electricity consumption in residential is compared with the total electricity capacity in residential sector of the MEA, the results indicate consumption may exceed capacity in 2021, 2022, 2023 2024, and 2025 by 1,319.06, 1,004.56, 690.16, 375.85, and 61.64 million kWh, respectively. The results imply that this may affect future electricity security in the area under the responsibility of the MEA. Therefore, it should set the plan or policy in order to support effectively increasing electricity consumption in residential sector in the future. Since the time series data for residential sector in this study contains a low number of observations, this affects the efficiency of some models such as Holt-Winters and Brown where forecasting efficiency is based on the amount of time series data used to create the model structure. If more time series data is available, it can make the forecasting model more accurate. Additional information should be added to the model for further learning. This will affect the efficiency of the forecasting electrical energy consumption model.

For future study, the author's aim to examine the MEA's investment plan and analyse the cost of electricity production and distribution in residential sector of the MEA. This would help to describe the electricity usage amount, the capacity to produce and distribute electrical energy, and the ability to meet the consumption for electricity, due to changes in society and the economy in the future.

Acknowledgment

This study focuses on the residential sector to examine electricity consumption under the responsibility of the MEA. The authors would like to extend sincere gratitude to the Power Economic Department of the MEA for allowing access to historical time series data on the electricity consumption and electrical energy capacity of the MEA, including information on energy through related documentation and websites.

References

Attavanich, W. (2014). *Energy Economics*. Bangkok: Danex Intercorporation Ltd.

International Energy Agency. (2014). *World Outlook Energy 2014*. Retrieved June 20, 2021, from www.iea.org.

Klimberg, R. K., Sillup, G. P., Boyle, K. J., & Tavva, V. (2010). Forecasting Performance Measures-What are their practical meaning. *Advances in Business and Management Forecasting, 7,* 137-147.

Manmin, M. (2006). *Time Series and Forecasting*. Bangkok: Four Printing.

Metropolitan Electricity Authority. (2020). *Classification for Electrical Energy Consumers in the MEA's area*. Retrieved June 20, 2021, from https://www.mea.or.th/

Metropolitan Electricity Authority. (2020). *Time Frame for the Electrical Power Station Construction of the MEA*. Retrieved June 25, 2021, from https://www.mea.or.th/

Metropolitan Electricity Authority. (2021). *Electricity capacity of Residential Sector in the MEA's area*. Retrieved June 25, 2021, from https://mea.or.th/download/127/3393

Power Economic Department. (2021). *Historical Time Series Data on the Electricity Consumption of Residential User Sector*. Bangkok: Metropolitan Electricity Authority.

Srivastava, U. K., Shenoy, G. V., & Sharma, S. C. (1989). *Time Series Analysis, Quantitative Techniques for Managerial Decisions*. New Delhi: New Age International (P) Ltd.

Suttichaimethee, P. (2010). *Applied Econometrics for Research*. Bangkok: Saha Dhammik Co., Ltd.

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

Tourism Marketing: The Influences of Social Media to the Tourist Destination

Mariae Khrisna Arreza*

College of Arts and Sciences, Cebu Normal University, Cebu, 6000 Philippines

Article info

Article history:
Received: 27 April 2021
Revised: 13 July 2021
Accepted: 27 August 2021

Keywords:
Tourism marketing, Social media, Foreign tourist, Domestic tourist

Abstract

Social media platforms have evolved into valuable resources for tourists in gathering information about travel destinations and tourists have considered them in their travel decisions. Although with the progression, there is a lack of literature that concentrates on social media influence, primarily based on the social media brand and tourist profile in terms of the type of tourist and generation profile or criteria. In response to the gaps, this paper is centered on the following aims: Determine the tourists' profile based on generation criteria and tourist type; Determine which social media platform tourists primarily base their travel decision; Determine social media platform tourists use to find more information about the destination; Gauge the level of influence social media has on the tourists' decision where to travel; Test the significant relationship between the tourists' generation profile and the level of influence social media has on the tourists' decision of where to travel; and Test the significant difference between the foreign and domestic tourist responses on the level of influence social media has on their decision where to travel. This descriptive-correlational study was conducted in Siargao, a first-class international surfing destination in the Philippines. This study garnered 279 participants. It was found that Generations X and Y are influenced by Facebook in their travel decisions, while Instagram influences Generation Z tourists. The study also revealed that tourists use YouTube to learn more about travel destinations. In testing the hypotheses, non- parametric tests were used. The study showed no significant relationship between tourists' generation profiles and the level of influence social media has on their travel decisions. However, Social media influence between foreign and domestic tourists is highly significant.

Introduction

Technology in the tourism industry has paved the way for the upgrade and growth of travel 2.0, which has significantly enhanced social media's role in our everyday lives, such as how social media has progressed and its vitality as a source of information communication. In addition, this web upgrade formed new knowledgeable customers and have expedient access to consume travel and tourism product experiences. Consumers have changed their shopping habits and use various digital platforms to complete their purchasing journey (Schroeder & Pennington-Gray, 2014). Internet connectivity has significantly impacted people, organizations, communication, and operations—this progression aids

* Corresponding Author
e-mail: mariae_arreza@outlook.com

in extending internet utilization in the future. The changing tourism industry is undertaking a conversion from business to the customer to peer-to-peer business and communication. There is a presence of traveler communities, both offline and online, on various social media platforms. These communities are fashioned by people who have shared interests. This leads the industry to alter its marketing communication. The dependability of the content posted on these social media platforms augments its strength. Travelers benefit from utilizing the social media platform for its content because it postulates varying information that travelers need about destinations and tourism products (Dwityas & Briandana, 2017).

Social media is a type of online media that allows users to provide feedback, create discussions, add ideas and information. Social media has become an imperative tactic in advertising resources. It is incontestable that internet technology rules this age, and social media are speedily becoming a part of many people's daily lives (Berhanu & Raj, 2020). Over the years, social media has grown steadily, and it is viewed as a new prospect to use for several specific purposes, including decision-making (Gilani, Salimia, Jouyandeh, Tavasoli, & Wong, 2019). The term "social media" denotes websites that enable relationships among users from numerous backgrounds, ensuing in a complex social structure. Consumer demands and decision-making are swayed by user-produced content (Gilani, Salimia, Jouyandeh, Tavasoli, & Wong, 2019). Social media has a significant impression on the tourism and hospitality industry and its distribution (Schroeder & Pennington-Gray, 2014). Content shared on social media, especially by persons with a good reputation, can significantly impact trip planning and the final decisions of tourists (Manyevere & Kruger, 2019).

Companies that engage with clients on a coherent basis through social media can find that such engagement can strengthen brand identity and durability. This is confirmed through the evidence that is beginning to manifest in different ways (Hudson & Thal, 2013). The internet revolutionized tourism marketing rules, and many traditional marketing methods have become archaic due to this technology. Digital marketing is an essential factor for those who desire to thrive in tourism and hospitality businesses. At present, consumers on the internet can communicate with other users and their best-loved brands. Because of this, prospects for a new partnership between stakeholders have arisen. To prosper in the tourism industry, tourism operators must understand digital marketing and leverage the potentials of digital media and mobile technology. Customers are profoundly influenced by the element of confidence when searching for relevant information in the digital world (Magano & Cunha, 2020).

Tourists acquire information before deciding to purchase travel-related items to reduce the risk associated with buying tourism services, which stems from the experimental nature of most tourism product purchases. Tourists rely heavily on information from others to decrease the risk and uncertainty associated with purchasing travel-related products. It is often assumed that information shared by other tourists on social media platforms is equivalent to offline recommendations from friends, family, and other travelers. Tourists typically seek out the opinions and advice of other experienced tourists during buying and selections. Therefore, online platforms can create significant changes in tourists' behavior. Because the way social media content is displayed, particularly in photographs and experiences, frequently increases curiosity. Social networks are increasingly becoming critical sources of information for travelers. It is valuable to tourists in holiday planning procedures since they allow people to see or read about other visitors' experiences (Manyevere & Kruger, 2019).

Digital marketing opportunities are in social media, mobile, and content marketing powered by technology users, such as Facebook, YouTube, and Instagram subscribers. Customers also benefit from digital marketing in various ways, including access to relevant product information (Mkwizu, 2019). Social media marketing efforts have improved sales and improved customer loyalty. In business, success is reliant on understanding the consumers. Today, consumer-generated media has a wide variety of new and growing online information channels generated, fashioned, initiated, shared, and utilized by consumers to educate one another about brands, products, and other issues. The tourists' travel decisions are intensely influenced by social media, commonly recognized as significant information sources. Social media platforms have challenged traditional ideas about the buying process (Liu Mehraliyev, Liu, & Schuckert, 2019). Relationships with brands are typically grounded on using the product or service after purchase (Hudson & Thal, 2013). One of the most significant factors that tourists deliberate when planning a trip to a particular location is the legitimacy of information sources. Trust is imperative for online tourism marketing because it intensifies the desire to purchase (Berhanu & Raj, 2020).

Even though digital marketing in the tourism industry is widespread, there is limited accessible literature that focuses on the social media influence, especially in discovering the influence of social media according to what social media brand and based on the tourist profile in terms of tourist type and generation criteria or profile. The study was conducted to respond to the gap. The outcome of this research contributes to the tourism industry in further understanding social media's influence on tourists and strengthen the social media marketing presence and visibility of the island of Siargao, leading to its economic growth. This study also intends to serve as a guide for the local tourism government in Siargao to better understand their visitors by using the findings of this research to identify social media marketing opportunities. In adapting modern marketing strategies and repositioning their objectives by strengthening their online presence.

Siargao is the Philippines' surfing capital and an international surfing destination. In 2019, Tourist arrivals in Siargao had grown by 32.85% (Lopez, 2020). Further, the objectives of the study are the following: (a) Determine the respondents' profile based on generation criteria and tourist type (b) Determine which social media platform respondents primarily base their travel decision; (c) Determine social media platform respondents’ usage to find more information about the destination; (d) Gauge the level of influence social media has on the respondents' decision where to travel; (e) Test the significant relationship between the respondents' generation profile and the level of influence social media has on the respondents' decision where to travel, and (f) Test the significant difference between the foreign and domestic tourist responses on the level of influence social media has on their decision where to travel.

Objectives

1. To determine the respondents' profile based on generation criteria and tourist type.
2. To determine which social media platform respondents primarily base their travel decision.
3. To determine social media platform respondents’ usage to find more information about the destination.
4. To gauge the level of influence social media has on the respondents' decision where to travel.
5. To test the significant relationship between the respondents' generation profile and the level of influence social media has on the respondents' decision where to travel
6. To test the significant difference between the foreign and domestic tourist responses on the level of influence social media has on their decision where to travel.

Conceptual framework

Technology in the tourism industry has paved the way for the upgrade and growth of travel 2.0, which has significantly enhanced social media's role in our everyday lives, such as how social media has progressed and its vitality as a source of information communication. In addition, this web upgrade formed new knowledgeable customers and have expedient access to consume travel and tourism product experiences. Consumers have changed their shopping habits and use various digital platforms to complete their purchasing journey (Schroeder & Pennington-Gray, 2014). Internet connectivity has significantly impacted people, organizations, communication, and operations—this progression aids in extending internet utilization in the future. The changing tourism industry is undertaking a conversion from business to the customer to peer-to-peer business and communication. There is a presence of traveler communities, both offline and online, on various social media platforms. These communities are fashioned by people who have shared interests. This leads the industry to alter its marketing communication. The dependability of the content posted on these social media platforms augments its strength. Travelers benefit from utilizing the social media platform for its content because it postulates varying information that travelers need about destinations and tourism products (Dwityas & Briandana, 2017).

Research methodology

Adult Tourists from Cloud 9, Barangay Catangan, General Luna, Siargao, participated in the study. Prior to the conduct of the study, a permit was obtained from the area in charge, allowing the researcher to formally carry out the research. The venue was chosen since it is considered a high- traffic area for tourists who wish to try surfing or see various surfing-related events. It enabled the researcher to approach tourists during the festival timeline and invite them to participate in the study. The participants were given questionnaire and signed a consent of voluntary participation.

The convenience sample size for this study was 279 people (Foreign Tourists - 146; Domestic Tourists - 133). This research has 54 Generation X respondents, 121 Generation Y respondents, and 104 Generation Z respondents. Furthermore, the researcher used the following criteria in the selection of participants: (a) the respondent must be at least 18 years old; (b) the respondent must belong to one of the following generations: Generation X, Generation Y, or Generation Z; and (c) the respondent must have access to and use social media in the selection of a travel destination. The researcher utilized the convenience sampling technique, considering that based on the defined characteristics of the participants, there is no definite account as to the number of participants qualified for sampling. However, the researcher took the sample from two sets of tourists who were conveniently available around the location to which the study was done. The researcher wants to ensure that there is some control over representation concerns when employing convenience sampling. The criteria for classifying the Generational profile differences are based on the respondents' year of birth and assured whether they fit the specified generation criteria.

This descriptive-correlational type of study utilized a researcher-made survey instrument verified by five tourism university professors. For the descriptive part, the researcher measured the influence level of social media in tourist travel decisions. The questionnaire's statements applied a Likert scale level of interest response anchor to calculate .79 intervals. The following designates (5) as extremely influential, (4) as very influential, (3) as influential, (2) as slightly influential; (1) as not at all influential.

For the correlational part, the researcher compared the relationship between the generations and the influence of social media to travel decisions, additionally the researcher tested groups to check differences on the level of influence of social media between foreign and local tourists. In treating the data, A licensed statistical software program Statplus by AnalystSoft was used. This provided results in testing the hypotheses of non-parametric tests of Kendall tau b and Wald-Wolfowitz Runs test.

Results

Table 1 The respondents' profile based on generation criteria and tourist type

Generation criteria	Number (Percentage) of foreign tourist respondents	Number (Percentage) of domestic tourist respondents
Generation X	28 (51.85%)	26 (48.15%)
Generation Y	77 (63.64%)	44 (36.36%)
Generation Z	41 (39.42%)	63 (60.58%)
Total	**146 (100%)**	**133 (100%)**

Table 1 shows the generation profile of the respondents. The study attained 54 responses from Generation X, 121 responses from Generation Y, and 104 responses from Generation Z. The distribution of the number of respondents could be caused by Siargao attracting the younger generation; it is highlighted as a surfing destination. It is noticeable on the island of Siargao that younger tourists are more evident.

Table 2 shows the answers of Generation X, Generation Y, and Generation Z. The respondents were informed to select one social media platform for both of the statements indicated in table 2. In the first statement, "The social media platform tourist based their travel decision." The popular choice among the Generations X and Y respondents is Facebook. Meanwhile, the majority of Generation Z respondents prefer Instagram as their primary base for their travel decisions. It can be because Facebook was launched in 2004 and has become popular worldwide around the year 2008. Werenowska & Rzepka (2020); Badowska & Delińska (2018) have discovered in their studies that Generation Y utilizes

Table 2 Respondents' categorized answers based on their social media use

Statements	Generation X			Generation Y			Generation Z		
	Number (Percentage)			Number (Percentage)			Number (Percentage)		
	Instagram	Youtube	Facebook	Instagram	Youtube	Facebook	Instagram	Youtube	Facebook
The social media platform tourist based their travel decision.	4 (7.40%)	12 (22.22%)	38 (70.37%)	22 (18.18%)	29 (23.96%)	70 (57.85%)	76 (73.07%)	20 (19.23%)	8 (7.69%)
The social media platform tourist utilized to find more information about the destination	13 (24.07%)	26 (48.14%)	15 (27.77%)	2 (1.65%)	103 (85.12%)	16 (13.22%)	38 (36.53%)	43 (41.34%)	23 (22.11%)

Facebook, YouTube, and Instagram and is the most popular social media channels to learn about a holiday destination. The respondents of Generation Y uses YouTube and Instagram as platforms that provide rapid and easy access to exciting content. In connection, Facebook was one of the first social media brands introduced to Generation X and Y. Some Generation Z respondents may be too young to use Facebook. The launch of Instagram was about ten years ago in 2010, so it is newer than Facebook and could have appealed to a much younger generation.

According to Cahyanto, Pennington-Gray, Mandala, & Schroeder (2016), social media has the foremost effect on travel planning, especially in terms of the travelers' quest for knowledge and post-travel experiences sharing. Cahyanto, Pennington-Gray, Mandala, & Schroeder (2016) note that future travelers use Facebook and are likely to post their stories online. Facebook's platform and popularity allow users to collaborate, upload pictures quickly, and provide tips and recommendations for travel plans.

The second statement's response, *"The social media platform tourist utilized to find more information about the destination."* shows that most respondents selected YouTube. This could be due to YouTube being one of the primary sources of online information (Reino & Hay, 2011).

According to Berhanu & Raj (2020), visitors have a positive attitude toward social media outlets' trustworthiness for travel information. Tourists between 18 and 35 have a higher level of positive views of travel information sources' trustworthiness on social media platforms. The younger generation is more likely to use digital networks, such as travel 2.0 apps. With the advent of technology, the tourism industry has become highly competitive. It has never been simpler for a tourist marketer to advertise a destination to potential tourists. Social media affects travel motivation and tourist destination image; these have been made sure and highlighted by travel marketers' social media as a destination promotion platform.

Furthermore, according to Nag & Gilitwala (2021), common social media channels are utilized to search for destination images. These platforms can be used to communicate the promotion to potential tourists. The key factor that connects social media, motivation, and travel intention is the destination image. Marketers should concentrate on how to create and sustain a positive destination image.

Table 3 The level of influence social media has on the respondents' decision of where to travel results presented according to Generational Profile

Level of influence (Verbal description) responses based on generation profile			
	Generation X	**Generation Y**	**Generation Z**
Rate the level of influence social media have on your decision where to travel	4.75 (extremely influential)	4.19 (very influential)	4.60 (extremely influential)

General weighted mean 4.51 (extremely influential)

The statement in table 3 answers the study's questions. The responses of Generation X, Generation Y, and Generation Z are varied. Generation X attained the highest mean among the group, followed by Generation Z and Generation Y.

According to the study's findings by Javed, Tučková, & Jibril (2020), social media outlets are critical in today's world and significantly affect tourists' behavioral intentions and actual conduct. This effect on tourist behavior contributes to the selection of particular destinations and travel- related decisions. On the one hand, a quest for tourist information significantly impacts behavioral intention but not actual actions. On the other hand, tourism promotion through social media has a significant impact on tourists' actual conduct, showing that businesses cannot expand and gain their fair share without a social media presence and promotion.

Table 4 Social media's level of influence on the respondents' decision of where to travel results presented according to the type of tourist.

Level of influence (Verbal description) responses based on the type of tourist		
	Foreign	**Domestic**
Rate the level of influence social media on your decision where to travel.	4.39 (extremely influential)	4.53 (extremely influential)

General weighted mean 4.46 (extremely influential)

Table 4 shows the categorized responses according to the type of tourist profile. Although the level of influence results is both verbally described as extremely influential. The domestic tourist response is higher compared to the foreign tourist responses. According to the study of Shtern, Hill, & Chan (2019), Filipino social media audiences are extremely heavy users of social media and are highly engaged in communicating through social media platforms. Inexpensive smartphones and different internet data plans have made the internet more accessible to Filipino audiences, thus amplifying social media platforms' popularity.

There might be an unexplored link between the tourist generation profile or criteria and their level of influence. This is the essential aspect of the foundation for testing hypotheses, as it is also necessary to determine whether the type of tourist makes a difference in their response.

Table 5 Results of the Kendall Tau-b test

Kendall Tau-b			
		Generation criteria	**Scale responses**
Generation criteria	Correlation coefficient	1.000	.008
	Sig. (2-tailed)	.	.877
	N	279	279
Scale responses	Correlation coefficient	.008	1.000
	Sig. (2-tailed)	.877	.
	N	279	279

In testing the H_{01}, there is no significant relationship between the respondent's generation profile and the level of influence that social media has on their decision to travel; Kendall tau b test was used since data satisfies the assumptions of using such test. As shown in table 5, A

Kendall's tau-b correlation was run to test the relationship between the respondents' generation profile and the level of influence social media has on their decision of where to travel. Based on the results, there was no correlation between the respondents' generation profile and the level of influence social media has on their decision of where to travel. The results is not significant (τ_b = .008, p = .877). Therefore, H_{01} is accepted.

Table 6 Results of the Wald-Wolfowitz Runs Test

Wald-Wolfowitz Runs Test			
Runs count R	4	Z	8.12570
p-value	0.00000		

Table 6 Results of the Wald-Wolfowitz Runs Test In testing the H_{02}, there is no significant difference between the responses of foreign and domestic tourists' level of influence social media has on their decision where to travel.

A non-parametric Wald Wolfowitz run test was used since it satisfies all the assumptions of using the test. The results are shown in Table 6, and this exposed the difference between domestic and foreign responses is highly significant (p = 0.0000). Therefore, H_{02} is rejected because domestic tourists have a much higher influence result than foreign tourists.

The influence of social media platforms on tourists' travel decisions is extremely high. The results can be used as a reference for tourism business operators and the local government unit of Siargao to create an effective and cost-efficient tourism marketing tool. Their marketing strengths should be established on the use of social media platforms. In this study, Generations X, Y, Z are taking advantage of the digital age and communication, especially consuming content in social media that promotes, develops, and interprets specific travel experiences. The development of the information age has a considerable bearing on tourist demand and plans.

It's crucial to remember that valuing social media presence is necessary because tourist destinations compete with other destinations in the Philippines and internationally. It's also critical to pay more attention to the social media platforms identified in the study.

This research provides an understanding of the level of interest tourists have in their travel decision. There are inevitable restrictions that arise from the study's nature. Social media's implication and influence could have been better comprehended if more independent variables were added, such as educational attainment and employment status. Future research may increase the sample size, venture into different areas to better represent the overall population. It may also add an exploration of the tourist frequency of social media use and destination marketing strategy according to different generation criteria. A more wide-ranging data may provide more specific results. The findings of this study can be replicated in other tourist destinations.

Conclusion

Social media is a digital medium that provides different resources and information to travelers, especially in their travel decisions. The private and government stakeholders should fully utilize social media as these promising platforms can be considered a marketing engagement method. It is inextricably linked to tourist decision-making where to travel. Generation X and Generation Y are influenced by their travel decisions through Facebook, and Instagram influences generation Z tourists. Tourists access YouTube for more information about travel destinations. The study discovers no significant relationship between tourist generation profile and the level of influence that social media has on their decision to travel. The difference between the foreign and domestic tourist responses on the level of influence that social media has on their decision to travel is highly significant.

References

Badowska, S., & Delińska, L. (2018). Smartphone as a device supporting the interpenetrating of offline and online processes in shopping-empirical research among the Y generation. *Zarządzanie i Finanse, 16*(3, cz. 3), 7-23.

Berhanu, K., & Raj, S. (2020). The trustworthiness of travel and tourism information sources of social media: perspectives of international tourists visiting Ethiopia. *Heliyon, 6*(3), 122-132

Cahyanto, I., Pennington-Gray, L., Mandala, L., & Schroeder, A. (2016). The Effects of Social Media Usage on Travel Information Searching and Travel Experience Sharing. *Travel and Tourism Research Association: Advancing Tourism Research Globally,* 1-8.

Dwityas, N., & Briandana, R. (2017). Social Media in Travel Decision Making Process. *International Journal Of Humanities And Social Science, 7*(7). 291-292

Gilani, E., Salimia, D., Jouyandeh, M., Tavasoli, K., & Wong, W. (2019). A trend study on the impact of social media in decision making. *International Journal Of Data And Network Science, 3*(2009), 201-222.

Hudson, S., & Thal, K. (2013). The Impact of Social Media on the Consumer Decision Process: Implications for Tourism Marketing. *Journal Of Travel & Tourism Marketing, 30*(1-2), 156- 160.

Javed, M., Tučková, Z., & Jibril, A. (2020). The Role of Social Media on Tourists' Behavior: An Empirical Analysis of Millennials from the Czech Republic. *Sustainability, 12*(18), 7735.

Liu, X., Mehraliyev, F., Liu, C., & Schuckert, M. (2019). The roles of social media in tourists' choices of travel components. *Tourist Studies, 20*(1), 27-48.

Lopez, A. (2020, January 23). *Tourist arrivals in Siargao, Dinagat islands up in 2019.* Philippine: News Agency.

Magano, J., & Cunha, M. N. (2020). Digital marketing impact on tourism in Portugal: A quantitative study. *African Journal of Hospitality, Tourism and Leisure, 9*(1), 1-19.

Manyevere, R. M., & Kruger, M. (2019). The role of social media sites in trip planning and destination decision-making processes. *African Journal of Hospitality, Tourism and Leisure, 8*(5), 1-10.

Mkwizu, K. H. (2019). Digital marketing and tourism: opportunities for Africa. *International Hospitality Review, 34*(1), 5-12.

Nag, A., & Gilitwala, B. (2021). Social Media And Its Influence On Travel Motivation And Destination's Image Formation. *International Journal of Scientific & Technology Research, 8*(12), 102-106

Reino, S., & Hay, B. (2011). The use of YouTube as a tourism marketing tool. In *Proceedings of the 42nd Annual Travel & Tourism Research Association Conference, London, Ontario, Canada.* Travel & Tourism Research Association.

Schroeder, A., & Pennington-Gray, L. (2014). The Role of Social Media in International Tourist's Decision Making. *Journal of Travel Research, 54*(5), 584-595.

Shtern, J., Hill, S., & Chan, D. (2019). Social Media Influence: Performative Authenticity and the Relational Work of Audience Commodification in the Philippines. *International Journal of Communication, 13,* 1939-1958. https://ijoc.org/index.php/ijoc/article/view/9615/2634

Werenowska, A., & Rzepka, M. (2020). The Role of Social Media in Generation Y Travel Decision-Making Process (Case Study in Poland). *Information, 11*(8), 396.

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

An Investigation of the Language used on Signage in Japanese Town on Sukhumvit Road, Bangkok through the Lens of Linguistic Landscape

Gornkrit Meemongkol[a*] & Sutsawad Jandum*[b]

[a] *International College for Sustainability Studies, Srinakharinwirot University, Bangkok, 10110 Thailand*
[b] *Faculty of Humanities and Social Science, Suan Dusit University, Bangkok, 10300 Thailand*

Article info

Article history:
Received: 20 July 2021
Revised: 14 July 2021
Accepted: 27 August 2021

Keywords:
Japanese language, Signage, Linguistic landscape, Bangkok

Abstract

This study investigates the language diversities and Japanese language usage reflected on the signage found in Japanese town on Sukhumvit Road, Bangkok. A qualitative research method was used, with which samples were collected by taking fifty photos of signage along five alleys on Sukhumvit Road with Japanese script appearing on them. The framework of Landry & Bourhis (1997) was employed in this study. The results show that Japanese has an important role in the multilingual area of Sukhumvit Road whereas English was used as the international language. Moreover, Thai language appeared on the signage as the national language but English was still the main language used to communicate with the target customers of various nationalities. It is inferred that most people in the area understand everyday English well. Additionally, the signage of Japanese restaurants was the most prominent and most of them represent Japanese culture. In addition, horizontal text was evident in the system of writing. This may be influenced by the Thai writing system as well as the Western languages. Furthermore, Kanji scripts were the most used on the signage compared to Hiragana and Katakana scripts. Overall, Kanji, as the picture scripts of Japanese language, may convey the meaning of lexical words to readers effectively.

Introduction

Recently, there has been a growing interest in the context of linguistic landscape. It is a branch of linguistic studies as a sub-category of sociolinguistics. The purpose of the study of linguistic landscape is to explore and analyze the language when it is present alongside other languages in spoken or written form, and in this case, on multilingual signage. Landry & Bourhis (1997) explained that linguistic landscape refers to the language used on signage in a particular area such as signage along a road, or a sign placed in front of a hotel. Also, linguistic landscape does not only reflect the language usage in a specific area, but it also reveals the language policy and the power of the language, and the people's identity is exhibited from the language on the signage (Gorter, 2006).

Previous studies relating to linguistic landscape were focused on language, education and culture as an

* Corresponding Author
e-mail: gornkrit@g.swu.ac.th

interdisciplinary study as evidenced in Pakarinen and Björklund's study on the language of school signage in Finland (Pakarinen, & Björklund, 2017). The study revealed that it can interact with students and enhance the students' language proficiency. Another study conducted by Wang (2015) focused on the language used on signage in a school campus in Kyoto, Japan. The results of the study confirmed that the language on signage was directly correlated to education and culture.

In Thailand, turning to the study of Thongtong (2016),found that many languages were used on signage. Furthermore, the findings showed that the role of English on signage in tourist attractions as well as the development of language choices is a classic issue in linguistic landscape. In addition, in a study by Yanhong (2014), it explored how the linguistic landscape reflects multilingualism in Chiang Mai as a tourist attraction in the northern part of Thailand. The results reflected code mixing and the influence of English as a global language. Furthermore, in the study of Meemongkol (2021) wherein the linguistic landscape on two alleys in the center of Bangkok was explored, the findings showed that Japanese language was presented on some signage. It can represent the main role of Japanese culture in Thai society. However, Japanese language was not thoroughly investigated on the studies, both language usage and Japanese culture.

In Japan, the language used on signage was investigated in several dimensions such as multilingualism, linguistic diversification (Backhaus, 2005; Backhaus, 2006), and language as a product of social activity and language usage (Jiang, 2013). It is clear, therefore, that the study of the language used on signage in Japan is an important issue of applied linguistics. This has drawn attention to the use of Japanese on signage in Bangkok, Thailand as many Japanese expatriates live in Bangkok especially in the business areas such as Sukhumvit Road. However, currently, there are only few investigations beneath the scope of Japanese on signage in Bangkok. Therefore, this research has emphasized on multilingualism and Japanese usage that is presented on signage in the business area of Bangkok. Also, in this paper, results of Japanese writing system and Japanese alphabetical sets will be presented as well. The findings will be beneficial for linguists in the future.

Objectives

The purpose of this study is to investigate the language diversities and Japanese language usage reflected on the signage found in Japanese town on Sukhumvit Road, Bangkok.

Scope of study

This study focuses on the use of Japanese on signage through the concept of linguistic landscape. Thus, grammatical concept of the language such as sentence structure was not analyzed in this study.

Definition of terms

The terms used in this research are defined as follows:

Business signage refers to the signs of shops for buying products as well as some businesses and services such as hotels, restaurants, dental clinics, etc.

Writing system refers to two main writing systems of Japanese: vertical and horizontal.

Sets of alphabets refer to three completely separate sets of Japanese characters called *Hiragana, Katakana,* and *Kanji.* The details are as follows:

Hiragana is a set of alphabets used for writing phonetically. For example, にほん (nihon=Japan), わしょく (washoku=Japanese food), やきにく (yakiniku= grilled meat).

Katakana is a set of alphabets used for writing foreign languages. For example,

マッサージ (massaaji=massage), デンタルクリニック (dentaru kurinikku=dental clinic), デザート (dezaato= dessert)

Kanji is a set of characters, originally borrowed from the Chinese language, that represents a concept of meaning. For example, 日本 (nihon=Japan), 和食 (washoku=Japanese food), 焼肉 (yakiniku=grilled meat).

Conceptual framework

In the present study, a theoretical basis for data analysis is provided as follows:

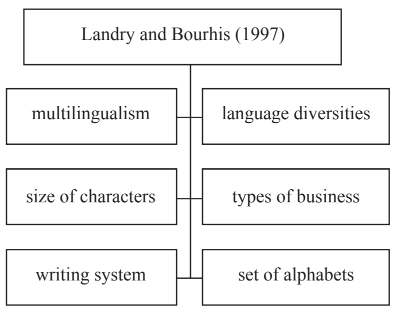


Figure 1 Conceptual framework

As can be seen from the chart, the conceptual framework by Landry & Bourhis (1997) was employed in this study. As explained, the concept of linguistic landscape refers to the language used on signage in a particular area such as those that are used on hotels and restaurants along the road. Linguistic landscape is a sub-field of sociolinguistics and it is an interdisciplinary study among intercultural communication issues. Interestingly, there are many dimensions that should be investigated. Hence, through this research, the analysis of multilingualism, language diversity, size of the characters, types of business, writing system as well as set of alphabets were analyzed by using frequency and percentage as a tool of the statistic fold. However, although the conceptual framework by Landry and Bourhis (1997) was focused on language and culture such as multilingualism and language diversity, types of business were added to this research in the dimension of business study. In addition, writing system as well as set of alphabets were analyzed in this research because it is the outstanding features of Japanese language.

Research methodology

The research procedures involve the following steps:

1. Samples

The samples for this study consisted of fifty photos of signage found on Sukhumvit Road. All was the signage of shops and various businesses—for example, the signage of a restaurant and a hotel. More importantly, the Japanese language must be displayed on the signs including its transliteration in English such as "bento" (弁当) 、"okane" (お金)、"honoho" (火の穂). The signage was divided into two patterns in this study: (1) permanent signage and (2) temporary signage (See Figures 2 and 3).

Pattern 1 – Permanent signage

Figure 2 An example of a permanent signage

Figure 2 is a permanent signage of a restaurant's name "Dai Yaki" with the English phrase "Premium Yakiniku" below the name. Interestingly, the kind of food and service were displayed on the sign. The main purpose of permanent signage is to show the name of the shops and/or restaurants.

Pattern 2 – Temporary signage

Figure 3 An example of a temporary signage

Figure 3 is an example of a temporary signage. The details of the available facilities in the hotel were shown on the sign: free Wi-Fi, comfy bed, free coffee, and great value for money. This type of sign can be moved and relocated, and the details on the sign can be changed easily by writing. The main purpose of temporary signage is to show the details of products and services.

2. Collection of data

This study is a sub-project of "Linguistic landscape of main Soi on Sukhumvit Road" which used 200 photos of signage found along 5 alleys on Sukhumvit Road as the sample of the study. Then, researchers recognized the beneficial significance of the Japanese language that appeared on the signs. Thus, 50 photos of signage with the Japanese language were selected to be used as the sample of the further study. Moreover, the selection criterion included: (1) the Japanese language is presented on the signage; (2) the words, phrases and sentences were readable; and (3) the signage belongs to a shop or a type of business such as a hotel or a restaurant. Government signage was not included. This research is not concentrated on government policies.

3. Data analysis

In order to analyze the collected data, data analysis procedures included the use of descriptive percentage and frequency. The key point of the research question was to investigate the common references in language diversities and the use of the Japanese language reflected on the signage in the business area of Bangkok. At this stage, all of the sampling photos were labelled and numbered from 1 to 50, and were analyzed for the frequency of languages used on them. Next, the size of the characters, the type of business, the Japanese writing system and alphabetical pattern were investigated. The example of data analysis is as follows:

Table 1 The example of signage analysis

pictures	Number of languages	Size of the characters	Type of Business	Writing system	Sets of alphabets
1. 	2 languages: Japanese and English	Japanese is bigger than English	Restaurant	Horizon	Kanji Katakana Hiragana

As can be seen in Table 1, Picture No.1 will be placed in the left column of the table. The number of languages, size of the characters, type of business, the writing system used, and sets of alphabets are placed in separate columns on the right. The researchers completed the table by filling in the information about the sign. For instance, there are two languages on the sign in Picture No. 1: Japanese and English. Japanese characters are bigger than English. The type of business is a restaurant. The writing system is horizontal and the sets of alphabets were showed on the sign which comprised of Hiragana, Katakana, and Kanji. They were ordered according to the size of the Japanese characters. For instance, if Kanji is the bigger than Hiragana, the researchers will put Kanji into the table before Hiragana. All of the sample photos were analyzed in the same way. Lastly, frequency was counted and the percentage was computed into the analysis.

Results

The research findings can be divided into five categories. Interestingly, the data provided convincing evidence of a strong association between language and culture. Moreover, the researchers also studied relevant research papers for discussion.

1. Multilingualism and language diversities

The purpose of the multilingualism and language diversity analysis is to investigate the varieties of languages present on the signage. The results are as follows:

Table 2 Signage categorized by languages

No.	Languages	Number of signs	Percentage
	1 language		
1.	Japanese	4	8%
2.	English (A Japanese word was written in English.)	1	2%
	Total	**5**	**10%**
	2 languages		
1.	Japanese and English	16	32%
2.	Thai and English (Japanese words were written in English.)	2	4%
3.	Japanese and Thai	1	2%
	Total	**19**	**38%**
	3 languages		
1.	English, Japanese and Thai	20	40%
2.	English, Japanese and Chinese	1	2%
3.	French, Japanese and Thai	1	2%
	Total	**22**	**44%**
	4 languages		
1.	Chinese, English, Japanese and Thai	2	4%
	5 languages		
1.	English, Japanese, Chinese, Korean and Thai	1	2%
	6 languages		
1.	French, English, Japanese, Korean, Chinese and Thai	1	2%
	Total	**50**	**100%**

Table 2 presents the overall data on the frequency and percentage of several languages as a criterion of data analysis. The total number of signage was 50 signs. Three languages were commonly present in the signage; with 22 signs at 44% of the total. In contrast, there was only one signage with five or six languages present which accounted for two percent of the total. Moreover, signage with one, two and four languages present amounted to five, nineteen and two signs, respectively. Furthermore, most signage had Japanese accompanied with English and Thai.

2. Size and sequence of scripts

The purpose of analyzing the size of the characters is to investigate which language was the focus language characterized by the use of large font size. That is, the analysis was focused on the size of the character font on the signage. The results are as follows:

Table 3 Signage categorized by size of alphabets

No.	Size of characters	Number of signs	Percentage
	1 language		
1.	Japanese	4	8%
2.	English		
	(A Japanese word was written in English.)	1	2%
	Total	**5**	**10%**
	2 languages		
1.	English is bigger than Japanese	9	18%
2.	Japanese is bigger than English	7	14%
3.	Japanese is bigger than Thai	1	2%
4.	Thai is bigger than English	1	2%
5.	English is bigger than Thai	1	2%
	Total	**19**	**38%**
	3 languages		
1.	English is the biggest	12	24%
2.	Japanese is the biggest	5	10%
3.	Thai is the biggest	4	8%
4.	French is the biggest	1	2%
	Total	**22**	**44%**
	4 languages		
1.	Chinese is the biggest	1	2%
2.	English is the biggest	1	2%
	Total	2	4%
	5 languages		
1.	English is the biggest	1	2%
	Total	**1**	**2%**
	6 languages		
1.	French is the biggest	1	2%
	Total	**1**	**2%**
	Total of 6 patterns of signage	**50**	**100%**

The information in Table 3 shows the overall data on the frequency and percentage of size of the characters as a criterion of data analysis. Three-language signage had the highest quantity of 22 signs with a 44 percentage. On the other hand, five- and six-language signage amounted to only one sign with a 2 percentage. Furthermore, two- and four-language signage amounted to nineteen and two signs, respectively. Additionally, the data represents English with the biggest character font size. Moreover, all of the signage was clarified by sequence of languages as a criterion. The results are illustrated in Table 4.

Table 4 Signage categorized by the sequence of languages

Size of alphabets	Number of signs	Sequence of languages	Number of signs	Percentage
		3 languages		
1. English is the biggest	12	1. English 2. Japanese 3. Thai	9	75%
		1.English 2. Thai 3. Japanese	3	25%
2. Japanese is the biggest	5	1. Japanese 2. English 3. Thai	4	80%
		1. Japanese 2. Thai 3. English	1	20%
3. Thai is the biggest	4	1. Thai 2. English 3. Japanese	4	100%
4. French is the biggest	1	1. French 2. Japanese 3. Thai	1	100%
Total	**22**		**22**	
		4 languages		
1. Chinese is the biggest	1	1. Chinese 2. English 3. Japanese 4. Thai		
2. English is the biggest	1	1. English 2. Japanese 3. Thai 4. Chinese		
Total	**2**			
		5 languages		
1. English is the biggest	1	1. English 2. Japanese 3. Chinese 4. Korean 5. Thai		
Total	**1**			
		6 languages		
1. French is the biggest	1	1. French 2. Japanese 3. Korean 4. Chinese 5. English 6. Thai		
Total	**1**			

The data in Table 4 shows that for three-language signage, nine put the Japanese language in the second position in the language ordering after English. For the four-language signage, one placed Japanese in the third position after Chinese and English and one signage put Japanese in the second position after English. For the five-language signage, Japanese was on the second position in the language ordering after English while for the six-language signage, Japanese was on the second position in the language ordering after French.

3. Type of business

The purpose of analyzing the type of business is to classify the nature of business and the information shown on the signage. The results are as follows:

Table 5 Signage was justified by type of businesses.

Type of businesses	Number of signs	Percentage	Type of businesses	Number of signs	Percentage
1. Restaurant	29	58%	8. Dance studio	1	2%
2. Massage	4	8%	9. Hotel	1	2%
3. Beauty salon	3	6%	10. Convenience store	1	2%
4. Dental clinic	3	6%	11. Art Gallery	1	2%
5. Karaoke	2	4%	12. International school	1	2%
6. Condominium	2	4%	13. Real estate company	1	2%
7. Police station	1	2%	Total	50	100%

Table 5 presents the overall data on the frequency and percentage of business types as a criterion of data analysis. The total number of signage was 50 and most are restaurant signage. There were four massage shop signage and there was only a single count for the other types of businesses such as the dance studio and art gallery.

4. Japanese writing system

The purpose of the Japanese writing system analysis is to divide the writing system by using Japanese writing system as a criterion-that is the vertical, horizontal and a combination of vertical and horizontal writing systems. The examples of signage and the results are as follows:

Figure 4 Vertical writing system

Figure 5 Horizontal writing system

Figure 6 Combination of vertical and horizontal writing systems

Table 6 Japanese writing systems present on the signage

No.	Writing systems were founded on signage	Number of signs	Percentage
1.	Horizontal	32	64
2.	Vertical	11	22
3.	Vertical and Horizontal	7	14
	Total	**50**	**100**

Table 6 presents the overall data on the frequency and percentage of Japanese writing system as a criterion of data analysis. Of the 50 signage, the horizontal writing system was the most used. There were 32 signs with a 64 percentage. In contrast, signage with a combination of vertical and horizontal writing systems was seen only in 7 signs with a 14 percentage among the sample group.

5. Japanese alphabetical pattern

The purpose of analyzing the Japanese alphabetical pattern is to explore the orthography sets that were used on the signage-the Hiragana, Katakana and Kanji. The examples of signage and the results are as follows:

Figure 7 An example of Hiragana, Katakana and Kanji found on a signage.

Table 7 Japanese alphabetical patterns present on the signage.

No.	Japanese alphabetical Patterns	Number of signs	Percentage
	Signage with 1 alphabetical pattern		
1.	Kanji	12	24%
2.	Katakana	8	16%
3.	Hiragana	1	2%
	Total	**21**	**42%**
	Signage with 2 alphabetical patterns		
1.	Hiragana and Kanji	6	12%
2.	Katakana and Kanji	2	4%
	Total	**8**	**16%**
	Signage with 3 alphabetical patterns		
1.	Hiragana Katakana and Kanji	18	36%
	Total	**18**	**36%**
	Signage with a Japanese word written in English.		
1	A Japanese word was written in English.	3	6%
	Total	**3**	**6%**
	Total of 4 patterns of Japanese alphabets	**50**	**100%**

Table 7 presents the overall data on the frequency and percentage of Japanese alphabetical patterns. Signage with the pattern of 3 alphabetical sets (Hiragana, Katakana, & Kanji) had the highest quantity. Equally important, there was only one signage that used Hiragana as its sole writing system.

Discussion

In this section, the researchers used the data from the results to support the discussion and several previous studies will be used to construct new knowledge.

According to the results, multilingualism and language diversity reflect the varieties of language used in the center of Bangkok. It appears, likely, that six languages are used on a sign. The results can confirm that Bangkok is one of the cosmopolitan cities in the world. Although Sukhumvit Road is an area of many Japanese expatriates in Bangkok, English is still the majority language used on signage as a global language. The result is consistent with the study of Rhekhalilit (2021); Yanhong (2014), which showed the role of English as an international language especially in the business areas of Bangkok and tourist attractions of Chiang Mai.

From the results of the size of the characters and the sequence of languages on the signage, compared with the other foreign languages, Japanese is a main language after Chinese and French. Evidently, although Thai is the national language, there were only four signs found using Thai as its first language position. It is probable that the business factor influencing Thai language represents the target customers in the business area of Bangkok. In most cases, foreigners may be the main target group in the Sukhumvit area. It is equally important to note that most Thais who live in the Sukhumvit area can understand English. However, Rowland (2015) has criticized that there are some factors in effect such as motivation, commercialism, cultural essentialism, and globalization behind English on signage in place of national language (Japanese).

From the results of business types, the result displayed that restaurant businesses used the most signage. Sarot & Kraisame (2018) expressed that many multilingual signs are used by restaurant owners, and beauty and health shops used bilingual signs. Moreover, Jiang (2013) said that language is a product of social activity. That is, multilingual and bilingual signs may be used as a tool in the aspect of business. Without question, although this study focused on signage with Japanese, the results confirmed that restaurants are the main type of business in the business areas of Bangkok. Furthermore, most of them used the multilingual signs for foreign tourists and customers from around the world who can easily understand the information on the signage.

In the context of Japanese writing system, the results show that most Japanese texts are written in a horizontal line. Similarly, Backhaus (2005) indicated that most of the Japanese texts are written in horizontal lines similar to most Western languages. For this critical issue, the opinions of researchers are that Japanese texts in Bangkok are influenced by the Thai writing system and essentially, the English writing system (horizontal text writing system). Moreover, the results of the analysis of the Japanese alphabetical pattern, showed that Kanji is used most on the signage. In fact, for another reason, as Kanji is a kind of picture language, it is used for the purpose of effectively delivering the meaning of the words to the readers. Therefore, Kanji is written vertically so that it is easier to read and understand than Hiragana and Katakana. Furthermore, the shape of the sign may have an effect in the Japanese writing system used. As evidence, Kanji was more appropriate for Pattern 2 (Temporary Signage) than in Pattern 1 (Permanent Signage). Additionally, there were only three signage that used the English transliteration of the Japanese words to imitate the sound such as "Bento". This signifies the incorporation of Japanese culture in Thai society. It can persuade the local people who are interested in Japanese culture to enter the shop.

It can therefore be deduced that cross-cultural as well as cross-linguistic factors influenced the results. Matwick & Matwick (2019) explained this through the interaction of these factors that occurred in food spaces such as promotional signs and their images. Also, the semiotic landscape will work together with linguistic competency as the elements of communication. In addition, Japanese is deemed informative for Japanese shoppers while symbols can be helpful for non-Japanese shoppers providing a pure, authentic, high-quality, significant and healthy impression.

Overall, the use of Japanese on signage in the business area of Bangkok is similar to the general commercial signage shops in Japan but it showed the role of the Japanese language and culture among Thai people and the Japanification of the multilingual society of Thailand. The limitations of the study would be that there is a vast number of signs in several business areas in Thailand and that semiotics are not included in this study.

Suggestions

In accordance with the limitations of this study, future similar studies must be conducted with the other multilingual and multicultural areas, i.e., Silom Road. Likewise, to address the challenges, future studies should try to conduct the research in different genres such as Japanese on cosmetic and consumer products. Another recommendation for further studies is that it is worth investigating how the Japanese culture has blended with Thai culture in the scope of localization and interdisciplinary studies.

References

Backhaus, P. (2005). *Signs of multilingualism in Tokyo: a linguistic landscape approach* (Doctoral Dissertation). Germany: University of Duisburg-Essen.

Backhaus, P. (2006). Multilingualism in Tokyo: A Look into the Linguistic Landscape. *International journal of Multilingualism, 3*(1), 52-66.

Gorter, D. (2006). Introduction: The study of the linguistic landscape as a new approach to multilingualism. In *Linguistic Landscape* (pp. 1-6). Multilingual Matters.

Jiang, Y. (2013). A Quantitative Study of Linguistic Landscape. *Meikai Japanese language journal, 18,* 195-205.

Landry, R., & Bourhis, R. (1997). Linguistic landscape and ethnolinguistic vitality: An empirical study. *Journal of Language and Social Psychology, 16*(1). 23-49.

Matwick, K., & Matwick K. (2019). Linguistic Landscape and Authenticity in a Japanese Supermarket in Singapore. *Open Linguistics, 5*(2019), 532–552.

Meemongkol, G. (2021). Linguistic Landscape of Soi. Sukhumvit 3 (Nana-nua) and Soi. Sukhumvit 63 (Ekamai). *Journal of Humanities and Social Sciences, 12*(1), 66-88.

Pakarinen, S., & Björklund, S. (2017). Multiple language signage in linguistic landscapes and students' language practices: A case study from a language immersion setting. *Linguistics and Education, 44,* 4-11.

Rhekhalilit, K. (2021). Language Choice of Public Signage in Thai Universities A Case Study of Chulalongkorn University and Kasetsart University. *Manutsayasat Wichakan, 7*(2), 310-341.

Rowland, L. (2015). English in the Japanese linguistic landscape: A motive analysis. *Journal of Multilingual and Multicultural Developmen, 37*(1), 1-16.

Sarot, T., & Kraisame, S. (2018). Urban multilingualism: A case study of the relationship between linguistic landscape and business in North Nana. *Journal of Language and Culture, 38*(1), 24-40.

Thongtong, T. (2016). A Linguistic Landscape Study of Signage on Nimmanhemin Road, a Lanna Chiang Mai Chill-Out Street. *Manusya, Journal of Humanities,* Special Issue, 72-87.

Wang, J. (2015). *Linguistic Landscape on Campus in Japan—A Case Study of Signs in Kyushu University.* Intercultural Communication Studies.

Yanhong, M. (2014). *Chiang Mai's Linguistic Landscape in the Tourist Attraction Areas: A Study on the English Language Use on Signs* (Master's thesis). Bangkok: Naresuan University.

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

A Study on Factors Influencing Chinese Consumers' Attitudes Towards Intention of Online Shopping for Thai Products

Yolamas Jeerasantikul*

Bachelor of Accountancy Program, Kanchanaburi Campus, Mahidol University, Nakhon Pathom, 73170 Thailand

Article info

Article history:
Received: 7 June 2021
Revised: 17 August 2021
Accepted: 30 August 2021

Keywords:
Consumer, Attitude, Intention, Online, Thai

Abstract

Past literature suggests that consumers' attitude has a direct influence on buying intention. However, the evaluation of both positive and negative attitudes towards purchase intention on motives had been scarce. Hence, this research attempts to examine the factors influencing Chinese consumers' attitudes toward intention of online shopping for Thai products and constructs drawn from functional and non-functional motives are conducted to identify factors that potentially affect Chinese online consumer decision making for purchasing Thai products. A survey was carried out of 303 consumers who had purchased Thai products. Multiple Regression in structural equation modeling (SEM) was applied for data analysis. As expected, different culture, previous purchasing experience, consumer style and merchant's trustworthiness were found to have a significant relationship in explaining the attitude of always eager to buy Thai products towards online shopping intention. Nevertheless, perceive brand value was found to have no significant relationship with the attitude of always eager to buy Thai products toward online shopping intention. The results of this study indicated that different culture and previous purchasing experience can also explain the attitude of very cautious to buy Thai products toward online shopping intention. It is important for the manufacturers and the Thai government to implement programs for building brand awareness, the recognition of different cultures and improvement of service quality as they are the main contributing factors that enhance continual use of Thai products.

Introduction

The impact of factors influencing consumer's attitude on intention of online shopping is supported not only by theory but also by empirical studies: many factors such as product quality, logistics speed, after-sales services and payment convenience create customer satisfaction and impact on consumer's attitude towards buying behavior (Jayawardhena, 2004; Enrique, Carla, Joaquín, Silvia, 2008; Wang & Chou, 2014) In addition, the factor of brand, reviews from real users, quality, fame and price affects decision making, respectively (Hernandez & Kuster, 2012; Yoldas, 2012; Hsu, Lin & Chang, 2013; Aldhmour, 2016). However, although a consumer has good attitude and experience with online

* Corresponding Author
e-mail: yolamas@yahoo.com

shopping, he may not decide to buy. This depends on motivation from information evaluation and value trade-off of product like price and quality and buying power. Moreover, two types of motives while shopping for consumers are functional and non-functional motives. The functional motives are time, place, consumer needs and channel alternative including convenience, price comparison and product assortment. The non-functional motives are culture or social and emotional value for support and recreation such as the brand name of shop (Sheth,1983). It should, therefore, be consequential for marketers to find ways to improve consumer satisfaction and shopping motives related to the attitude on intention to online shopping.

The Growth of Thai Products in China Cross-Border E-commerce Almost 50% of Chinese consumers in the cross-border e-commerce (“CBEC”) market think that foreign products lifts their quality of life due to higher quality, higher standard of safety , and healthy. Consumer satisfaction for products such as fashion, food, beauty and nutritious products are purchased to avoid risk of buying fake products, especially for milk powder, beauty products and medicines. From estimated sales volume of top ten brands in 12 months on Tmall, the 5 Best Sellers of Thai products on Tmall in 2019 were Latex (2,880 million baht), snack (906 million baht), skin care (595 million baht), cosmetic (468 million baht) and health care (34 million baht), respectively. Among CBEC target groups, two groups exist; one is the super 1st tier such as Beijing, Shanghai, Guangzhou, Shenzhen and the second consists of 15 cities in new Tier 1 like Chengdu, Hangzhou, Wu

Wuhan, Chongqing, Nanjing and others, who are also the top 10 Chinese tourists in Thailand. However, there are also differences in taste, want and online shopping platforms between them (Scb.co.th). For this reason, the growth of Chinese tourist numbers arrival to Thailand results in brand awareness and value perception and attitude towards intention of online shopping for Thai products.

Objectives

The purpose of this research is to understand how the factors of different culture, perceive brand value, perceive previous purchasing experience, customer style and perceive merchant experience have a significant influence on Chinese consumers’ attitude towards intention of online shopping for Thai products.

Conceptual framework

- Different culture
- Perceive brand value
- Perceive previous purchasing experience
- Customer style
- Perceive merchant trustworthiness

→ Attitude a, b towards intention to online shopping of Thai products in China

Figure 1 Conceptual framework

Research methodology

The population sample of this research consisted of Chinese consumers who had a minimum of one purchase experience of Thai products in China. The quantity of population sample was based on Taro Yamane formula for uncertain population sample and calculated on the reliability at .05 significant level. Therefore, 400 questionnaires were distributed 303 were deemed usable for the analysis; and the response rate was approximately 75.75%. Data were gathered from an online questionnaire link and distributed to target group in five economic zones that are centers of education and work. Therefore, people in these cities have high purchase power. Measures for the survey were adopted and developed from the literature review and previous established scales from past research. The 5-point Likert scale questionnaire was aimed at collecting quantitative data about factors influencing Chinese Consumers’ Attitude towards Intention of Online Shopping for Thai products. Data was conducted during May 2, 2016 –June 2, 2016. Data analysis employed descriptive statistics and inferential statistics. It also employed multiple regression in the structural equation modeling (SEM) to test the hypotheses.

Results

A total of 303 questionnaires were used for analysis. Among the respondents, 57.4% lived in Chuanyu City, 12.2% were from Changjiang a middle reach megalopolis, 15.3% were scattered in several economic development areas and 15.2% were from other cities not in economic development areas. Based on gender, respondents consisted of 105 males and 198 females while 74.3% of respondents were aged between 21 and 30 years and 12.5% aged between 31 and 40 years. In terms of education level, 54.1% of respondents held a Bachelor degree and 33.7% a Master degree. In the career item, 56.1% of respondents were students or part-time workers, 14.9% teachers and 16.5% employees. The respondents with monthly income below RMB 1,000 were students (56.1%), and 24.1% of respondents earned between RMB1,000 and RMB3,000, and 20.1% earned between RMB3,000 and RMB5,000.

Table 1 Characteristics of respondents

Variable	Frequency	Percent
Number of respondents in each zones		
Changjiang middle reaches megalopolis	37	12.20
Region Over Bohai Ring	15	5.00
The Delta Area of Yangtse River City	22	7.30
Chuan Yu City Group	174	57.40
Urban Agglomeration in the pearl river delta	9	3.00
Other	46	15.20
Gender		
Male	105	34.7
Female	198	65.3
Age		
<= 20 years old	29	9.60
21-30 years old	225	74.30
31-40 years old	38	12.50
41-50 years old	5	1.70
>=50 years old	6	2.00
Education		
Secondary and Below	2	0.70
High School/Vocational	16	5.30
Bachelor	164	54.10
Master	102	33.70
Dr. and Above	19	6.30
Occupation		
Student/Part time job	170	56.10
Teacher	45	14.90
Full time working	50	16.50
Government officer	5	1.70
Freelance	10	3.30
Merchant	6	2.00
Housewife	2	0.07
Retire	2	0.07
Unemployed	1	0.03
Other	12	4.00
Income		
<=1000 RMB	102	33.70
1000-3000 RMB	73	24.10
3000-5000 RMB	61	20.10
>= 5000 RMB	53	17.50
>=10000 RMB	14	4.60

The results showed that 67.99% of the respondents have a good attitude towards online shopping and 32.01% have a negative attitude table 2.

Table 2 Consumers' attitude towards online shopping in china

	Attitude Rank	Frequency	Percent
Consumers' attitude towards	Yes	206	67.99
Online shopping in china	No	97	32.01
	Total	**303**	**100**

As shown in the table above, travel experience is significantly correlated to the attitude of always eager to buy Thai products, but there is no relationship with the attitude of very cautious to buy Thai products. Undoubtedly, travel experience has an effect on online shopping and affects the attitude of always eager to buy online for Thai products. Therefore, it shows that people who have visited Thailand have deep impression with Thai products table 3.

Table 3 Travel experience factor towards attitude to online buying

Travel experience towards attitude to buy	Travel experience			
	Mean	S.D.	Pearson correlation	Sig. (2-tailed)
Always eager to buy thai products	2.83	1.208	-.272	.000
Very cautious to buy thai products	3.20	1.109	-.080	.246

From the above table, measure validation was preliminary examined for reliability by computing Cronbach's alpha coefficient for each question. The reliability is acceptable because the Cronbach's alpha is ≥ 0.70 and % variance of each factor loading can explain cumulative variance of population sample around ≥ 60%. According to the use of standardized variables, Cronbach's alpha 0.70 is considered for the cutoff value to be acceptable and Barrtlettt's test was significant. Therefore, it indicates factor analysis is appropriate and has been analysed in AMOS using multiple regression in structural equation modeling (SEM) analysis.

Table 4 Reliability and factor loading of perceived brand value, perceived previous purchasing experience, customer style, perceived merchant trustworthiness, different culture

Factor name	Factor component	Factor loading	Mean	Interpretation	%Variance explained	Factor definition
Perceive brand value (br_value) 5 items, Cronbach Alpha .976	Reliability	.849	-	-	74.609	Perceived brand value of personality, reliability, function factors and brand favor in affect and trust factors
	Show yourself	.674	2.85	Uncertain		
	Feel familiar with others use same	.729	3.05	Uncertain		
	Would buy other Thai products/ services	.803	3.29	Uncertain		
	Like to share good points/support to buy	.764	3.33	Uncertain		
	Still continue to use Thai products	.798	3.10	Uncertain		

Table 4 (Continued)

Factor name	Factor component	Factor loading	Mean	Interpretation	%Variance explained	Factor definition
Perceive previous purchasing experience (pre_ex) 3 items, Cronbach Alpha .976	Reliability	.695	-	-	75.227	Perceived satisfaction in previous purchasing experience
	I always like to introduce Thai products to friends	.809	3.28	Uncertain		
	Many sides suit me	.894	3.21	Uncertain		
	Very satisfied and continue to use	.896	3.30	Uncertain		
Customer style (c_style) 4 items, Cronbach Alpha .976	Reliability	.638	-	-	51.891	Consumers' personality and purchasing behavior
	I like to browse thai product even no plan to buy	.713	2.85	Neutral		
	Security/save time & cost shopping factor	.675	4.05	Very satisfied		
	Promotion campaign factor	.718	3.72	Very satisfied		
	Brand satisfaction	.772	3.55	Very satisfied		
Perceive merchant trustworthiness (seller_trust) 5 items, Cronbach Alpha .976	Reliability	.816	-	-	59.591	Perceived security, trustworthiness factors of sellers
	Website famous/good image/ trustworthy	.734	3.93	Very satisfied		
	Seller discloses contact details	.810	3.82	Very satisfied		
	Retail shops certified trustworthiness from web	.861	3.96	Very satisfied		
	Payment system security	.769	4.39	Very satisfied		
	Seller is trustworthy/honest factor	.673	4.00	Very satisfied		
Different culture (Difc) 4 items, Cronbach Alpha .976	Reliability	.820	-	-	71.71	Recognition of Thai cultures
	Thai drama better watch than chinese	.832	2.62	Uncertain		
	Thai culture more interesting than chinese	.874	2.95	Uncertain		
	More delightful to buy thai product than chinese	.862	2.95	Uncertain		
	More enjoyable chinese food than thai food	.819	2.63	Uncertain		

Note: Interpretation of perceived brand value, perceived previous purchasing experience, different culture factor: 1.00 - 1.49 strongly disagree; 1.50 - 2.49 disagree; 2.50 - 3.49 Uncertain; 3.50 - 4.49 agree; 4.50 - 5.00 strongly agree Interpretation of Customer style and Perceive merchant trustworthiness factor: 1.00 - 1.49 dissatisfied; 1.50 - 2.49 little dissatisfied; 2.50 - 3.49 Neutral; 3.50 - 4.49 satisfied; 4.50 - 5.00 very satisfied

From the above table, different culture, perceive brand value, consumer style, perceive previous purchase experience were highly correlated to the attitude of always eager to buy Thai products, but a rather low relationship with the attitude of very cautious to buy Thai product. Besides, perceive merchant trustworthiness was slightly correlated to both attitudes.

Table 5 Correlation Matrix of Principal Constructs

Variable	seller_trust	c_style	pre_ex	br_value	difc	cautious_buy	eager_buy
seller_trust	1						
c_style	0.666**	1					
pre_ex	0.685**	0.771**	1				
br_value	0.505**	0.787**	0.808**	1			
difc	0.417**	0.634**	0.644**	0.705**	1		
cautious_buy	0.085**	0.261**	0.217**	0.236**	0.349**	1	
eager_buy	0.359**	0.661**	0.616**	0.659**	0.717**	0.274**	1

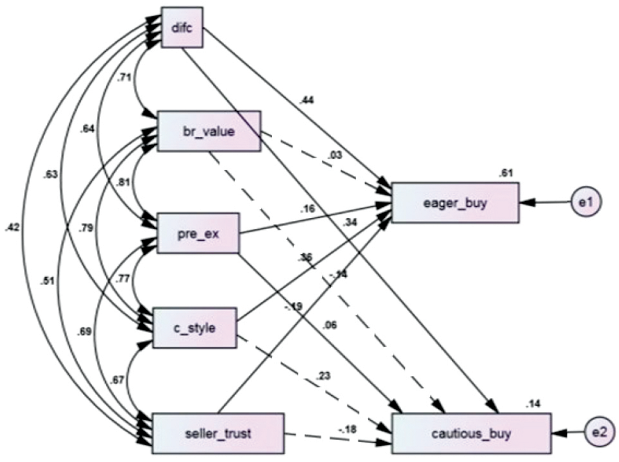
It was concluded that the proposed model reasonably fits the data for factors affecting both attitudes of always eager to buy and very cautious to buy Thai product towards intention to online shopping of Thai products in China and the R-square value is 0.606 and 0.143, which explain 60.6 percent of the variance in the attitudes of always eager to buy and 14.3 percent of the variance in the attitude of very cautious to buy, respectively of consumers' behavior can be accounted for by a variation in the independent variables. The hypothesis was further analyzed based on multiple regression analysis and presented as follows:

H_1 was supported with p value of 0.001. Thus, there is a significant relationship between different culture and attitude of always eager and very cautious to buy Thai products towards intention of online shopping for Thai products.

H_2 was not supported with p value of 0.668 and 0.208. Hence, there is no significant relationship between perceive brand value and attitude of always eager and very cautious to buy Thai products towards intention of online shopping for Thai products.

H_3 was supported with p value at 0.05 level because there is a significant relationship between perceive previous purchasing experience and attitude of always eager and very cautious to buy Thai products towards intention of online shopping for Thai products.

H_4 and H_5 both were partially supported. We found that customer style and perceive merchant trustworthiness significantly affect attitude of always eager to buy Thai products towards intention of online shopping for Thai products based on p value of 0.001 and 0.05, respectively. However, perceive brand value and perceive merchant trustworthiness have no significant relationship with attitude of very cautious to buy Thai product towards intention of online shopping for Thai products with p value of 0.078 and 0.633, respectively



Chi-square = .453, df = 1, P-value = .501

Figure 2 Model testing

previous purchasing experience, consumer style and merchant's trustworthiness have a direct effect on attitude of always eager to buy towards the intention of online shopping for Thai products, whereas perceive brand value does not . These results are in accordance with previous research; cultural differences impact consumer behavior. Especially, Chinese consumers who have a strong cultural cringe and innovative character will have high attention in buying foreign products (Yoo & Donthu, 2001; Hu, 2014). Whenever a consumer is satisfied or has good attitude towards a shop, he will be willing to buy online more (Li, Kim & Park, 2007). As a result, trust towards seller's affects shopping online decision (Nunthipong & Khongsawatkriat, 2011). However, perceive brand value has no effect on attitude of always eager to buy towards intention of online shopping for Thai products because Chinese luxury consumers have rather low brand awareness and low attitude towards brands that brings about low repurchase intention (Bojei & Wong, 2011; Hermandez & Kuster, 2012). On the other hand, the attitude of very cautious to buy towards intention of online shopping for Thai products is also influenced by different culture and previous purchasing experience only. The results are in accordance with previous research; a lack of trust can make some

Table 6 Regression Analysis Result between Independent Variables and The Dependent Variables

variables	Variance	std. error		B		Beta		P-value		R square	
CONSTANT)										**0.606**	**0.143**
difc	0.511	0.089	0.114	0.743	0.501	0.443	0.34				
br_value	0.571	0.122	0.157	0.052	-0.198	0.033	-0.142	0.668	0.208		
pre_ex	0.768	0.109	0.137	0.214	0.298	0.156	0.232	0.049	0.029		
c_style	0.677	0.106	0.131	0.523	-0.231	0.359	-0.178		0.078		
seller_trust	0.657	0.101	0.14	-0.279	0.067	-0.189	0.056	0.006	0.633		
Dependent variable: Attitude		eager_buy	cautious_buy	eager_buy	cautious_buy	eager_buy	cautious_buy	eager_buy	cautious_buy	eager_buy	cautious_buy

*** p< 0.01 (Correlation is significant at the 0.01 level (2-tailed))

Discussion

The theoretical analysis indicates that attitudes towards intention of online shopping for Thai products are influenced by cultural, social, personal and psychological factors and prior purchasing experience. According to the R-square value of 0.606 and 0.143, the independent variables can explain 60.6 percent and 14.3 percent of the variance in both attitudes of eager to buy and cautious to buy, respectively of consumers' behavior, concluding that other factors exist that affect both attitudes towards intention of online shopping for Thai products. The result also reveals that different culture, consumers avoid risk and limit buying to only famous online shops (Brynjolfsson & Hitt, 2000) and seek and accept online recommendations (Smith, 2005). This is the reason why security factor of trust in sellers, payment, product or service, warrantee and website reputation have the highest influence on online shopping (Chen & Jiang, 2013). Therefore, the attitude of consumer highly influences the success of marketing on that product and it is important to understand the factors influencing consumers' general or aggregate perception that drive consumers to purchase a Thai product and attitude towards intention of online shopping is the antecedent of the purchase decision. Marketer can increase awareness of a new brand through advertisement and create the recognition of different culture and cultural experience consumption and uniqueness because high awareness in brand value causes high brand satisfaction and purchasing satisfaction on Thai product's purchasing decisions and brand awareness (Chen, 2015). Besides, service quality affecting satisfaction related to trust, customer loyalty and repurchase intention can be improved by quality of product, reasonable price and combination with other choices (Hartmann 2006; Kassim & Abdullah, 2008). Also, information supporting such as product details and internal search engine is the most important factor of information search affecting purchase decision making process of the customer while finding suitable products for his needs (Mittal, 2013). Finally, this research have several limitations in collecting data. Firstly, we used online questionaire as the survey tool and selected respondents by initial interview and survey respondents in each economic zone equally, but the proportion of demographic in southwest were the largest size, which is consistent with the fact that most Chinese tourists are from the southwest. Secondly, the group of senior consumers were difficult to reach with the online survey tool and must rely on their children. The senior consumer group was small scale, but valid. Thirdly, some factors were invalid on the test of other measurement tools due to insufficient data for conduction. Further studies should be undertaken in other countries involving different cultural values and larger samples to strengthen its validity and additional variables such as product price, product availability could also affect consumers' intention to purchase.

Suggestion

The main objective of this study was to examine factors influencing Chinese consumers attitude towards intention of online shopping for Thai products in China. It is important to highlight the potential of the theory of Petty, Cacioppo and Hofstede's the dimension of uncertainty avoidance in understanding different culture factor affecting positive and negative attitude towards intention of online shopping for Thai products, extending the aggregate view of results conditioned only to these constraints to study the consumers point of view. In a practical sense, different culture, previous purchasing experience, consumer style and merchant's trustworthiness are important in building positive attitude towards intention of online shopping for Thai products. To succeed, marketers may need to maintain brand awareness and use the power of word-of-mouth through social media influencer such as Net idol and recommendations and reviews from Chinese tourists and students studying overseas and penetrate the target market of modernism and fashionista and create new product experience harmonized with Chinese culture. Li Jia Qi, a Net idol known as Lipstick Brother of foreign brands is a successful example of social media marketing that has high rating of consumers.

References

Aldhmour, F. (2016). An Investigation of Factors Influencing Consumers' Intention to Use Online Shopping: An Empirical Study in South of *Jordan. Journal of Internet Banking and Commerce, 21*(2), 1-50.

Bojei, J., & Wong, C. (2011). *Factors Influencing Repurchase Intention of Smartphones*. Retrieved November 25, 2015, from http://www.wbjconpro.com/419-Hoo.pdf

Brynjolfsson, E., & Hitt, L. M. (2000). Beyond Computation: Information Technology, Organizational Transformation and Business Performance. *Journal of Economic Perspectives, 14*(4), 23-48.

Chen, F., & Jiang, A. (2013). The Consumers' Knowledge of Product, Knowledge Acquisition Channels and Consuming Behavior-----Based on 1803 residents tea consumption survey data of Hangzhou. *Journal of Business Economics, 20*(1), 52-57.

Chen, L. (2015). *Kuoguo gongsi shichang jinru yu zhongguo peiyu zizhu guoju pinpai yanjiu [Entering the market of the international company and the China study on foreign brands research.]*. China: Economic science Press.

Enrique, B. A., Carla, R. M., Joaquín, A. M., & Silvia, S. B. (2008). Influence of online shopping information dependency and innovativeness on internet shopping adoption. *Online Information Review, 32*(5),648-667.

Hartmann, D. (2006). Over the edge: How the pursuit of youth by marketers and the media has changed American culture. *Contemporary Sociology, 35*(4), 392.

Hernandez, A., & Kuster, I. (2012). Brand impact on purchase intention: An approach in social networks channel, *Journal of Economics and Business letter, 1*(2), 1-2.

Hu, Y. (2014). *The impact of cultural cringe on consumer behavior in China* (Master's thesis). Island: University of Rhode Island.

Hsu, C. L., Lin, J. C., & Chiang, H. S. (2013). The effects of blogger recommendations on customers'online shopping intentions. *Internet Research, 23*(1), 69-88.

Jayawardhena, C. (2004). Personal values'influence on e-shopping attitude and Behavior. *Internet Research, 14*(2), 127-138.

Kassim, N., & Abdullah, N. (2008). Customer Loyalty in e-Commerce Settings: An Empirical Study. *Journal of Electric Markets, 18*(3), 275-290.

Li, R., Kim, J. J., & Park, J. S. (2007). The Effects of Internet Shoppers' Trust on Their Purchasing Intention in China, *Journal of Information Systems and Technology Management, 4*(3), 269-286.

Mittal, A. (2013). E-commerce: It's Impact on Consumer Behavior. *Global Journal of Management and Business Studies, 3*(2), 131-138.

Nunthipong, B., & Khongsawatkriat, K. (2011). Consumer behavior of decision making on buying online products: Area of studies at Bangkok. *Journal of Finance Investment Marketing and Business Management, 2*(2), 65-88.

Sheth, J. N. (1983). An integrative theory of patronge preference and behavior. In *Darden WR, Lusch RF, editors, Patronage behavior and retail management.* (pp.9-28) Orlando (FL): Elsevier Science Publishing Co.

Smith, A. M. (2015). Attitude Tracing and Control. *Journal of Applied Philosophy, 32*(2),115-132

Wang, E. S. T., & Chou, N. P. Y. (2014). Consumer characteristics, social influence, and system factors on online group-buying repurchasing intention. *Journal of Electronic Commerce Research, 15*(2), 119.

Yoldas, S. (2011). *A Research About Buying Behaviours Of Online Customer Comparison of Turkey with UK* (Master's thesis). London: University of Roehampton.

Yoo, B., & Donthu, N. (2001). Developing and validating a multidimensional consumer-based brand equity scale. *Journal of Business Research, 52*(1), 1-14.

Journal of Multidisciplinary in Social Sciences (May - August 2021), 17(2): 40-47

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

Quality Improvement through DMAIC: A Case Study of Wire Harness Tape Manufacturing

Oranicha Buthphorm*

Science and Social Sciences Faculty, Burapha University, Sakaew Campus, Sakaew, 27160 Thailand

Article info

Article history:
Received: 19 April 2021
Revised: 16 August 2021
Accepted: 30 August 2021

Keywords:
Six sigma, DMAIC, Defect eeduction, Wire harness tape, Process of product quality control

Abstract

The goals of this research were to identify problems, find solutions and implement DMAIC to improve the high defect rate in the weaving process that was causing high operation cost at a wire harness tape manufacturing in Thailand. In this study, qualitative research was used with samples collected, and the paper gives an insight into the 16-week journey of applying a DMAIC (Define-Measure-Analyze-Improve-Control) of Six Sigma framework to achieve reducing defects in the weaving process. The study utilized the Six Sigma tools such as brainstorming, SIPOC, affinity diagram, Isikawa diagram, Pareto chart and checklists. As a result, the root cause of significant defects were first, the human problem was defined, human error, no motivation, not enough training. Then an improvement plan was constructed, that included training of SOP, ISO 9001:2015, and CTQs. Next, the problem with machines were defined such as machines were not in the appropriate condition causing them to breakdown and shortages of spare parts to fix the machines. Implementing the preventive maintenance, daily checking, and monthly scheduled maintenance will stop these issues from occurring. Last, the raw material issue, which lacked full inspection, lack of vendor site inspection, and lack of qualified products, the issues can be prevented by implementing a system of value chain management and supplier relationship management with vendor site inspection planning. The ISO 9001:2015 is the significant tool implemented to ensure the company meets quality control and quality assurance. In the end, the desired achievement to reduce 6% to zero defect rate was achieved. The value of this study presents an industrial case that demonstrates how the deployment of Six Sigma and DMAIC can assist manufacturing productivity to achieve quality improvements in their processes.

Introduction

The mass production of the textiles industry sector during the 18th century was a powerful industry of the first industrial revolution, and the first to use modern production methods. The industries rapidly became economic powerhouses and contributed to economic growth (Ashton, 1948). Today, the textile industries are fundamental to the economic and social enhancement of many people and emerging countries, being the access point to global supply chains and export markets. In 2018, The international textile industry sector was forecasted to be approximately USD 920

* Corresponding Author
e-mail: oranicha@buu.ac.th

billion, and it is projected to reach approximately USD 1,230 billion by 2024 (Grand View Research, 2020). Thailand's textile industry has achieved supremacy over the past five decades, despite challenges from leading global textile producers. As a strong history base of silk and cotton operation, Thailand's textiles and apparel industry are increasingly growing and evolving to keep up with changing customer preferences (Board of Investment, 2018). The economy's slowdown as a result of the coronavirus outbreak has an effect on automotive companies, with projections for 2% export growth and 3% domestic declines in 2021. Although the next three years are projected to see a 3-4 percent growth rate (2021-2023), sales are expected to fall due to a slow recovery in buyer spending.

Motorola established the Six-Sigma system in the 1980s, with the goal of achieving a challenging failure rate of 3.4 parts per million (Barney, 2002). Six Sigma seeks to optimize business processes in such a way that the standard deviation of a process is so small that any value within six standard deviations of the mean can be considered non-defective, in order to reduce the number of defects (Graafmans, Turetken, Poppelaars, & Fahland, 2020). Other approaches to a successful management system exist. However, the introduction of the Six Sigma method in the 1980s resulted in significant improvements, especially in the areas of reliability, service quality, and overall management (Ertürk, Tuerdi, & Wujiabudula, 2016). Six Sigma was initially used to improve industrial operations Currently, Six Sigma is use to improve marketing, purchasing, billing, invoicing, insurance, human resource and customer, the Six Sigma approach is also being used in call answering functions with the goal of constantly reducing defects throughout the organization's processes (Patil & Inamder, 2014). Define-Measure-Analyze-Improve-Control (“DMAIC”) is a Six Sigma framework, which is a very effective tool for the process of optimization, and is one of the most often used Six Sigma methodologies (Khandker & Sakib, 2018). In the context of Thailand, the application of Six Sigma is considerable. There are amounts of losses due to a high degree of defect in the wire harness tape manufacturing in Thailand. In order to continuously improve the wire harness tape manufacturing, the related techniques must first be applied as discussed above. The Six Sigma DMAIC is helpful in ridding any production’s wastes and defect. Moreover, there is no previous longitudinal research conducted that explores wire harness tape production based on Six Sigma DMAIC over a series of years. The company’s benefits and increased customer satisfaction would be possible to apply the Six Sigma quality control system. In this case study the DMAIC methodology was used to improve the wire harness tape manufacturing process. This study was performed based on data from internal customer complaints in a wire harness tape manufacturing in Thailand. In the weaving process, there was a problem with product quality, with non-standard fibers being woven into fleeces, which were frequently damaged by thickness, mixed wastes, lumps, and weight. Organizations need to implement quality control techniques and methodologies like DMAIC to achieve broad enhancements in quality, productivity and customer satisfaction, as well as cost reduction. One of the most critical concerns for wiring harness manufacturers is the elimination of critical quality defects such as fleece weight being too much or too little and mixed wastes. Not only does an organization waste its resources and time to re-check or re-work the products, but it also leads to the loss of customer satisfaction and trust. The research points out the potential value of distinguishing defects of wire harness tape quality.

Objectives

1. To determine and improve the defects of wire harness tape quality in the supply chain management in the wire harness tape company in Thailand.

2. To implement a six-sigma approach of DMAIC to identify process gaps and to measure performance improvement and offer practical strategies based on the findings.

Conceptual framework

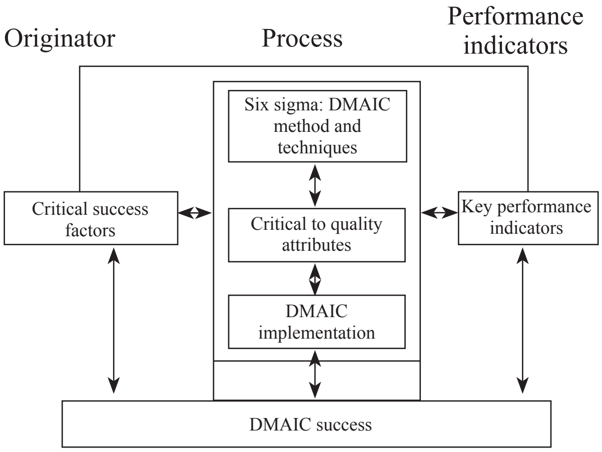


Figure 1 Conceptual framework

Research methodology

The objective of the project was to improve the quality of the product by eliminating or reducing the existence of the defects causing poor product quality with the purpose of achieving the quality advancement and meet the customer expectations. The main intention of this study was to reduce the defects, quality and productivity improvement by the application of Six Sigma using the DMAIC methodology in the process of product quality control in the wire harness tape operation.

1. **Collection methods**

1.1 This study is qualitative research using observation and semi-structured interviews of the production process and actual events in the manufacturing.

1.2 Brainstorming by managers, supervisors, QC operators.

1.3 The data sheets were obtained from the end line quality inspectors' record books from the wire harness tape production lines. Six Sigma DMAIC approach was implemented.

2. **Population and research sample**

The population in this study were wire harness tape and the samplings were data from reject production as a fleece fiber result of the QC process carried out by wire harness tape manufacturing. This study used data sheets collected for four months during August 2019 to November 2019. The research methodology is presented in the following sequences.

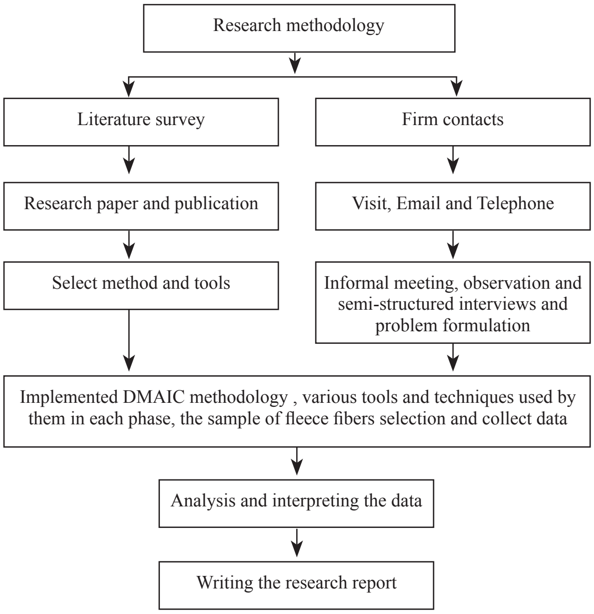


Figure 2 Research methodology

The implementation of the project conforms to the five phases of DMAIC. An illustration consists of the following.

Define: Define the process and opportunities for change from a company and consumer standpoint. The first step is to determine the customer (internal and external), analysis the voice of the customer to find out the service level, which are critical to their view of quality, called critical to quality (CTQ). Next step is performing an SIPOC (Supplier, input, process, output and customer) analysis to learn the suppliers to the operation under study, the inputs given by those suppliers, the production, and finally identifying the customers or market segments for the outputs at a very high level of abstraction of the process flowchart under analysis. The final stage is comprehensive process flow, which is similar to high-level process flow but maps each process segment in greater depth. Finally, state the issue, the scope of the project, and the team's objectives.

Measure: The issues, scope and objectives are set, next the need to follow by three measure stage; first set the performance indicators to measure, specify what needs to be calculated, with an emphasis on upstream leading steps. Next, collect base line data, this makes it clear how data will be collected and sets down definitions and procedures. Last, develop baseline performance measurement, this provides an evaluation of how the company's current process is performing. This will be compared to what happens when changes are made later. Therefore, the project team needs to validate the problem, refine problem and keep step input. With the help of pareto chart, control charts, SPC methods.

Analyze: Analyze's goal is to examine current data and identify root causes and opportunities for improvement. Determine true sources of variance and possible failure modes that lead to consumer dissatisfaction by identifying and validating root causes to ensure the removal of "actual" root causes. Understanding why defects have occurred, as well as comparing and prioritizing prospects for improvement in the future. To define and validate the problem's root causes, the project team will use data analysis methods and process analysis techniques. They are using different analyzing techniques like FMEA, cause and effect diagram, pareto chart, and processing mapping, affinity diagram, Ishikawa diagram.

Improve: The steps generate potential root-cause solutions, as well as define, analyze, and choose the best improvement options. Develop a change management strategy to help the company respond to the changes brought about by solution implementation. The goal of the improve stage is to find and implementation of solutions that will eliminate the causes of problems, reduce the variation in a process, or prevent a problem from recurring. So, the project team needs to develop ideas to remove root causes, test solutions, and standardize solution result. The use of quality tools are implemented like bar chart, histogram, pareto chart, brainstorming, ISO 9001:2015, and SOP.

Control: To comprehend the significance of preparing and executing against the strategy, as well as to decide the path to take in order to ensure the achievement of the desired outcomes. They use of control charts, create specifications, flow charts, check lists, and other tools to ensure continuity during the improvement process. As a result, they increase the sigma level for their specified projects after successfully implementing the DMAIC methodology (Sindha & Suthar, 2017).

Results

The project was directed to the area of production, from raw material receiving, warping, weaving, calico, heat treatment, inspection, sorting, packing, store, and delivery of the product. The operation, in which the improvement project was implemented, is a part of the production division of a wire harness tape plant with a long tradition. Wire harness tape from the production division is used in the automobile, engineering and construction industries, as well as in the production of white kitchen appliances. Meanwhile, the process of wire harness tape, starts with; fleece and yarn warping from a bobbin is synthetic and yarns are woven together, calico, the fabric is heat treated by Teneter Frame, after heat-treatment, the wire harness tape must have the required quality mechanical and physical properties inspection, sorting, store, and delivery to the customer. In operations, there was a problem with product quality, the weaving non -standard fibers, the fleeces were often degraded by thickness, mixed wastes, lumps, and weight. The phases in the DMAIC framework include define, measure, analyze, improve and control is performed via roadmap as shown in figure 3.

1. Define phase

The research began with a meeting in the company to discuss the problems. A thorough examination of the entire manufacturing process was conducted. The defined phases of a six sigma DMAIC model were used to identify the product quality characteristics which is critical to the customer (CTQs) in which the weaving process was selected as a process that requires improvement due to the high defect rate of fleece and high operations failure costs. If the fleece does not meet the requirement of an internal customer, it is returned to the previous processing stage for re-adjustment. The observation of the fabric tape production process found that wastes that occur in the production process will occur in the weaving process of fibers that do not meet the specified standards. Though, causing waste in the subsequent process, the Calico weaving machine could not weave raw calico, due to the tearing of the fleece or the waste while weaving into calico. Therefore, the study determined the acceptable waste levels at ± 3 6 from the acceptable level of original waste of ± 5 6. The alternative tool for the define phase was SIPOC (supplier, input, process, output, customer) analysis shown in figure 4. Goal definition: the goal of the project was to reduce the number of failed fleece quality from 6% to zero and to reduce the processing costs. Project implementation time was scheduled for 4 months, from August to November 2019.

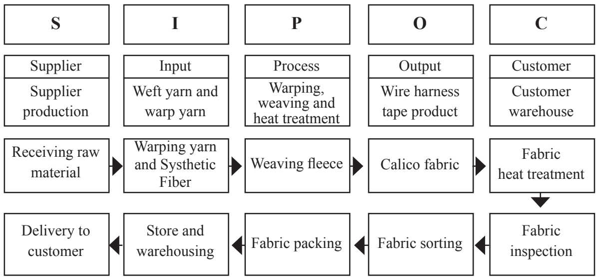


Figure 4 Supplier-Input-Process-Output-Customer Diagram of Wire Harness Tape

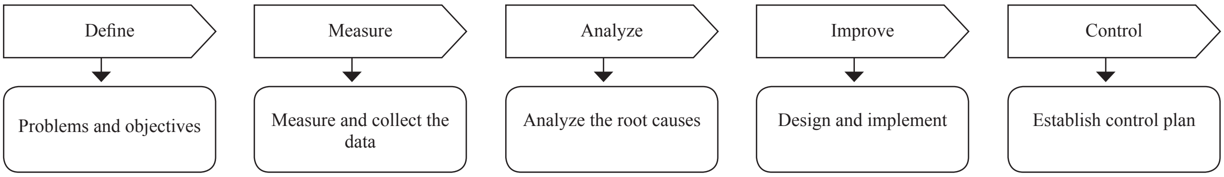
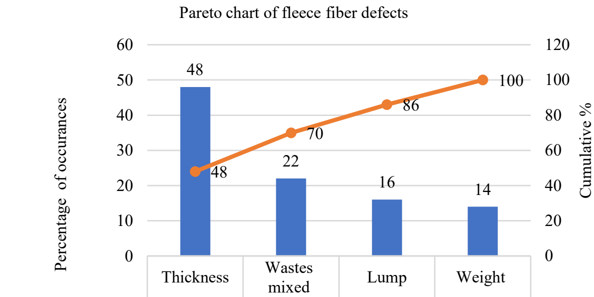


Figure 3 The stages of DMAIC methodologies

2. Measure phase

From the study, it was found that waste defects occurred in the weaving process. For the project implementation time was scheduled for 4 months, the fleeces in the fiber weaving department produced amounts of defects by on average of 6% per week. The Pareto chart is shown in figure 4, The collected data was obtained with a check sheet and researchers identified the fleece fibers defects as follows; thickness 48%, wastes mixed 22%, lumps 16% and weight 14%.



	Thickness	Wastes mixed	Lump	Weight
Defective %	48	22	16	14
Cumulative %	48	70	86	100

Figure 5 Pareto chart of fleece fibers defects

3. Analyze phase

Through the analysis phase, the affinity diagram performed with fourteen participants all with knowledge about the defect, working in two-shift and various positions, Problem Title: What is the cause of Wire Harness Tape Defects?", the result of the initiative defect analysis is shown in figure 5.

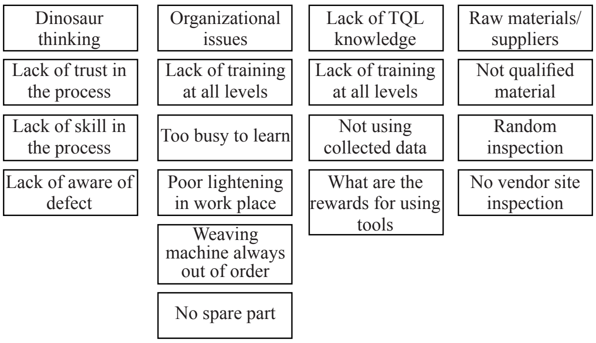


Figure 6 Potential causes as a results of affinity diagram

In order to display and classifies the practicable causes of the defect, a cause-and-effect diagram was constructed. The cause-and-effect diagram (Ishikawa Diagram) is known as a regularly questioning method for seeking the root causes of problems. The analysis of the Ishikawa Diagram signifies the potential causal linkages between the factors and the examined problem. It was essential to investigate the defined elements by observation and validate the root cause by logical analysis as shown in figure 7.

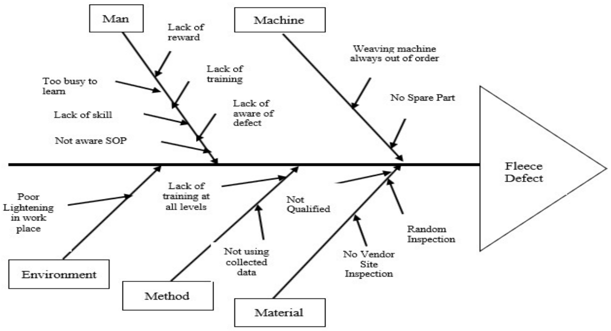


Figure 7 Ishikawa diagram-fleece defects

3.1 Man-Out of the 14 fleece causes of defects, 6 were from human error. To minimize errors and develop lost time caused by "the man", training is required for employees to work correctly and efficiently with minimizing waste time. The causal relationship of the employee with the fleece defect was revealed by observation. The employee was in an unsatisfactory technical skill condition. The lack of time management to learn new things, lack of proper skill training, no training for awareness and SOP. Employees do not understand how to do their work properly because there is little or insufficient teaching, and none of these objectives can be met. This leads to low morale among employees, which results in employee turnover, production defect and wastes. There were no announcements to recognize proper duties and no commitment to offer rewards. Hence, a lack of employee motivation and increase in fleece defects. It is usual for every employee to like having his or her achievements recognized by other employees. Even though personal satisfaction will come from meeting a predetermined goal, it is always more meaningful if the company is there to share the success.

3.2 Machine-The loom interruptions occurred because of various reasons and the regularity of such incidents determined the rate of loom suspensions. The opportunity of damaging the weft yarn is further influenced by the variations of environmental conditions and hence these conditions are highly responsible for the weft yarn tears during the weaving process. The loom frequently needs to be serviced by replacing the worn-out parts of machines. The production was affected when failure to find spare parts to fit the machines occured.

3.3 Environment-From the employees'' perspective, poor lighting at work affects health such as eye-strain, fatigue, headaches, stress, and accidents. Too much light can cause safety and health troubles such as “glare” causing headaches and stress. This can lead to faults at work, unsatisfactory quality and weak productivity. The psychological health benefits and welfare of employees should be reviewed in order to retain a long-term workforce.

3.4 Method-The production division, the failure of data utilization that causes inaccurate information in real-time. In addition, insufficiency in all levels of training.

3.5 Material-The current process flow chart showed that the warehouse received raw materials from suppliers without full inspection and delivery to production. No other preventive measures were in place and there were no qualified raw material flow in the production line such as random inspection. This indicates that the process requires an adaption and changes to add control and preventive measures to ensure that raw material match and are qualified for wire harness tape production division requirements. Current control was not enough to prevent the occurrence of defects indicated by the figure of 6% defects, meaning that traditional workflow cannot achieve a reduction in defects and cost - effectiveness targets.

4. Improve phase

The corrective action for the root causes problems were carried out at this stage. The root causes of many types of trouble have been identified, as well as solutions, as indicated in Table 1.

Table 1 no. 2 The root cause of problems and the comparison of improving process

The root causes of problems	Before improving process	Customer critical to quality (CTQs)	Operator method	After improving process
Man	- Human error in weaving process due to not enough training to work properly. - No employee motivation	The workers work properly and no production defect and wastes.	- The training and development of the quality awareness program of SOP, ISO system and CTQs. - The employee recognition program, the rewarding staff for the hard-work, rise profits for both parties.	- The worker has a deep understanding of the SOP, ISO system and CTQs. - Workers are more effective, their positive reaction when management presents appreciation for their great work or achievement.
Machine	The loom always breakdown and spare part shortage.	The machines utilization of 100% and increase productivity, effectiveness and efficiency.	Set up the preventive maintenance and routine schedule maintenance can reduce the looming break down and reduce waste in the weaving line.	Decreasing the looming breaks down and reduce waste in the weaving line. Moreover, the machines and equipment can expand the life of machines and scrap decreases and control dramatically.
Environment	Poor lighting effect to eye-strain, fatigue, headaches, stress, and accidents and too much light cause safety and health troubles.	A healthy and safe work environment.	Install blue-enriched light bulbs in meeting and/or recreation room.	Reduce fatigue and increase happiness and work efficiency.
Method	The production division, the failure of data utilization. It cause inaccurate information in real - time.	Friendly with big data analytics tools.	Establishing the big data tools.	The enhancement of quality levels and reduction quality-related expenditure, creates constant potential for optimization, cost saving, and preclusion, as long as the proper tools are accessible for data analysis.
Material	Yarn defect 6%. Yarn quality issues; no yarn full amount quality inspection in material supply chain by supplier, warehouse and production, and no other preventive method.	No defect and wastes, and quality assurance to achieve the AQL ± 3 6,	Established the system of value chain management and supplier relationship management with vendor site inspection plan and develop inspection test plans (ITPs).	Material defect reduction from 6% to 0%.

5. Control phase

Six Sigma uses five key philosophies to ensure products meet customers' requirements and have zero defects. After the implementation of these solutions into the operation, the results were tested and measured for one month. A significant decrease in the production defect category to zero defects in the fleece was achieved. Quality Assurance with quality control, however, ISO 9001:2015 works for businesses large and small and can be suitable to enhance operations. It provides the means for establishing a long-term quality assurance policy, ensuring that everything from raw materials to inspection procedures is of the highest quality. Issues and defects from unsatisfactory quality substances or third-party components are all but eliminated. The new methods become standardized in practice and lessons learned are documented :

5.1 Training of warping, weaving and calico operators on the appropriate standard operating procedure and on the new modified processes.

5.2 Training of maintenance technicians on the new modified processes and tool release process.

5.3 Update the control plan with the revised changes in the process.

5.4 Perform event case process release to ensure that warping, weaving and calico process is controlled and actions are maintained.

5.5 Reducing errors from humans and machines by creating checklists. The goal of establishing checklists was to verify that workers clean the working area and check conditions of safety equipment as well as routinely checking materials before starting work. Moreover, the setting of parts of the machine should be tested, fixed, and maintained after one order of production is finished, which usually takes one month. Therefore, the checklists were divided into 2 forms: daily machine checklist and monthly machine preventive maintenance checklist. Preventive maintenance should be used to investigate and report monthly about the problems. Then, the steps in DMAIC can be repeated to resolve new problems. To monitor and support the results, the management system at the company should allow and motivate leadership at each level to work together with the worker more, in order to examine difficulties in the production process and improve the documentation system.

Discussion

This paper presented a successful case study of defects reduction in wiring harnesses tape manufacturing processes by applying Six Sigma DMAIC methodology. Nowadays, Six Sigma is increasingly popular among organizations from different industries (Laureani & Antony, 2019). It emphasize is mainly on improving production procedures which increases the cost-effectiveness of the company. Achieving the Six Sigma levels demands from organizations an awareness of the reasons for processes variance, performing their study of cause and effect and the evaluation of their costs. The application of DMAIC, which is one of the tools of quality enhancement used in Six Sigma, can grow the effectiveness while properly reacting to the emerging problems First, the human problem was defined, human error, no motivation, not enough training. Employees' lack of experience, qualification, and expertise, as well as their predisposition, culture, and enthusiasm for work, all contributed to the production process's low efficacy. The employees were unaware that their everyday behaviors had a significant impact on the organization's overall performance. The absence of motivation for work was obvious due to the lack of a rewards system. (Smętkowska & Mrugalska, 2018). Then an improvement plan was constructed, it included training of SOP, ISO 9001:2015 and CTQs. Warinah & Nusraningrum (2019), addressed that the corrective activities, such as conducting training and revising SOPs, are used to try to improve the fault in the study and aim to lessen the quantity of imperfections in the assembly by utilizing the Six Sigma (DMAIC) strategy. Next, the problems with machines were defined such as the inappropriate condition of the machines causing them to breakdown and shortage of spare parts to fix the machines. The preventive maintenance, daily checking, and monthly scheduled maintenance will stop these issues from occurring. The research of Six Sigma DMAIC for machine efficiency improvement in a carpet factory by Phruksaphanrat & Tipmanee (2019), mentioned that the daily machine checklist and the monthly preventive maintenance of the machine should be used to analyze the problem and report on in monthly. Last, the raw material issue, the lack of full inspection, lack of vendor site inspection and not qualified products, those issues can prevent action by the system of value chain management and supplier relationship management with vendor site inspection planning. This was established through work arrangements with suppliers, obtaining production material procurement commitment, and assist employees in QC. Astini & Imaroh (2021) research used DMAIC with thermal bags and stated that the ISO 9001:2015 is the significant tool for implementation to ensure the company meets quality control and quality assurance.

Advantages from the DMAIC enforcement is overviewed as follows: filled the internal customer's requirement concern of delivering the product with the required quality to the following production departments, minimize and saving of costs associated with the re-adjusting of non-conforming products and take advantage in the field of safety and protection of employees. Not only on the qualitative degree but also on the usefulness on the economic and safety level can be achieved. At the end of the project deadline, the case study was able to achieve the desired reduction of 6% to zero defect rate. Finally, all types of assignable causes were able to be controlled by reducing defects and implementing continuous improvement processes. The findings of this study show that the DMAIC approach, which is based on the Six Sigma principle, can be used to increase output efficiency in the wiring harnesses tape industry. In dynamic manufacturing, top management must be aware of new concepts such as value chain management and supplier relationship management, which can increase customer satisfaction while lowering costs and risks. It also can be a guiding principle for fixing problems inside the manufacturing of wiring harnesses tapes in different factories. In addition, it can be used in the manufacture of other products.

Suggestions

Companies can increase quality control by strengthening raw materials, machines, and staff during the manufacturing process. The same technique is also used by the organization to explore and enhance other equipment. This case study will benefit practitioners who are dealing with inefficient machines or processes.

Future studies should devote more than 4 months to gain a deeper understanding of the problems in order to gain more insight into the importance of data collection for the purpose in DMAIC methodology. Furthermore, the next study should focus on human resource management theories such as motivation to work, why employees lack motivation, and how to motivate them. As these factors influence quality and performance, extend the TPM theory (total preventive maintenance) and the supplier relationship management theory. The findings of this study can be used to conduct additional research into increasing production quality while still being environmentally sustainable.

References

Ashton, T. S. (1948). *The Industrial Revolution (1760–1830).* London and New York: Oxford University Press.

Astini, N. K., & Imaroh, T. S. (2021). Implementation of Quality Control Thermal Bag Using the DMAIC Method (Case Study PT XYZ). *International Journal of Research and Review, 8*(2), 270-276.

Barney, M. (2002). Macro, meso, micro: Six Sigma. *The Industrial Organizational Psychologist, 39*(4), 104-107.

Board of Investment. (2018). *Thailand Textile Industry.* Retrieved August 4, 2021, from https://www.boi.go.th/index.php?page=business_opportunities_detail&topic_id=117531

Ertürk, M., Tuerdi, M., & Wujiabudula, A. (2016). The Effects of Six Sigma Approach on Business Performance: A Study of White Goods (Home Appliances) Sector in Turkey. *Procedia-Social and Behavioral Sciences, 229,* 444-452.

Graafmans, T., Turetken, O., Poppelaars, H., & Fahland, D. (2020). Process Mining for Six Sigma. *Business & Information Systems Engineering, 63*(3), 277-300.

Grand View Research. (2020). *Textile Market Growth & Trends.* Retrieved August 4, 2021, from https://www.grandviewresearch.com/industry-analysis/textile-market

Khandker, S., & Sakib, T. U. (2018). DMAIC Approach for Process Improvement: Improving Fabric Width Shrinkage of basic T shirt. *International Conference on Mechanical, Industrial and Energy Engineering 2018 23-24 December, 2018,* Khulna, BANGLADESH.

Laureani, A., & Antony, J. (2019). Leadership and lean six sigma: A systematic literature review. *Total Quality Management & Business Excellence, 30*(1-2), 53-81.

Patil, A. B., & Inamder, K. H. (2014). Process Improvement Using DMAIC Approach: Case Study in Downtime Reduction. *International Journal of Engineering Research and Technology, 3*(3), 1930-1934.

Phruksaphanrat, B., & Tipmanee, N, (2019). Six sigma DMAIC for machine efficiency improvement in a carpet factory. *Songklanakarin Journal of Science and Technology, 41*(4), 887-898.

Smętkowska, M., & Mrugalska, B. (2018). Using Six Sigma DMAIC to Improve the Quality of the Production Process: A Case Study. *Procedia - Social and Behavioral Sciences, 238,* 590-596.

Sindha, N., & Suthar, K. (2017). Review on Implementation of Six Sigma DMAIC Methodology in Manufacturing Industries. *International Journal of Science Technology & Engineering, 3*(8).

Warinah, W., & Nusraningrum, D. (2019). Application of Six Sigma (Dmaic) Method to Reduce Defect Amount in Assembly Process A Case Study PT. XYZ. *International Humanities and Applied Science Journal, 2,* 59-60.

Journal of Multidisciplinary in Social Sciences (May - August 2021), 17(2): 48-59

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

The Determinants of Cloud Computing Adoption in the Banking System: A Case Study of Myanmar's Banks

Sandy Aye & Rawin Vongurai*

Innovative Technology Management, Graduation School of Business and Advanced Technology Management, Assumption University, 10240 Thailand

Article info

Article history:
Received: 8 July 2021
Revised: 20 August 2021
Accepted: 30 August 2021

Keywords:
Cloud computing, Technology adopting, Banking system, TOE framework

Abstract

Many organizations are shifting towards cloud computing to facilitate customer transactions, hence cloud computing has become an interest to multiple banks in the financial sector. The purpose of this research is to examine the determinants of cloud computing adoption in the banking system of two selected banks in Myanmar. The research framework with three hypotheses was developed based on the theories and previous research studies. First- and second-order technique was applied to investigate the causal relationships between the variables in different perspective of technology context, organization context, and environmental context. Multi-stage sampling technique was applied by using probability and non-probability sampling method to nominate a representative target population for quantitative research. Stratified random sampling was firstly employed to proportionately divide the target population to two commercial banks in Myanmar and purposive sampling was used to reach the target respondents who worked relatively with the cloud systems. The samples were collected from 770 respondents via offline questionnaires distribution. Confirmatory factor analysis (CFA) and structural equation model (SEM) were conducted to examine the data, confirm goodness-of-fit and validity of the model, and testing the hypotheses. The results have indicated that environmental context has the highest influence in determining cloud computing adoption in the banking system, followed by organization context and technology context. Therefore, it is important for the bank owners and top management to acquire knowledge and trends of banking industry in order to develop a cloud-based infrastructure that best react and competitive to the marketplace in an instant.

Introduction

Today, cloud computing has become widely discussed in the technology field. Cloud computing is a new technology that enables the users to maintain computer resources without the needs to buy or possess infrastructure and computer hardware (Bien, Bien, & Madiraju, 2009). Since 2007, the flexibility of cloud computing technology became well-known and a hot topic (Wang & Laszewski, 2008). To solve the growing problems of computing and data storage, cloud

* Corresponding Author
e-mail: rawinvng@au.edu

computing technology has been adopted by various sectors such as research institutes, governments, and industrial leaders (Foster, Zhao, Raicu, & Lu, 2008).

The banking sector relies on information technology (IT) for many of its operations. The industry applies IT to meet customer demand, gain a competitive advantage, or increase in transaction volume. In the 21st century, many organizations are shifting towards cloud computing to facilitate customer transactions, such as money transfers from various parts of the country. As a result, cloud computing has become of interest to multiple banks in the financial sector. Cloud computing is defined as a model or system for on-demand web access, convenience (US National Institute of Standards and Technology, 2011), or enabling wide configurable sharing of computing applications with less effort and interactions with counterparty (Mell & Grance, 2011). The characteristics of cloud computing include service measurement, elasticity, resource pooling, broad network access, and on-demand self-service (Mell & Grance, 2011). It is crucial to identify challenges that impede the adoption processes such as associated risk factors and regulations.

Innovation in Myanmar's banking industry can promote customer satisfaction, the attraction of clients, and retention. Hence, adopting cloud computing is critical in boosting economic growth and the delivery of financial services. Besides, the advantages of cloud computing, various factors hinder the adoption process in Myanmar. Munguti & Opiyo (2018) highlighted the technological factors in adoption could include complexity, compatibility to the existing systems, and the relative advantage. Technical compatibility entails the ability to integrate cloud services with existing infrastructure, which may pose challenges to some financial institutions in Myanmar. They might also include perceived benefits to the organization, such as establishing critical linkage with other banks to improve access to information. The environmental aspects that can determine the cloud computing adoption include pressure from the trading partners and competition from other firms (Munguti & Opiyo, 2018). In the bank sector, institutions can gain popularity or prestige over other competitors from the adoption of advance IT infrastructure. As a result of the competitive pressure, some banks may outsource cloud computing systems to meet customer demands and improve on effectiveness.

The potential for implementing cloud computing is evident. However, there is a lack of adequate research conducted in regard to factors that can influence the adoption process in Myanmar's banking industry. Myanmar's banking sector is one of the world's most underdeveloped sectors that cannot effectively perform its role or meet the consumer’s desire for rapid and responsive economic development (Berger, 2016). World Bank (2018) stated that there are infrastructure gaps in Myanmar, evidenced by the inability to meet electrical power requirements as well as limited fixed-line internet connections. Gutierrez, Boukrami, & Lumsden (2015) highlighted some of the factors that influence a manager's decision in the adoption process which are competitive pressure, technology readiness, complexity, and pressure from trading partners. Additional factors may involve the need to co-create, customize, enhance service linkage, and adhere to legal regulation in Myanmar's banking sector. Potential challenges may include a lack of standardized procedures for cloud computing in the banking industry. Additional obstacles encompass the shortage of skilled resources that is either professional IT workers or appropriate equipment. Strengths in the adoption process may entail strong political will and support from the Myanmar government on digital investment in the financial sectors. As advantages and challenges on cloud computing adoption remain vital for the banking sector, these concerns should always be well addressed for successful adoption. There is inadequate evidence that supports the significant determinants affecting the cloud computing adoption in the industry of banking, especially banks in Myanmar. Therefore, this research can provide a reference to banks adopting cloud computing in order to frame appropriate change management strategies and prevent monetary losses from implementation failure.

In order to examine the determinants of cloud computing adoption in banking system of two selected banks in Myanmar, theoretical frameworks and previous literature were reviewed and a proposed research framework. The key factors used were based on Diffusion of Innovation (DOI) theory, Technology, Organization, Environment (TOE) framework (Tornatzky & Fleischer, 1990) for innovative technology environment in an organization level and merged with the Technology Acceptance Model (TAM) (Davis, 1989) to consider the potential determinants and its significance of affect. TOE framework and TAM are mostly used for the study of technology adoption at the organizational level (Awa, Ukoha, Bartholomew, & Emecheta, 2015). The factors include technology context of relative advantage, compatibility, complexity, and security, organization context of top management support, technology readiness, and benefit, environment context of competitive pressure and trends, and adoption of cloud computing consisting of perceived usefulness and perceived ease of use.

The technology context means the internal and external innovation or technology that the organization provides or is likely to adopt (Apanasevic, 2013; Baker 2011). The technology aspect includes the internal and external forces of the organization adopting a particular technology. Jeyaraj, Rottman, & Lacity (2006) found relative advantages, complexity, and compatibility in the independent technology are mostly weigh when adopting a technology within organizations. Several previous research have discussed the fields of new technologies, market expectations, and security in these changing environments (Tuncay, 2010). The previous studies have recommended four technological characteristics when researching the determinants of cloud computing adoption: relative advantage, compatibility, complexity, and security. Relative advantage is described as the extent to which a technological factor is perceived as offering more benefit for the organization (Rogers, 1983). The degree to which a technological context is an advantage more than its drawbacks defines its relative advantage for organizations (Kuan & Chau, 2001). Research evidence seems to suggest that new technology adoption is more feasible once the organization feels that these technologies have a relative advantage (Mohammadi, Saeedikondorib, & Azman Bin Alia, 2017; Sayginer & Ercan, 2020). Kuan & Chau (2001) defined compatibility as the level of consistency between the innovation and the usage behaviors of the individual and/or the current value system. Compatibility was regarded as a key factor in adopting innovation (Macredie & Mijinyawa, 2011; Wang, Wang, & Yang, 2010). Complexity means the extent of understanding complexity and the use of new innovative technologies (Gangwar, Date, & Ramaswamy, 2015). For cloud computing, complexity defined as the extent to which its use and interpretation are considered as a challenge (Tehrani, 2013). Security is defined as a range of policies, processes, and standards to ensure information security in a cloud-based environment (Shin, 2009; Wu, Lan, & Lee, 2011; Nkhoma & Dang, 2013). Security has been described as how much a consumer believes it's risk-free to use cloud services (Armbrust, Fox, Griffith, Joseph, Katz, & Konwinski, 2010).

The organizational characteristics that encourage the adoption and implementation of new technology are organizational contexts (Rogers, 1995). In cloud computing adoption, organizational characteristics are vital in the decisions making (Tan, 2010). Organizational influences may impact the purpose of the new technology adoption in hospitals (Chang, Hwang, Yen, & Lian, 2006; Hsiao, Li, Chen, & Ko, 2008). Chang, Chou, & Ramakrishnan (2009) found that the top manager's support influences on cloud computing adoption. As well as technology readiness that was tested in various research as part of new technology adoption in the organization (Singh & Mansotra, 2019; Gutierrez, Boukrami, & Lumsden 2015; Low, Chen, & Wu, 2011). Moreover, benefit of the technology was tested in the research of Lian, Yen, & Wang (2014); Seham (2017) as organization context. McKinnie (2016) found that the benefits of cloud computing can be impacted by the cloud service model in manufacturing. From the review of previous research, the organizational characteristics considered in this study are top management support, technological readiness, and benefit. Top management support is considered essential for organizations when seeking to establish a supportive environment and the appropriate resources required for cloud services (Low, Chen, & Wu, 2011). The higher degree of support from top management, the greater innovative behavior would benefit the organization's values (Jaruwanakul, 2021). Top management support is defined if managers understand and respect the cloud computing technology adoption. Top management support has an important role in introducing, implementing, and adopting cloud computing (Gupta, Seetharaman, & Raj, 2013; Parasuraman, 2000). Technology readiness is the ability of the company to use new techniques in relation to technological infrastructure, transformation, and human resources (Awa, Ukoha, Bartholomew, & Emecheta, 2015). The readiness of technology is critical for determining the innovative adoption in a firm, and it is regarded as an inhibitor or a decision-maker (Oliveira, Thomas, & Espadanal, 2014; Wang & Qualls, 2007). Benefit is defined as advantages gained from using the cloud computing software to improve operations (Gewald & Dibbern, 2009; Benlian & Hess, 2011). Ghalimi (2010) states that there are three aspects of benefits gained from cloud computing: (1) reduce technology costs by shifting technology expenses to operational costs from the capital investment; (2) enhance the end-user experience; and (3) cloud computing offers organizations the opportunity to focus on their core competencies. In the research by Ali, Soar, Yong, & McClymont (2015), benefits are the most significant factor that relatively leads to cloud computing adoption.

Laforet (2011) has defined environment as the organization's environment that implicitly influences the motivation or the adoption of innovation. The cloud computing adoption can be the result of pressure and encouragement by the environment of the organization. Competitive pressure is one of the factors mostly studied in many research under the Technology, Organization, Environment (TOE) framework. A significant number of previous studies have addressed emerging technologies, the security requirements, and the demands of these developing environments in cloud computing. A recent survey showed that the changing trend and other cloud service such as higher opportunities of technology adoption compared to larger organizations influences have a high impact on SMEs (Misra & Mondal, 2011). Trends were found to affect the cloud computing innovation in technological development strategy. Apart from trend, competitive pressure was noted as a main driver on technology adoption. The intensity of competitive pressure can motivate the organization to seek for alternative technology enhancement (Maqueira-Marín, Bruque-Cámara, & Minguela-Rata, 2017). Environmental context takes into consideration the specific environment in which the company operates its business, including the market and service providers (Feuerlicht & Govardhan, 2010). Competitive pressure is defined as the level of competition by other companies from the same industry (Low, Chen, & Wu, 2011). Competition thus improves the chances for the adoption of innovation (Oliveira & Martins, 2011). This competitiveness can play an important role in adopting the innovation, especially when technology has a prescribed impact on competition (Li, Sedayao, Hahn-Steichen, Jimison, Spence, & Chahal, 2009). Trends is defined as businesses are constantly trying to incorporate business processes into their current systems and develop internet-based technologies to communicate with a trading partner from a business perspective (Tuncay, 2010). The adoption of cloud computing is becoming an important research focus since it allows organizations and value chain operations to perform data transactions (e.g., finance, including manufacturing, customer service, distribution, sales, collaboration with trading partners, and information sharing) (Gartner, 2009). By outsourcing such services to a cloud service provider, the IT infrastructure costs, and operating overheads are often reduced in maintaining and managing these services (Armbrust, Fox, Griffith, Joseph, Katz, & Konwinski, 2010).

Adoption of cloud computing means “the cloud” which consists of software and services that are in charge of a local computer or server network that remain and operate on the Internet. Cloud adoption is a business approach to develop the capabilities of Internet-based systems and reduce costs and risks (Tafoya, 2020). Considering one of the few studies, Bhatiasevi & Naglis (2015) have analyzed cloud computing adoption in the context of developing countries with the extended Technology Acceptance Model (TAM). According to TAM, perceived usefulness, and perceived ease of use motivate the positive attitude of the users to accept and intent to adopt new technology (Chuleeporn, 2014; Kitcharoen & Vongurai, 2021). Perceived usefulness of cloud computing adoption is defined as the extent that the person thinks that using the technology help improves task performance. This is an important factor because consumers are willing to adopt cloud computing when they perceive that cloud services can boost their organizational productivity, profitability, and productivity (Senk, 2013). Perceived usefulness of cloud computing adoption can be focusing on performance improvement, profitability, flexibility in work, and efficiency. Cloud services are more likely to be adopted by enterprises if they understand all the benefits of cloud solutions (Venkatesh & Davis, 2000). Perceived ease of use is how much the person considers it would be effortless to use a particular system. It is essential for users to research information technology response because it has been shown to affect the use of a specific technical purpose or motivation (Chuleeporn, 2014). Perceived ease of use will contribute to direct collaboration and service, which lessens mental effort in the use and the capability to carry out tasks according to the requirements of an organization.

Objectives

1. To determine the causal relationship and significance of affect between technology context, organization context, environment context, and the adoption of cloud computing in the two selected banks in Myanmar.

2. To provide insights to practitioners on determinants of decision for banks to adopt cloud computing for banking system in this case study

Conceptual framework

The conceptual framework proposed in this research derived from well-known theoretical frameworks in this area of study, which are Diffusion of Innovation (DOI) theory established by Rogers (1995), Technology Acceptance Model (TAM) by Davis (1989) and the Technology, Organization, Environment (TOE) framework developed by Tornatzky & Fleischer (1990). Seventeen variables from theoretical frameworks were developed to formulate a conceptual framework of researching the adoption of cloud computing, which is shown in Figure 1.

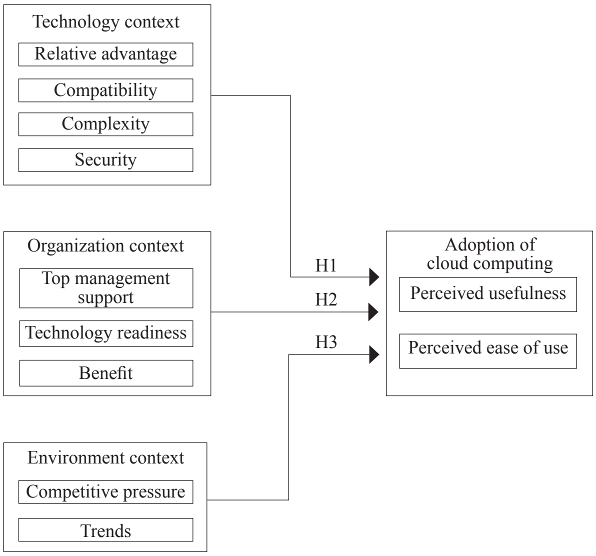


Figure 1 Conceptual framework

Research methodology

The research used quantitative methods and multi-stage sampling in nominating target population. Based on previous research in cloud computing adoption, measurement items were developed to collect empirical data on cloud computing adoption of two banks in Myanmar. The use of previously validated measurement items enhances the reliability of latent constructs and provides a guide for comparison with other studies (Straub, 1989). In certain situations, measurement items had to be adapted for cloud computing. The measurement items are measured using a five-point Likert scale (5 = Strongly Agreed, 4 = Agreed, 3 = Neutral, 2 = Disagreed, and 1 = Strongly Disagreed). Additionally, questions on general information and demographic factors were added for details of the respondents. Reliability test was conducted from 50 respondents by using Cronbach's Alpha values prior to questionnaire distribution to 770 target respondents from two banks in Myanmar. The collected data was then used to analyze Confirmatory Factor Analysis (CFA) to verify the convergence validity and measurement model, and Structural Equation Model (SEM) to examine the causal relationship of each variable and support the hypotheses proposed.

1. Population and sample size

The research focused on the banking system in Myanmar. Two banks were selected for population as they are the only commercial banks in Myanmar that currently employ cloud computing technology in their operations (Lwin, 2020; Microsoft Asia News Center, 2018). The sample unit were at the individual level and the group of people who worked relatively with the cloud systems of the bank. Hair, Black, Babin, Anderson, & Tatham (2006) suggested a minimum sample size of 150 to 400. According to the website of Soper (2006), A-priori Sample Size Calculator for SEMs has recommended a sample size of 342 from setting the number of latent variables at 4, number of observed variables at 11 and probability level at 0.05. As the samples will be collected from two selected banks, sample size for this study was determined approximately doubled and decided to collect at 770 samples. The sample size exceeded the recommended sample size.

2. Sampling technique and data collection

Multi-stage sampling technique was applied by using probability and non-probability sampling method in nominating a representative target population. Multi-stage sampling is the selection of target group by using two or more stages of sampling methods (Onwuegbuzie & Leech, 2007). Stratified random sampling of probability sampling method was applied in the first stage to proportionately divide the target population into two commercial banks in Myanmar that currently employ cloud computing technology in their operations (Microsoft Asia News Center, 2018) as shown in Table 1. Then purposive sampling of non-probability sampling method was applied to reach the target respondents of employees who have been working relatively with the cloud systems of the bank. Data was collected using questionnaires that were handed out offline by the HR department of the selected banks in Myanmar. Therefore, convenience sampling was employed for any respondents who were willing to answer the questionnaires distributed by the HR department. The questionnaires were completed and returned at 770 sets.

Table 1 Size of population and sample by bank

Bank	Approximate size of population (Employee)	Proportionate size of sample
Bank A	18,000	523
Bank B	8,500	247
Total	**26,500**	**770**

Source: KBZ Bank (2021); Wikipedia (2020)

3. Pilot test

To assess the reliability of constructs in research, Cronbach's alpha is used as the statistical method. Cronbach's alpha or coefficient alpha or ∞-test the reliability or internal consistency. According to Mohsen & Reg (2011), Cronbach's alpha value higher than or equal 0.9 is excellent, between 0.9 and 0.8 is good, and between 0.8 and 0.7 is acceptable. The results of the pilot test shown in Table 2 indicates that all constructs are reliable with coefficient alpha values ranging from 0.710 to 0.915.

Results

1. Demographic factors

The respondents were more female compared to male, representing 52.3% and 47.7%. For the age of the respondents, 60% were 21 to 29 years old, 28.6% were 30 to 39 years old, 8.3% and 3.1% were 40 to 49 years old and over 50 years old, respectively. Majority of the respondents, 80.4% were single and only 19.6% were married. As for the highest level of education, 0.8% were postgraduate and majority of the respondents had a bachelor graduate (61.3%). The remaining 8.4%, 10.5% and 15.7% were college graduate, master, diploma and others were 3.2%. For Monthly income, 32.6% were below MMK 500,000, 30.9%earned between MK 500,001 – 1,000,000, 14.3% earned MMK 1,000,001 – 1,500,000, 8.6%, 4.9% and 8.7% earned MMK 1,500,001 – 2,000,000, MMK 2,000,001 – 2,500,000 and more than MMK 2,500,000, respectively. 45.7% of the respondents worked in banks 2 to 5 years, 28.1% worked in banking industry for less than 2 years, 15.7% were between 6 to 8 years and 10.5% worked in the industry over 9 years.

2. Confirmatory factor analysis (CFA)

Confirmatory factor analysis (CFA) was conducted to study the model's causal relationship that could determine the cloud computing adoption in the banking system in Myanmar. The sufficiency of items for the constructs and the number of dimensions in the empirical research model can be verified through CFA (Bollen, 1989). Also CFA was conducted with 11 dependent variables to measure the fit of data to the empirical study (Jørgensen, Boer, & Laugen, 2006). To assess the validity of the model, there are two major types of construct validity which are convergent and discriminating (Hair, Black, Babin, & Anderson, 2010). This research also applied the Second Order Factor Analysis Technique with weight factor estimation to determine the goodness of fit indices. The research has further considered the Chi-square statistics, GFI (Goodness of fit index), AGFI (Adjusted Goodness-of-Fit Index), NFI (Normed Fit Index), TLI (Tucker-Lewis index), CFI (Comparative fit indices), RMR (Root Mean Square Residual) and RMSEA (Root mean square error of approximation) for four measurement models: Technology Context, Organization Context, Environment Context and Adoption of Cloud, and Overall Measurement Model.

Based on the first- and second-order confirmatory factor analysis, the factor loadings of 12 indicators were ranged from 0.729-0.941 and were found significant at $t>1.96$. Convergent validity was tested by using composite reliability (CR) and average variance extracted (AVE). Convergent validity used for the findings of the constructs are related to other items that measure the same construct or carry a high proportion of variance (Pallant, 2020). The value of both composite reliability and average variance extracted varies from 0 to 1. The result of composite reliability was ranged from 0.838-0.928 which met the acceptable value of 0.60 (Hair, Black, Babin, Anderson, & Tatham, 2006). Hence, all the constructs are adequate for further analysis. The values of average extracted value were 0.565-0.865 which also exceeded 0.5 for adequate convergent validity (Hair, Black, Babin, Anderson, & Tatham, 2006). The summary of the factor loadings, CR and AVE are shown in Table 2.

Table 2 Confirmatory factor analysis (CFA), Composite reliability (CR), and Average variance extracted (AVE)

Second-order factor	First-order factor	Source of questionnaire (Measurement Indicator)	Cronbach's alpha	Standardized loading	CR	AVE
	Relative advantage (RA)	**Moore & Benbasat (1991)**	0.740	0.748	0.838	0.565
Technology context (TC)	Compatibility (CPA)	Kiriinya (2014)	0.828	0.793		
	Complexity (CPX)	Kiriinya (2014)	0.885	0.734		
	Security (SET)	Chellappa & Pavlou (2002)		0.836	0.729	
Organization context (OC)	TopManagement support (TMS)	Kiriinya (2014)	0.710	0.819	0.869	0.688
	Technical readiness (TR)	Sigh & Mansotra (2019)	0.826	0.803		
	Benefit (BFIT)	Lo´pez-Nicola, Molina-Castillo, & Bouwman (2008)	0.773	0.865		
Environmental context (EC)	Competitive pressure (CP)	Kiriinya (2014)	0.902	0.877	0.880	0.786
	Trend (TRD)	Kiriinya (2014)	0.907	0.896		
Adoption of cloud computing (ACC)	Perceived usefulness (PU)	Davis (1989); Venkatesh & Davis (2000)	0.750	0.941	0.928	0.865
	Perceived ease of use (PEOU)	Davis (1989); Venkatesh & Davis (2000)	0.915	0.919		

Note: Composite reliability (CR); and Average variance extracted (AVE)

Discriminant validity is described as the extent to which the variables empirically differ from one another. It also assesses the extent to which the overlapping constructs differ from one another. Discriminant validity is measured by using the Fornell-Lacker criterion. The square root of the average variance extracted (AVE) was compared to the correlation of latent constructs in this method. The variance of a latent construct's own indicator should be explained better than the variance of other latent constructs. Therefore, the correlations with other latent constructs should be lower than the square root of each construct's AVE. Discriminant validity results were established and shown in Table 3.

Table 3 Inter-construct correlation and discriminant validity

Constructs	Correlations			
	TC	**OC**	**EC**	**ACC**
TC	**0.752**			
OC	0.702	**0.829**		
EC	0.719	0.810	**0.887**	
ACC	0.703	0.783	0.804	**0.930**

Note: The square root of each construct's AVE is on the diagonal.

The final measurement model had met the fit indices of CMIN/DF = 2.981, GFI = 0.937, AGFI = 0.924, NFI = 0.961, TLI = 0.965, CFI = 0.965, RMR = 0.012, RMSEA = 0.048 as shown in Table 4.

3. Structural equation model (SEM)

A statistical methodology of SEM takes a confirmatory method to test the causal relationship in structural equations (Byrne, 2010). Grace, Schoolmaster, Guntenspergen, Little, Mitchell, Miller, & Schweiger

Table 4 Model fit indices

Goodness-of-fit indices	Criterion	Measurement model	Structural model
χ^2/df	<3 (Hair, Black, Babin, & Anderson, 2010)	2.981	2.738
GFI	≥0.90 (Bagozzi & Yi, 1988)	0.937	0.922
AGFI	≥0.90 (Segars & Grover, 1993)	0.924	0.919
NFI	≥0.90 (Hair, Anderson, Tatham, & Black, 1998)	0.961	0.921
TLI	≥0.90 (Hopwood & Donnellan, 2010)	0.965	0.925
CFI	≥0.90 (Gefen, Straub & Boudreau, 2000)	0.965	0.924
RMR	<0.05 (Hair, Black, Babin, Anderson, & Tatham , 2006)	0.012	0.046
RMSEA	<0.05 (Browne & Cudeck, 1993)	0.048	0.045

Note: Chi-square statistics, GFI (Goodness of fit index), AGFI (Adjusted Goodness-of-Fit Index), NFI (Normed Fit Index), TLI (Tucker-Lewis index), CFI (Comparative fit indices), RMR (Root Mean Square Residual) and RMSEA (Root mean square error of approximation).

(2012) also mentioned that structural equation model describes the setting of hypotheses relying on the relationship between cause and effect. The model was conducted and after modified the result showed the overall fit indices, CMIN/DF = 2.738, GFI = 0.922, AGFI = 0.919, NFI = 0.921, TLI = 0.925, CFI = 0.924, RMR = 0.046, RMSEA = 0.046 in the Table 4. The modified structural model to achieved model fitness is illustrated in Figure 2.

4. Research hypothesis testing

The research conducted SEM analysis in order to find the determinants of cloud computing adoption which consist of technology context, organization context and environmental context. R square value, known as the coefficient of R^2 determination represent the proportion of variation in the dependent variable. It indicates the amount of variance in the construct that is explained by the variables (Henseler & Sarstedt, 2012).

The summary of the hypothesis testing result was established as shown in Table 5 and the results of structural model is presented in Figure 2. All proposed hypotheses were supported at the significant level at p = 0.05 and the variation of cloud computing adoption can be explained by all independent variables at 68.9%.

Table 5 Hypothesis testing result

Hypothesis	Standardized coefficients (B)	t-value	Result
H1: TC→ACC	0.326	9.783*	Supported
H2: OC→ACC	0.420	13.323*	Supported
H3: EC→ACC	0.562	17.846*	Supported

Note: *Significant at p-value, p<0.05.

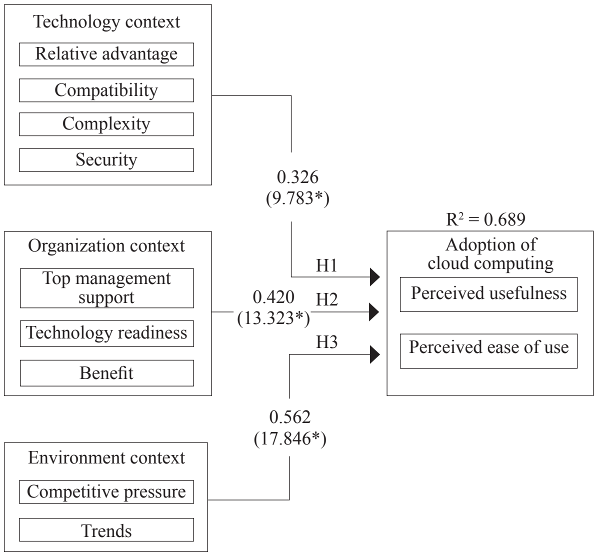


Figure 2 The results of structural model
Note: *Significant at p-value, p<0.05.

H1: There is a casual relationship between technology context and adoption of cloud computing in the banking system. H1 is supported with the standardized path coefficient of 0.326 and t-value of 9.783 between technology context and adoption of cloud computing. Technology context was mainly driven by the compatibility of cloud computing, which indicates that the consistency of cloud computing with current value systems and employee's usage behavior are vital to the adoption, hence in line with the studies of Macredie & Mijinyawa (2011) and Wang, Wang, & Yang (2010).

H2: There is a casual relationship between organization context and adoption of cloud computing in the banking system. H2 is supported with the standardized path coefficient of 0.420 and t-value of 13.323 between organization context and adoption of cloud computing. From the results, organization context was greatly characterized by the benefits gained from using the cloud computing in order to improve banking operations (Gewald & Dibbern, 2009; Benlian & Hess, 2011).

H3: There is a casual relationship between environmental context and adoption of cloud computing in the banking system. H3 is supported with the standardized path coefficient of 0.562 and t-value of 17.846 between environmental context and adoption of cloud computing. Environmental context has the highest affect in adopting cloud computing which the respondents have characterized this context as a trend. This result can prove the studies of Tuncay (2010); Gartner (2009) that cloud computing is becoming an important aspect of IT infrastructure in order to enable the banks to perform data transactions, communicate and collaborate with their trading partner and value chains.

Discussion

In the study, the authors aimed to study the determinants of cloud computing adoption in the banking system in Myanmar. The questionnaires were distributed offline by the HR Manager of the bank at the headquarter office, and 770 questionnaires were completed and returned. The proposed research framework was developed from various theories and empirical research. The factors included in the proposed framework were relative advantage, compatibility, complexity and security as the first-order constructs of technology context, top manger support, technical readiness and benefit as first-order constructs of organization context, competitive advantage and trend of environmental context and lastly, perceived usefulness and perceived ease of use as the first-order constructs for adoption of cloud computing. The confirmatory analysis was conducted to ensure the reliability and validity of each construct. Furthermore, the structural equation model (SEM) was applied to carry hypothesis testing and results of the study.

In summary, all contexts of technology, organization, and environmental are determinants of cloud computing adoption in the banking systems. Hence, the results have proven the theory of TOE framework that these three contexts have a critical influence on technology adoption in an organization (Tornatzky & Fleischer, 1990). Compatibility and complexity are the characteristics of technology context that are important for determining the innovation adoption as studied by Rogers (1995) in Diffusion of Innovation (DOI) theory. Also perceived usefulness and perceived ease of use are the significant factors that can represents the acceptance of the adoption of the technology according to TAM.

The most affecting factor is environmental context which are prioritized by the characteristics of trend and competitive pressure. The banking sector heavily relies on information technology for huge transactions retention, enabling broad network access, and facilitating customer transactions (Mell & Grance, 2011). Therefore, in order to gain or maintain competitive advantage, continuous development of innovation and IT is essential (Li, Sedayao, Hahn-Steichen, Jimison, Spence, & Chahal, 2009). The second impacting determinant to the cloud computing adoption is organization context. The respondents have prioritized the characteristics of this context as benefits, top management support and technical readiness. By adopting the new innovation or technology, advantages should be recognized by the banking employees in helping improve their daily operational tasks (Gewald & Dibbern, 2009; Benlian & Hess, 2011) and also customers to earn their satisfaction from using the banking services. When cloud computing is perceived as a benefit, support from top management is important to make it happen, ranging from the improvement of IT infrastructure and people for technology readiness (Oliveira, Thomas, & Espadanal, 2014; Tornatzky & Fleisher, 1990) to introducing to implementing the technology (Parasuraman, 2000). The least affecting factor is technology context, which is characterized by compatibility, relative advantage, complexity, and security. This could imply that when there is a business environment pressure on adopting a new innovation that were also perceived as beneficial to operations, technology constraints are unavoidable to overcome or timely resolved in order to compete in the market.

Suggestions

The result of this study has found various factors are critical to determine the cloud computing adoption. The main critical factors were technology, organization and environmental contexts. The most influential factor from the research finding was the environmental contexts. It is important for the bank owners and top management to have a well-round knowledge of the banking industry, including its trends and not only in Myanmar, but on the global banking industry. This would allow the management to react and compete in the marketplace instantly or innovate technology that serves the customer needs and satisfaction. Employing the right technology or cloud-based infrastructure to support bank operations and customers may result to company values and a competitive advantage. Organization context is also important. it is considered as the internal factor that the bank owner should emphasize to convey the advantages of cloud computing and providing sufficient resources and support to employees to allow efficient work performance. Hence, the advantages and ease of use of cloud computing should be ensured and promoted both to customers and the bank employees in order to persuade the cloud computing adoption.

Limitation and further study

The research focused on the cloud computing adoption in the banking system in Myanmar. Therefore, the study has some limitation which can be discovered for further study in other countries. The result may not be applicable to the internet banking, mobile banking and mobile wallets. The study focused on the analysis of data consolidated from two selected bank, which each bank might have different opinions that led to different results. Further research is suggested to better understand the organization context and environmental context that has resulted into the most significant driver for cloud computing adoption.

References

Ali, O., Soar, J., Yong, J., & McClymont, H. (2015). Exploratory study to investigate the factors influencing the adoption of cloud computing in Australian regional municipal governments. *Journal of Art Media and Technology, 1*(1), 1-13.

Apanasevic, T. (2013). Obstacles to investments in mobile payments: The perspective of merchants: Work in progress. In *CMI International Conference on Developing the future ICT infrastructure-technologies, markets, and policies,* Copenhagen: Aalborg University Copenhagen,

Armbrust, M., Fox, A., Griffith, R., Joseph, A. D., Katz, R., & Konwinski, A. (2010). A view of cloud computing. *Communications of the ACM, 53*(4), 50-58.

Awa, H. O., Ukoha, O., Bartholomew, O., & Emecheta, C. (2015). Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for E-commerce adoption by SMEs. *Journal of Science and Technology Policy Management, 6,* 76-94.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74-94.

Baker, J. (2011). The technology-organization-environment framework. In *Y. Dwivedi, M. Wade, & S. Schneberger (Eds), Information Systems Theory: Explaining and Predicting Our Digital Society* (pp. 231-246). New York, NY: Springer.

Benlian, A., & Hess, T. (2011). Opportunities and Risks of Software-as-a-Service: Findings from a Survey of IT Executives. *Decision Support Systems, 52*(1), 232-246.

Berger, R. (2016, September 20). *Myanmar Banking Sector 2025: The Way Forward.* Retrieved November 29, 2020, from https://www.rolandberger.com/Sv/Media/Myanmar-Banking-Industry-2025.html.

Bhatiasevi, V., & Naglis, M. (2015). Investigating the structural relationship for the determinants of cloud computing adoption in education. *Education and Information Technologies, 21*(5), 1197-1223.

Bien, D., Bien, W., & Madiraju, P. (2009). The impact of cloud computing on web 2.0. *Economy Informatics Journal, 9*(1), 1-8.

Bollen, K. A. (1989). *Structural Equations with Latent Variables.* John Wiley & Sons, Inc.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In *Bollen K.A. and Long J.S. (Eds.), Testing structural equation models* (136-162). Newbury Park, CA: Sage.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). England, UK: Routledge.

Chang, H. H., Chou, P. B., & Ramakrishnan, S. (2009, October). An ecosystem approach for healthcare services cloud. In *2009 IEEE international conference on e-business engineering* (608-612). IEEE.

Chang, I. C., Hwang, H. G., Yen, D. C., & Lian, J. W. (2006). Critical factors for adopting PACS in Taiwan: Views of radiology department directors. *Decision Support Systems, 42*(2), 1042-1053.

Chellappa, R. K., & Pavlou, P. A. (2002). Perceived information security, financial liability and consumer trust in electronic commerce transactions. *Logistics Information Management, 15*(5/6), 358-368.

Chuleeporn, C. (2014). Students' Perceptions of Cloud Computing. *Issues in Information Systems, 15*(1), 312-322.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-339.

Feuerlicht, G., & Govardhan, S. (2010). *Impact of cloud computing: beyond a technology trend.' Proceedings of the International Conference on Systems Integration.* (pp.1–8). Oeconomica Prague

Foster, I., Zhao, Y., Raicu, I., & Lu, S. (2008). Cloud computing and grid computing 360-degree compared. In *Grid computing environments workshop.* (pp 1-10) IEEE

Gangwar, H., Date, H., & Ramaswamy, R. (2015). Understanding determinants of cloud computing adoption using an integrated TAM-TOE model. *Journal of Enterprise Information Management, 28,* 107-130.

Gartner, (2009). *Gartner report ―Top 10 Strategic Technologies for 2010, Oct 2009.* Retrieved November 29, 2020, from http://www.gartner.com/it/page.jsp?id=1210613

Gefen, D., Straub, D., & Boudreau, M. (2000). Structural Equation Modeling And Regression: Guidelines For Research Practice. *Communications of the Association for Information Systems, 4*(7), 7.

Gewald, H., & Dibbern, J. (2009). Risks and Benefits of Business Process Outsourcing: A Study of Transaction Services in the German Banking Industry. *Information and Management 46*(4), 249-257.

Ghalimi, I. C. (2010). *Benefits of Cloud Computing.* Retrieved November 29, 2020, from https://www.scribd.com/document/65379756/Benefits-of-Cloud-Computing

Grace, J. B., Schoolmaster, D. R., Guntenspergen, G. R., Little, A. M., Mitchell, B. R., Miller, K. M., & Schweiger, E. W. (2012). Guidelines for a graph-theoretic implementation of structural equation modeling. *Ecosphere, 3*(8), 1-44.

Gupta, P., Seetharaman, A., & Raj, J. R. (2013). The usage and adoption of cloud computing by small and medium businesses. *International Journal of Information Management, 33*(5), 861-874.

Gutierrez, A., Boukrami, E., & Lumsden, R. (2015). Technological, Organizational and Environmental Factors Influencing Managers' Decision to Adopt Cloud Computing in the UK. *Journal of Enterprise Information Management, 28,* 788-807.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis* (5th ed.). Upper Saddle River: Pearson Prentice Hall.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate Data Analysis* (6th ed.). Upper Saddle River: Pearson Prentice hall.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis: A Global Perspective* (7th ed.). London, Pearson Education.

Henseler, J., & Sarstedt, M. (2012). Goodness-of-fit indices for partial least squares path modeling. *Computational Statistics, 28*(2), 565-580.

Hopwood, C. J., & Donnellan, M. B. (2010). How should the internal structure of personality inventories be evaluated?. *Personality and Social Psychology Review, 14*(3), 332-346.

Hsiao, S. J., Li, Y. C., Chen, Y. L. & Ko, H. C. (2008). Critical Factors for the Adoption of Mobile Nursing Information Systems in Taiwan: The Nursing Department Administrators' Perspective. *Journal of Medical Systems, 33*(5), 369-377.

Jaruwanakul, T. (2021). Key influencers of innovative work behavior in leading Thai property developers. *AU-GSB e-Journal, 14*(1), 61-70.

Jeyaraj, A., Rottman, J. W., & Lacity, M. C. (2006). A review of the predictors, linkages, and biases in IT innovation adoption research. *Journal of Information Technology, 21*(1), 1-23.

Jørgensen, F., Boer, H., & Laugen, B. T. (2006). CI Implementation: An Empirical Test of the CI Maturity Model. *Creativity and Innovation Management, 15*(4), 328-337.

Kiriinya, D. (2014). *Factors Influencing Cloud Computing Adoption in Organisations: A Case of Cooperative Insurance Company of Kenya* (Doctoral dissertation). United States International University-Africa.

Kitcharoen, K., & Vongurai, R. (2021). Factors influencing customer attitude and behavioral intention towards consuming dietary supplements. *AU-GSB e-Journal, 13*(2), 94-109.

Kuan, K. K. Y., & Chau, P. Y. K. (2001). A perception-based model for edi adoption in small businesses using a technology-organization-environment framework. *Information & Management, 38*(8), 507-521.

Laforet, S. (2011). A framework of Organisational innovation and outcomes in SMEs. *International Journal of Entrepreneurial Behaviour and Research, 17,* 380-408.

Li, H., Sedayao, J., Hahn-Steichen, J., Jimison, E., Spence, C., & Chahal, S. (2009). *Developing an Enterprise Cloud Computing Strategy.* Retrieved November 29, 2020, from https://www.researchgate.net/publication/263658917_Developing_an_Enterprise_Cloud_ Computing_Strategy.

Lian, J. W., Yen, D. C., & Wang, Y. T. (2014). An exploratory study to understand the critical factors affecting the decision to adopt cloud computing in Taiwan hospital. *International Journal of Information Management, 34*(1), 28-36.

Lo´pez-Nicola, C., Molina-Castillo, F. J. & Bouwman, H. (2008). An assessment of advanced mobile services acceptance: contributions from TAM and diffusion theory models. *Information & Management, 45*(6), 359-364

Low, C., Chen, Y., & Wu, M. (2011). Understanding the determinants of cloud computing adoption. *Industrial Management & Data Systems, 111*(7), 1006-1023.

Lwin, N. (2020). Huawei extends cloud services to Myanmar as firms go digital. Retrieved November 29, 2020, from https://www.irrawaddy.com/news/burma/huawei-extends-cloud-services-myanmar-firms-go-digital.html

Macredie, R.D., & Mijinyawa, K. (2011). A theory-grounded framework of open source software adoption in SMEs. *European Journal of Information Systems, 20*(2), 237-250.

Maqueira-Marín, J. M., Bruque-Cámara, S., & Minguela-Rata, B. (2017). Environment determinants in business adoption of cloud computing. *Industrial Management and Data Systems, 117*(1), 228-246.

McKinnie, M. (2016). *Cloud Computing: TOE Adoption Factors By Service Model In Manufacturing* (Doctoral Dissertation). Georgia State University, Atlanta, Georgia.

Mell, P., & Grance, T. (2011). The NIST definition of cloud computing (draft). *NIST special publication, 800*(145), 7.

Microsoft Asia News Center. (2018). *AYA Bank embraces cloud and embarks on digital transformation journey with Microsoft.* Retrieved November 29, 2020, from https://news.microsoft.com/apac/2018/08/30/aya-bank-embraces-cloud-and-embarks-on-digital-transformation -journey-with-microsoft/

Misra, S. C., & Mondal, A. (2011). Identification of a Company's suitability for the adoption of cloud computing and modeling its corresponding return on investment. *Mathematical and ComputerModelling, 53,* 504-521.

Mohammadi, A., Saeedikondorib, A., & Azman Bin Alia, N. (2017). *Factors influencing cloud computing adoption in Malaysian information technology companies.* School of Business and Economics. Retrieved November 29, 2020, from https://econ.upm.edu.my/content/factors_influencing_cloud_computing_adoption_in_malaysian_information_technology_companies-35609

Mohsen, T., & Reg, D. (2011). Making Sense of Cronbach's Alpha. *International journal of Medical Edcation, 2,* 53-55.

Moore, G.C., & Benbasat, I. (1991) Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192-222.

Munguti, S., & Opiyo, E. (2018). Factors influencing the adoption of cloud computing in software development companies in Kenya. *International Academic Journal of Information Systems and Technology, 2*(1) 126-144.

Nkhoma, M., & Dang, D. (2013). Contributing factors of cloud computing adoption: a technologyorganization-environment framework approach. *International Journal of Information Systems and Engineering, 1,* 38-49.

Oliveira, T., & Martins, M. (2011). Literature review of information technology adoption models at the firm level. *Electronic Journal of Information Systems Evaluation, 14*(1), 110-121.

Oliveira, T., Thomas, M., & Espadanal, M. (2014). Assessing the determinants of cloud computing adoption: An analysis of the manufacturing and services sectors. *Information & Management, 51*(5), 497-510.

Onwuegbuzie, A. J., & Leech, N. L. (2007). A call for qualitative power analyses. *Quality & Quantity, 41*(1), 105-21.

Parasuraman, A. (2000). Technology readiness index (tri): a multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research, 2*(4), 307–320.

Pallant, J. (2020). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS.* England, UK: Routledge.

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). New York: Free Press.

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York: Free Press.

Sayginer, C., & Ercan, T. (2020). Understanding determinants of cloud computing adoption using an integrated diffusion of innovation (DOI) technological, organizational and environmental (TOE) model. *Humanities & Social Sciences Reviews, 8*(1), 91-102.

Segars, A., & Grover V. (1993). Re-examining perceived ease of use and usefulness. *MIS quarterly, 17,* 517-525.

Seham, S. (2017). Factors Influencing the Adoption of Cloud Computing by Saudi University Hospitals. *International Journal of Advanced Computer Science and Applications, 8*(1), 41-48.

Senk, C. (2013). Adoption of security as a service. *Journal of Internet Services and Applications, 4*(11), 1-16.

Shin, D. H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior, 25*(6), 1343-1354.

Singh, J., & Mansotra, V. (2019). Factors affecting cloud computing adoption in the Indian school education system. *Education and Information Technologies, 24*(4), 2453-2475.

Soper, D. (2006). *Calculator: A-priori Sample Size for Structural Equation Models*. Retrieved November 29, 2020, from https://www.danielsoper.com/statcalc/calculator.aspx?id=89

Straub, D. W. (1989). Validating Instruments in MIS Research. *MIS Quarterly, 13*(2), 147.

Tan, T. C. F. (2010). A perception based model for technological innovation in small and medium enterprises. *Paper presented at 18th European Conference on Information Systems (ECIS),* Pretoria, South Africa.

Tafoya, F. (2020). *What is Cloud Adoption and Why is it Important?*. Retrieved November 29, 2020, from https://www.itexico.com/blog/what-is-cloud-adoption

Tehrani, S. R. (2013). *Factors influencing the adoption of cloud computing by small and medium sized enterprises (SMEs)* (Master's thesis). Canada: Ryerson University.

Tornatzky, L. G., & Fleischer, M. (1990). *Processes of technological innovation.* Lanham, MD: Lexington Books.

Tuncay, E. (2010). Effective use of cloud computing in educational institutions. *Procedia: Social and Behavioral Science, 2*(2), 938-942.

US National Institute of Standards and Technology. (2011). *The NIST definition of cloud computing.* Retrieved November 29, 2020, from https://www.nist.gov/news-events/news/2011/10/final-version-nist-cloud-computing-definition-published

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science, 46*(2), 186-204.

Wang, L., & Laszewski, V. (2008). Cloud computing: a perspective study. Retrieved November 29, 2020, from https://ritdml.rit.edu/bitstream/

Wang, Y., & Qualls, W. (2007). Towards a theoretical model of technology adoption in hospitality organizations. *International Journal of Hospitality Management, 26*(3), 560-573.

Wang, Y. M., Wang, Y. S., & Yang, Y. F. (2010). Understanding the determinants of RFID adoption in the manufacturing industry. *Technological Forecasting and Social Change, 77,* 803-815.

Wikipedia. (2020). *Ayeyarwady Bank.* Retrieved November 29, 2020, from https://en.wikipedia.org/wiki/Ayeyarwady_Bank

World Bank. (2018). *Myanmar: Investment analysis and investigation options for the proposed digital government project.* Retrieved November 29, 2020, from https://documents.worldbank.org/en/publication/documents-reports/documentdetail/528481530162210035/myanmar-investment-analysis-and-implementation-options-for-digital-government-project

Wu, W. W., Lan, L. W., & Lee, Y. T. (2011). Exploring decisive factors affecting an organization's SaaS adoption: a case study. *International Journal of Information Management, 31*(6), 556-563.

Journal of Multidisciplinary in Social Sciences (May - August 2021), 17(2): 60-72

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

Guidelines for Enhancing Early Childhood Teacher Preparation and Development in Higher Education Institutions in Thailand

Phornchulee Lungka[a]* Sittiporn Iamsen[a] Wilailak Langka[b] Nisarat Issaramanorose[a] Pornluck Intamra[a] Poonyawee Chiropasworrapong[a] & Ua-aree Janthon[a]

[a] *Faculty of Education, Suan Dusit University, Bangkok, 10300 Thailand*
[b] *Faculty Education, Srinakharinwirot University, Bangkok, 10110 Thailand*

Article info

Article history:
Received: 13 July 2021
Revised: 19 August 2021
Accepted: 30 August 2021

Keywords:
Guidelines, Early childhood teacher, Higher education institutions

Abstract

This research aims to study the preparation and development of early childhood teachers in Thai higher education institutions. Overall, the study established the guidelines and the policy proposals for enhancing the “preparation and development” of early childhood teachers in Thai higher education institutions; following the Standard of the National Early Childhood Development Institution. Both quantitative and qualitative data were collected with relevant groups and stakeholders in the process of preparation and development of early childhood teachers in 4 regions, the data were conducted in 2020. The participants were (1) Administrators or lectures, accountable for producing early childhood teachers, in the higher institutes in 4 regions, (2) Students in Early Childhood Education Programs, (3) School authority, mentors, student teachers, (4) Graduated in Early Childhood Education Programs, (5) Representatives from 4 relevant Ministries, (6) Early Childhood Teachers in different affiliations, (7) Senior experts in policymaking, and (8) Specialist in early childhood teacher preparation and development. The research tools included interviews, group discussions, data record forms, and the questionnaires of management and organising learning experiences for early childhood development according to the Standard of the National Early Childhood Development Institute. The qualitative data analysis was made using content analysis. The quantitative data were analyzed by descriptive statistics and inference statistics using One Way ANOVA statistical analysis, the correlation analysis, and confirmatory factor analysis (CFA). The results of the research revealed that early childhood teacher preparation conditions of higher education institutions in Thailand can be classified into 8 areas. The findings revealed that early childhood teachers in different affiliations had developed relevant knowledge, understandings and strengthening the competency in organising activities for early childhood development. However, there are several challenges facing the teachers to meet the requirements.

* Corresponding Author
e-mail: poundy40@hotmail.com

Introduction

Early childhood is an essential age for the foundation for national development. As it is an important period to build a strong bedrock for human life and a foundation for the country's development and growth in many areas. At the present, the Thai government places a priority on early childhood development by launching the Early Childhood Development Act 2019, which is presented in Section 1, Unit 5 on Early Childhood Development. It states that "Early childhood education encompasses the physical, emotional, social and intellectual development and cultivate a good manner, moral character, ethics, and build a good conscious for young children. Meanwhile, teachers or caregivers must be knowledgeable and skillful, and obtain a good attitude towards early childhood development". Besides, several researchers indicated that children aged 0-6 years can develop their learning rapidly; since their brain undergoes rapid growth. Providing high quality and consistent educational support, therefore, can create a significant fundamental experience for learners to be equipped with skills for their future learning.

"Early childhood teacher" generally has an important mission and role in the development of early childhood ages to become a quality citizen. This is in agreement with the country's intention, as shown in in the Early Childhood Development Act 2019, Chapter 4 on Early Childhood Development, Section 23, paragraph 1, requiring "To produce or develop teachers in early childhood development, the educational institutions need to provide; teaching and learning to strengthen the spirit of being a teacher, having a morality, ethics, knowledge, skills, and ability to stipulate the teaching and learning to supervise and develop young children following the principles and philosophy of early childhood development". Also, the "teacher preparation" can ensure the education quality and the continuity of early childhood development in the Child Development Center, especially, the role of teachers/caregivers to provide education and play experiences to promote the holistic early childhood development. Besides, the Office of the Education Council and the relevant organization who are involved with the early childhood development, have made; the documentation and manual to indicate the standard and direction for the high quality for the teachers/caregivers in Early Childhood Development Center in public and private sectors; and teaching profession institutes inputs or key variables into the educational management process following their roles in producing and developing "early childhood teacher" to maintain the educational quality and standard as required.

Currently, there are various higher education institutions that offer courses in early childhood education. It offers programs ranging from certificate, diploma, bachelor's, master's, to doctorate degrees in a variety of locations throughout the region; in a public university, autonomous university, Rajabhat University, the educational institutions of the private sector, and community college. The number of early childhood education courses account for more than 50% of all higher education institutions; under the Ministry of Higher Education, Science, Research and Innovation. According to the Office of the Education Council (2019), statement in the Executive Summary that the current teacher preparation systems had a lack of a mechanism to monitor and assess quality, such as a large application of early childhood teachers that effects the ratio of the teachers to the number of students and the efficiency in teaching. As the early childhood teacher development process cannot be done only with lectures but also the requirement of professional experience training. In addition, the teacher development system is lacking in clarity and there is no direct response agency that can provide guidelines and supports, as well as the Teacher Development Curriculum and Methods are fairly in species with school contexts and the needs of the teachers. As a result of the reports, there is a concern in society about the quality and standard of early childhood teacher's preparation and development in higher education institutions. So that, the relevant agencies, especially in the government sector, need to provide guarantees for the parents and society to be confident that all children will be taken care of with high education quality; and with qualified teachers thoroughly.

For this reason, the researchers are intended to carry out the study of the "preparation and development" of early childhood teachers in all types of Thai higher education institutions in 4 regions. The study focused on the current conditions of teacher preparation and development in higher education institutions on the relevant issues such as the curriculum, quality of the early childhood institution, instructors, and students in early childhood education program, and the teaching development, etc. The aim for the research findings is to aid in the analyses for the path to success, the relevant problems and challenges and the formulation of guidelines for enhancing the preparation and development of early childhood teachers, as well as, creation of the policy proposals to identify and promote the preparation and development of early childhood teachers to meet the Standard of National Early Childhood Development Institution.

Objectives

1. To study the preparation and development of the early childhood teacher in Thai higher education institutions.
2. To formulate guidelines for promoting the preparation and development of early childhood teacher in Thai higher education institutions following the Standard of the National Early Childhood Development Institution.
3. To formulate the policy proposal for the preparation and development of early childhood teachers in Thai higher education institutions following the Standard of the National Early Childhood Development Institution.

Conceptual framework

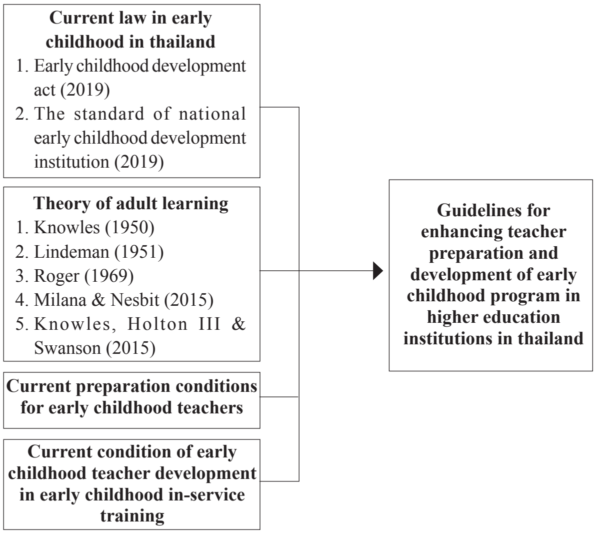


Figure 1 Conceptual framework

Research methodology

1. Research participants

1.1 The number of participants

1.1.1 Administrators or lectures, accountable for producing early childhood teachers, in the higher institutes in 4 regions from State Universities, Private Universities, Rajabhat Universities, and Community Colleges in total 20 participants

1.1.2 Students in Early Childhood Education Programs, in total 20 participants

1.1.3 School authority, mentors, student teachers, in total 15 participants

1.1.4 Graduated in Early Childhood Education Programs, in total 20 participants

1.1.5 Representatives from 4 relevant Ministries, in total 4 participants

1.1.6 Early Childhood Teachers in different affiliations, in total 8,534 participants

1.1.7 Senior experts in policymaking, in total 5 participants

1.1.8 Specialist in early childhood teacher preparation and development, in total 5 participants

1.2 Sampling method

1.2.1 Simple random sampling was used in the selection of early childhood teachers in different affiliations to complete the questionnaire of management and organising learning experience for early childhood development according to the Standard of the National Early Childhood Development Institute.

1.2.2 Purposive Sampling was used in the selection of senior experts in policymaking in early childhood education and specialist in early childhood teacher preparation and development to interview and join group discussion.

2. Research instruments

2.1 There were 3 instruments used in this research which were interview forms, focus group discussion topics and questionnaire forms. Three instruments are detailed as follow;

2.1.1 Interview form which was the semi-structured interview form regarding issues of state and problems of preparation and development of early childhood teachers in Thai education institutions;

2.1.2 Focus group discussion topic which question about preparation and development of early childhood teachers in Thai education institutions;

2.1.3 Two questionnaires with a 5-rating scale (1) questionnaire of preparation and development of early childhood teachers in Thai education institutions and (2) questionnaire of management and organising learning experience for early childhood development according to the Standard of the National Early Childhood Development Institute.

2.2 The procedure of developing research instruments

2.2.1 Set goals, scope, and the key ideas for the development process of learner and the scope of research tools including interview forms, topics for group discussion, and questionnaires.

2.2.2 Research the relevant documents about the preparation conditions and the development of early childhood teachers of higher education institutions including the Early Childhood Development Act 2019 and the Standards of the National Early Childhood Development Institution. Review basic information about the current situation of early childhood teacher preparation and development in Thai higher education institutions and define the terminology of the variables to be measured

2.2.3 Formulate the definitions and terms from the study in stage 2 and point out the relevant topics/issues for group discussion and questions in the questionnaire following the definition of the variables.

2.2.4 Examine and test the interview questions, scripts, and topics for group discussion for validity. This process was done by the experts to check the language expressions of the text appropriation, whether the questions/scripts/issues are completed within the framework of the definition.

2.2.5 Three specialists tested the content validity in finding the correlation between the research questions and definitions and using the Index of Item Objective Congruence (IOC). The result showed that interview forms, focus group discussion topics and questionnaires were marked with 0.67-1.00 of IOC.

2.2.6 Bring the pre-determined interview questions and scripts and topics for group discussion to collect data in the local research settings.

3. Collection of data

3.1 Researching and gathering information, concepts, theories and principals from the relevant documents and literature about the teacher preparation and development in higher education institutions; both in Thailand and internationally. As well as, researching the Early Childhood Development Act 2019 (B.E. 2562) and the Standard of National Early Childhood Development Institution to review the literature and collect preliminary information on the current conditions and situations for preparation and development of early childhood teachers in Thai higher education institutions.

3.2 Establishing a framework for analyzing ‘the preparation” and “the early childhood teacher’s development” in Thai higher education institutions and defining issues for analyzing data in terms of quality, efficiency, and success in implementation including possible problems and challenges.

3.3 Conducting data collection with participants by asking for permission to conduct the study was sought from Suan Dusit University and other universities, Office of the Private Education Commission (OPEC), Bangkok Metropolitan Administration (BMA), the Local Government Organization (DLA), and the Office of the Private Education Commission (OPEC) in Thailand.

3.4 The data were collected by using, the semi-structured interview form, the focus group discussion topic, and the questionnaires. The research team organized the field study to collect the qualitative data from 79 participants. The interview and focus group discussion were conducted several times in different target groups. Whereas the questionnaires were shared by the link of google form to collect data, the relation between research instruments and participants is shown in Table 1.

Table 1 Research instrument and participants conducted in the research

Research instrument	Participants	The number of participants
1. The semi-structured interview form	1) Administrators or lectures, accountable for producing early childhood teachers, in the higher institutes in 4 regions from State Universities, Private Universities, Rajabhat Universities, and Community Colleges	10 participants
	2) Representatives from 4 relevant Ministries	4 participants
2. Focus group discussion topic	1) Students in Early Childhood Education Programs	20 participants
	2) School authority, mentors, student teachers	15 participants
	3) Graduated in Early Childhood Education Programs	20 participants
	4) Senior experts in policymaking	5 participants
	5) Specialist in early childhood teacher preparation and development	5 participants
3. Questionnaire of preparation and development of early childhood teachers in Thai education institutions	Administrators or lectures, accountable for producing early childhood teachers, in the higher institutes in 4 regions from State Universities, Private Universities, Rajabhat Universities, and Community Colleges	20 participants
4. Questionnaire of management and organising learning experience for early childhood development according to the Standard of the National Early Childhood Development Institute	Early Childhood Teachers in different affiliations	8,534 teachers

4. Data analysis

The researcher team analysed the quantitative data using the following statistics:

4.1 Descriptive statistics including mean and standard deviation,

4.2 Inference statistics using One Way ANOVA statistical analysis,

4.3 The content analysis was used for analysing interview and focus group data.

Results

The results of the research are discussed as follows:

1. Current preparation conditions for early childhood teacher preparation.

The teacher preparation conditions in the teacher institutes had been improved by adjusting the curriculum; according to the changes in society and the impact of external circumstances. The curriculum development focused on producing teachers in new traits that highlight the results-oriented dimensions, evolve into highly-qualified teachers, and raise the awareness of the teachers' dignity following the Teaching Profession Standards. Moreover, student teachers must have the ability to provide a learning experience and develop learners to be good, knowledgeable, inquisitive, skillful, and professional. They are also anticipated to obtain positive attitudes towards the profession careers and to have awareness of morality and ethics following Professional Ethics; and to be omniscient, adaptive and have awareness of the way to develop themselves sustainably to build confidence and faith in the professional practice; as well as to work efficiently with others to meet the Professional Standards and Educational Competencies. In consideration of teacher preparation conditions in higher education institution in Thailand, it can be classified into 7 areas as follows;

1.1 Curriculum for early childhood teacher preparation

Considering, the average number of credits of 139-141 for the four-year curriculum of Teacher Preparation. This included an average of 63 credits for Core modules, 42 credits for Teaching Professions modules, 30 credits for General modules, and 6 credits for Optional modules. According to the new Four-Year Curriculum, which had one year less than the previous curriculum, it is required the institutions to adjust the courses and integrate education with professional instructors to help students learn the skills they need for their careers optimally. Some institutions had adjusted the curriculum to fit with the changes in society and some had reorganised the curriculum with more major and minor subjects to provide a wide-range of knowledge and expertise to meet the needs of the social changes in the world today.

1.2 Management of the early childhood education curriculum

The role and responsibilities of faculty members in the Early Childhood Education Curriculum were similar in each university. The instructors shared the responsibilities in each area clearly including academic work, teacher placement training, student's activities, quality assurance, the research work, and the personal tutor for the yearly advisor. Generally, the main teaching workload for instructors in the early childhood education programs was quite large: approximately 15-18 hours per week. As well, there were additional tasks such as project work, research, practice placement supervision, and other workload in faculty and university. For admission, the student's admission system in institutions are supported by the TCAS system to select a student. Meanwhile, there were "Teacher Rak Tin" another way of admission, that offers scholarship for students for Early Childhood education program. Generally, the admission was carried out by interviewing and there are additional examinations such as the English tests and some specific subject tests required by each institution.

1.3 Information about teacher's preparation institutes

Overall, the oldest teacher training institute was established 114 years ago and the most recent institute was established about 14 years ago. On the one hand, the oldest early childhood teacher training institute was founded approximately 80 years ago while the latest institute was founded recently for one year. Each institute was well-organised in providing learning support, activities, laboratory, language rooms, libraries, teaching laboratories, and the demonstration school as the placement platform. Moreover, the institutes usually obtained a cooperative network in both governmental and non-government organisations, communities, municipalities, and universities where they offer substantial grants, subsidies, or educational scholarships.

1.4 Instructor information

The overview of instructor information demonstrated the average number of early childhood staff which were approximately six people in the institute. Among these numbers, the instructors who obtained

Ph.D. degrees accounted for 27.66%, those who obtained master's degrees made up 72.34%. The data showed that the participants had an average of 13 years of working experience. They carried out three research projects/ person on average and they averagely published two academic papers/person in the past five years. The overall strengths of teachers in early childhood education reflected the good points in teamwork, the comprehension, and cooperation of projects/development for project efficiency. On the other hand, the participants reflected the weakness of the instructor role which was the promotion for academic titles. There were still a number of faculty staff who have not applied for the academic titles which indicated the need for the development of member staff in the early childhood program to apply for the academic position, develop research and pursue a doctoral degree.

1.5 Student Information

The average number of early childhood students from 2017-2020 tended to increase gradually in each year. On the one hand, the average number of early childhood students in each institute was; 67 first-year students, 62 second-year students, 59 third-year students, 40 fourth-year students, and 78 fifth-year students.

1.6 Issues in early childhood teacher preparation

The issues of teacher preparation institutes are focused on three aspects consisting of (1) student aspects: it was revealed that the students decided to choose to study in an early childhood education as it is the easiest fields compared to other educational areas. Some students did not want to be teachers but their decisions were influenced by their families. Some student teachers did not hold a qualification as a teacher. Therefore, the student came to study in ECE with different perspectives such as the aptitude in teaching professions, family's background and the accessibility to the technology (2) teacher aspects: it was found that the workload of teachers in early childhood education program was quite high in almost all institutions. As a small number of instructors compared to the number of students along with the other tasks such as researching, quality assurance, student development project activities, academic services and some other faculty and university duties. Some institutions reflected a shortage of early childhood teachers due to the number of qualified graduate's teachers are relatively few and some institutions revealed the lack of quality of teachers with educational management for Four-Year Curriculum of Teacher Preparation and (3) learning support aspects: it was found that there were lack of training books and textbooks for teacher development supported by faculty and university. In terms of teaching placement, it was reported that there are a small number of network schools where they are qualified and have similar prospects and visions in providing early childhood education with the teaching institutions.

1.7 Factors affecting early childhood teacher preparation

Factors affecting the preparation of early childhood teachers were divided into 4 areas: (1) teacher factors consisted of the quality of the teachers (knowledge, competence, academic status, academic standing and educational qualifications) and teacher workload (2) Learner factors consisted of learner quality (attitude, motivation, learning goal) the ability to develop their ability through various activities and the economic status of learners (3) Curriculum and teaching factors consist of media, technology, materials, teaching equipment, documents / books / textbooks / researches, learning resources / educational institutes with quality-placement training , and the funds for teaching and learning (4) Social and economic factors and social values such as the expectations of parents who desire their offspring to serve in the teacher service following the changes in government policies; to reform the quality of teacher preparation system; a decrease in demands for graduates; and the impact of the coronavirus outbreak (Covid-19).

1.8 Ways to success and the conditions of early childhood teacher development in early childhood development institutions.

The path to success in early childhood teacher preparation is as follows: (1) the cooperation of all parties involved in the development and preparation of the curriculum for early childhood teacher; including the university, faculty of education, early childhood education program, and the stakeholders who work with teachers and the network schools (2) teacher preparation institutes develop their strengths according to their identity and expertise of teachers to fully develop students to expand their teaching abilities and potentials; and (3) the supportive and extracurricular activities should be provided by the relevant departments, the network schools, the collaboration from alumni or the retired teachers.

2. The condition of early childhood teacher development in early childhood in-service training found that in the curriculum of early childhood teacher development the majority of early childhood teacher development curriculum was short-training courses that operate 1-3 days. The training usually is lecture-based and work-based training. However, nowadays, the training was significantly moved online to continue during the Covid-19 outbreak. Many educational activities, such as educational training, teaching placement training, or teaching evaluation, were held online via programs such as Zoom, Microsoft Teams, and Facebook Live, etc. There are more options for training channels as well as a variety of training topics for early childhood teachers, such as providing learning experiences for children in the New Normal era, changing world-adapting teachers, psychology of learning to develop learners and to understand early childhood with different needs through careful observation, etc. The online training courses for early childhood teacher development are available both with fees and free of charge. As a result, the teachers have various channels for continuous self-development. However, the issues of early childhood teacher development in different affiliations revealed that there were differences in the dimensions of teacher development opportunities that may arise from inadequate budgetary support and the administrators may not recognize the needs of early childhood teacher development. On the other hand, the Child Development Institution under the Office of the Private Education Commission (OPEC) and the Ministry of Higher Education (Demonstration schools) had more opportunities and supportive factors for teacher development than other organizations. The results of the study of Needs of Early Childhood Teachers for Self-Development demonstrated that the majority of teachers requirements for self-improvement was techniques for organising activities for the development of active learning; the assessment for learner's development according to age range, coding activities, the foundation for Educating Students with Special Needs, the management and literacy of emergency or epidemic circumstances, the communication skills between parents and communities. This can be organised through a training model with a mentor or a coach to facilitate them to reflect on what can be done for teaching development. The results of the study of the state of early childhood teacher development found that the early childhood teachers in different affiliations, obtained the relevant knowledge, understanding, and strengthen the competency in organising teaching activities for early childhood development. Nevertheless, there were some problems in terms of support including a budget, personnel capacity, high workload, that caused the difficulties of teacher's self-development. The results of the problems in the development of early childhood teachers showed that there was a high workload and a relatively small number of early childhood teachers in the Early Childhood Development Institution which hindered the participation in development training. Besides, it was found that some administrators did not recognise the role of early childhood teachers and had some misconception such as early childhood is an easy subject, people can teach early childhood education without training. As a result, some teachers were not encouraged to participate in the development training. Moreover, there were differences in knowledge, understanding, and competence of early childhood teachers who graduated from different educational institutions. The factors affecting the development of early childhood teachers in all affiliations reflected the support from the administrators that provide the cooperative network to collaborate. This included the areas of work such as teacher's workload, budget, development support, and offer additional support to support teacher's confidence and consult with the mentors or experts about the problems/challenges when it is needed.

2.1 The results of the study of the management and organising learning experience for early childhood development according to the National Early Childhood Development Institute standards are presented in table 2-4.

Table 2 Mean and standard deviation of management and organising learning experience for early childhood development (n = 8,534)

Management and organising learning experience for early childhood development	M	SD	Description
Standard 1: management	4.21	0.54	high
Standard 2: teacher /caregivers who provided care and experience for learning and playing for early childhood development	4.39	0.53	high
Overall	**4.30**	**0.51**	**high**

Table 2 shows that the overall *management and organising learning experience* for early childhood development has an average mean score = 4.30 and the standard deviation = 0.51 which is at a high level.

Table 3 Mean and standard deviation of standard 1: management (n = 8,534)

Standard 1: management	M	SD	Description
1. Systematic Management	4.21	0.63	high
2. Personnel Management according to the Affiliation	4.23	0.65	high
3. Environment Management for Safety	4.17	0.62	high
4. Health Promotion Management and Learning	4.26	0.60	high
5. Promoting Family and Community Participation	4.18	0.63	high
Overall Standard 1	**4.21**	**0.54**	**high**

Table 3 shows that the overall standard 1: management has the mean value = 4.21 which is at a high level and a standard deviation = 0.54. When considered *items* individually, it was found that Health Promotion Management and Learning had the highest mean score (M = 4.26 SD = 0.60), followed by all types of Personnel Management according to the Affiliation (M = 4.23 SD = 0.65), the Systematic Management (M = 4.21 SD = 0.63), Promoting Family and Community Participation (M = 4.18 SD = 0.63) and the Environment Management for Safety had the lowest mean score (M = 4.17 SD = 0.62), respectively.

Table 4 Mean and standard deviation of standard 2: teacher /caregivers who provided care and experience for learning and playing for early childhood development (n = 8,534)

Standard 2: teacher /caregivers who provided care and experience for learning and playing for early childhood development	M	SD	Description
1. Care and Development of Young Children	4.34	0.57	high
2. Promotion of Physical Development and Health Care	4.47	0.55	high
3. Promoting Intellectual Development and Language and Communication	4.38	0.57	high
4. Promotion of Emotional, Psychological, Social and Moral Development and Good Citizenship	4.43	0.56	high
5. Supporting Transitions from Preschool to The Next Educational Stage	4.29	0.66	high
Overall Standard 2	**4.39**	**0.53**	**high**

Table 4 shows that the overall standard 2: teacher/caregivers who provided care and experience for learning and playing for early childhood development had an average mean score =4.39 which is at a high level and standard deviation =0.53. When considered items individually, it was found that the Promotion of Physical Development and Health Care has the highest mean score (M = 4.47 SD = 0.55), followed by the Promotion of Emotional, Psychological, Social and Moral Development and Good Citizenship (M = 4.43 SD = 0.56) Promoting Intellectual Development and Language and Communication (M = 4.38 SD = 0.57) the Comprehensive of Care and Development of Young Children (M = 4.34 SD = 0.57) and the Supporting Transitions from Preschool to The Next Educational Stage had the lowest mean score (M = 4.29 SD = 0.66), respectively.

2.2 The comparison of results of management and organising learning experience for early childhood development classified by affiliation, regions, educational qualification, working experiences is presented in table 5-7.

2.2.1 The comparison of results of management and organising learning experience for early childhood development classified by affiliation is shown in Table 5.

Table 5 The comparison of results of management and organising learning experience for early childhood development classified by affiliation (n = 8,534)

Management and organising learning experience for early childhood development according to the National Early Childhood Development Institute standards	SS	df	MS	F	p
between group	50.96	6	8.49	33.57*	.00
within group	2157.47	8527	0.25		
total	**2208.42**	**8533**			

*p<.05

Table 5 shows that the different affiliations had a mean score of management and organising learning experience for early childhood development; in all standards and all items statistically significant difference at .05. In Standard 1, the Office of the Private Education Commission (OPEC), Bangkok Metropolitan Administration (BMA) and the Demonstration School had a higher average score of Standard 1: the Management than the Basic Education Commission (OBEC) and the Local Government Organization (DLA). In Standard 2, the Office of the Private Education Commission (OPEC), Bangkok Metropolitan Administration (BMA) and the Demonstration School had a higher average score of Standard 2: teachers/caregivers who provide education and care in learning and playing for early childhood development than the Basic Education Commission (OBEC) and the Local Government Organization (DLA) and other child care centers.

2.2.2 The comparison of results of management and organising learning experience for early childhood development classified by regions is shown in Table 6.

Table 6 The comparison of results of management and organising learning experience for early childhood development classified by regions (n = 8,534)

Management and organising learning experience for early childhood development according to the National Early Childhood Development Institute standards	SS	df	MS	F	p
between group	17.40	5	3.48	13.54*	.00
within group	2191.02	8528	0.26		
total	**2208.42**	**8533**			

*p<.05

Table 6 shows that the results revealed that the different regions demonstrated the mean score of management and organising learning experience for early childhood development; in all standards and all items statistically significant difference at .05. In Standard 1, the Central Region and Eastern Region had a higher average score of Standard 1: Management than the Northern Region. For the Northeast and the Central Region, the average score of Standard 1 Management was significantly higher than the Eastern Region and Southern Region at .05. In Standard 2, Northeastern and Central Regions had a higher average score of Standard 2: Teachers/caregivers to provide learning and play experiences for early childhood development than the Eastern and Southern Regions. While the Central Region had a higher average score of Standard 2: Teachers/caregivers to provide learning and play experiences for early childhood development than Northern Region. And, Northern Region had a higher average score of Standard 2: Teachers/caregivers to provide learning and play experiences for early childhood development than the Southern Region.

2.2.3 The comparison of results of the management and organising learning experience for early childhood development. Classified by educational qualification is shown in Table 7.

Table 7 The comparison of results of management and organising learning experience for early childhood development classified by educational qualification (n = 8,534)

Management and organising learning experience for early childhood development according to the National Early Childhood Development Institute standards	SS	df	MS	F	p
between group	5.55	2	2.77	10.74*	.00
within group	2202.88	8531	0.26		
total	**2208.42**	**8533**			

*p<.05

Table 7 shows that the results of educational qualification had a mean score of management and organising learning experience for early childhood development; in all standards and all items statistically significant difference at .05. A teacher who obtained a lower-undergraduate degree had a higher average mean score of Environment Management for Safety than those who obtained a bachelor’s degree and a master’s degree or higher. Also, teachers who obtained the master's degree or higher had a higher average of Environment Management for Safety than bachelor’s degree at a significant difference of .05. A teacher who obtained a master’s degree had the lower average mean score of Standard 2: Teachers/caregivers to provide learning and play experiences for early childhood development than those who obtained undergraduates and lower-undergraduates degree had a significant difference of .05.

2.2.4 The comparison of results of the management and organising learning experience for early childhood development. Classified by working experiences is shown in Table 8.

Table 8 The comparison of results of management and organising learning experience for early childhood development classified by working experiences (n = 8,534)

Management and organising learning experience for early childhood development according to the National Early Childhood Development Institute standards	SS	df	MS	F	p
between group	8.03	3	2.68	10.37*	.00
within group	2200.40	8530	0.26		
total	**2208.42**	**8533**			

*p<.05

Table 8 shows that the results of the different work experiences had a mean score of management and organising learning experience for early childhood development; in all standards and all items statistically significant difference at .05. In Standard 1, it was found that teachers who had teaching experiences over 16 years had a higher average score of Standard 1: Management than those who work under 5 years and 11-15 years had a statistically significant difference at .05. In Standard 2, teachers who had teaching experiences over 16 years had a higher average score of Standard 2 Teachers/caregivers to provide learning and play experiences for early childhood development than those who work under 5 years and 11-15 years had a statistically significant difference at .05.

3. Guidelines for Enhancing Teacher Preparation and Development of Early Childhood Program in higher education institutions in Thailand

3.1 Guidelines for enhancing the teacher preparation and development of early childhood program in Thai higher education institutions (Pre-Service Training); following the standards of the National Early Childhood Development Institution. The guidelines consist of 7 areas:

3.1.1 Enhancement of the Early Childhood Teacher Profession: the results suggested that there should be an establishment of Professional Standards for Early Childhood Teachers and Caregivers and the National Standard for School Administrators for the Early Childhood Education; a license provision for early childhood teacher and caregivers classified by the particular affiliation; a system for assessing and certifying the quality of early childhood education institutions; and a mechanism for monitoring the quality of early childhood teacher preparation from the National Central agency.

3.1.2 Early Childhood Teacher Policy in accordance with the International Standards: the results suggested that there should be a policy in accordance with the international standards with all affiliations who are involved with working with newborns to 6 years; a National Early Childhood Teacher Preparation Policy that concord with the Standard of National Early Childhood Development Institution; and a National Standard of Professional Teacher in Early Childhood Education to build awareness of the early childhood teacher preparation policy with all institutions.

3.1.3 Enhancement of the Early Childhood Teacher Preparation by Their Identity: the results suggested that there should be network cooperation between teacher preparation institutions; both in the country and abroad; an institutional network system to link the preparation for early childhood teachers; and there should be an enhancement teacher preparation following the instructions and local identity and the management model/ methotrexate to be in line with the National Early Childhood Teacher Preparation Policy, and; the activities to inspire an early childhood teacher for a school in local areas.

3.1.4 Curriculum for Early Childhood Teacher Preparation That Are Appropriate to The Changes in The World Society: the results suggested that there should be revisions of the curriculum to take into account the changes in the society and adjustments for coexistence. The curriculum should emphasise building hands-on experience from the Core Activities in Early Childhood Teacher Production curriculum; the course should be designed to keep up with the changes in social circumstances; and extracurricular activities that can reflect the spirit of early childhood and preparation for teaching professions.

3.1.5 Enhancement of Teacher Competency to Meet the International Standards: the results suggested that there should be a professional learning network system for the teaching profession in Thailand and abroad; and also, a system for developing teacher's professions to meet the international standards in both academic and research development.

3.1.6 Enhancement of Student Competency for The Teaching Profession Pathways: the results suggested that there should be a system to assess the aptitude for early childhood teachers and other aptitude development methods for a student-teacher; as well as a network of student teachers in municipal/local and national levels; as well as the tracking system to maintain the teaching development with the student teachers who recently graduated.

3.1.7 Enhancement of Supportive Context for Integrated Teacher Preparation: the results suggested that there should be a high-standard school network for student-teacher to practice teaching experiences; the provision of the learning environment for student teachers should offer opportunities to work professionally in the digital age; and support/help for all students to access learning opportunities; especially those who may encounter the disparities.

3.2 Guidelines for enhancing in-service training for early childhood development following the standards of the National Early Childhood Development Institute, consisting of 4 areas as follows:

3.2.1 Teacher Competency Development Policy: the results suggested that there should be a teacher development policy for promoting excellence in the teaching profession and a continuity of teaching development following the National Early Childhood Teacher Competency Standards; a system of a mechanism for monitoring the development of early childhood teacher from the National Central agency and municipal agency to drive the early childhood teacher development policy into practice.

3.2.2 Stability and Career Development for Early Childhood Teachers: the results suggested that there should be a system for self-development in a professional path from the national organisations or agencies such as Personal Development Awards and Honors; a system to compare the professional careers progress in the different affiliation; and the scholarship for Master and Doctoral level.

3.2.3 Model of Excellent Teaching Profession Development: the results suggested that there should be a network for early childhood teacher professional development collaborating from a central agency: a system for developing; a supportive model for Excellent Teaching Profession by establishing a curriculum for developing early childhood teachers to re-skills and up-skills based upon the personal needs; and a credit banking system that allows teachers to accumulate teaching profession.

3.2.4 Supportive Context for Excellent Teaching Development: the results suggested that providing scholarships for early childhood teachers for higher education and grants for teacher's self-development and funding for innovation production to organize learning experiences and develop education for young children; a central information technology system of the country that assembles academic information related to the development and education for young children; and a national central agency of research, development and innovation in early childhood education, and shared with the early childhood teachers across the country.

Discussion

1. In the light of current conditions of early childhood teacher preparation, the higher education institutions had modified the curriculum taking into account social changes and the impact of external situations. Accordingly, all universities, that offer the Bachelor of Education program in Early Childhood Education, had adjusted the course from 5 years to 4 years program according to the announcement of the bachelor's degree standards and professional qualifications in education, 2019. The newly developed curriculum will focus on preparing teachers in a new dimension that emphasizes learning outcomes of the quality graduate teachers and the self-respect as being a teacher according to the standards of the teaching profession and qualifications and to be a good teacher, knowledgeable and curious person. Also, a teacher should have skills, expertise, and professional experience along with a positive attitude towards the profession, and having morals and ethics that follow the professional ethics. Finally, teachers are expected to obtain knowledge and are up-to-date with the changes, and be able to learn and develop themselves sustainably. This corresponds to the Early Childhood Development Act, B.E. 2562, Section 23, which relates to the teachers' preparation and development in early childhood development that the higher education institutions shall provide teaching and learning to enhance teacher spirit, morality, ethics, knowledge, skills, and ability to provide teaching and learning and to develop children according to the philosophy of early childhood development. Additionally, the relevant organization and agency, who are responsible for the development of early childhood caregivers, shall support teachers and caregivers to enhance the spirit of being a teacher/caregiver with morality, ethics, knowledge, skills, and ability to care for early childhood children according to the principles of early childhood development (Office of the Education Council, 2019). This corresponds to the work of Pruitthikul (2018) who studied the development of learning activities to enhance professional teachings of early childhood education students, Faculty of Education, Burapha University. The study aimed to develop learning activities and programs that enhance the spirituality of teachers and the essential competencies for early childhood education students.

2. The current condition of early childhood teacher development. The comparative study of learning experiences for young children in different affiliations found that early childhood teachers under the Office of the Private Education Commission (OPEC), Bangkok Metropolitan Administration (BMA), and the Demonstration School had a higher average of learning experiences of early childhood development than one who is affiliated under the Basic Education Commission (OBEC) and the Local Government Organization (DLA) and other child care centers. This is because the management system of schools under the Office of the Private Education Commission (OPEC), Bangkok Metropolitan Administration (BMA), and the Demonstration School are more flexible. School administrators play an important role to make decisions directly and they can also manage the financial plan for organising learning experiences for the children's learning and development immediately.

The findings showed that early childhood teachers in different affiliations have been developed in terms of knowledge, understanding, and capacity in delivering early childhood development activities. However, there are some problems in terms of support for example the budget, human resources, and heavy workload which hindered teacher's self-development. Factors affecting the development of early childhood teachers in all affiliations reflect the following issues: the support of the administrators, the professional networking and community in helping teachers to share and support one another, teacher's workload, budget, development support. On the one hand, consulting with mentors or experts is placed as essential because it motivates teachers' confidence and offers immediate support. This corresponds to several studies that indicate that Learning Management for Early Childhood Teachers is the learning for adults. An important characteristic of this type of learning is that it is learning management that emphasizes experiential learning in the form of self-guided learning. Learners are involved in all learning designs and processes; from setting learning goals, plans, and the analysis of problems that exist in the setting to meet the basic needs and requirements. The use of participatory activities with real learning experiences is an important mechanism to achieve meaningful learning. The teachers must adjust their roles as facilitators and supporters who can help procure and manage learning resources both in the form of techniques, teaching strategies, pedagogy, and the use of technology materials that facilitate flexible learning and minimize the problem of travel distance, time constraints, and creating a learning atmosphere for lifelong learning (Lindeman, 1951; Knowles, 1950; Roger, 1969; Milana & Nesbit, 2015; Knowles, Holton III & Swanson, 2015).

According to the survey of Early Childhood Teachers' Needs for Self-development, it was found that the majority of the teachers had needs for self-development on the following issues: techniques for organising activities to develop learners using active learning, an assessment and evaluation for learner development by stage of child's development, coding activities, the fundamental knowledge of children with special needs, the ability to cope with the emergencies or epidemics circumstance and the communication between parents and community. This is consistent with several studies which investigated the needs of early childhood teachers. The findings found that there was a need for self-development in writing lesson plans and organisng learning experiences, the media production or innovation in early childhood education, the technology with early childhood teachers, and child development assessment, and the relationship and involvement of parents and communities (Jongpattana, Narintarangkul, & Ayudhaya, 2017; Meesomsarn, 2017; Thongplew & Chanawonges, 2017; Chuensuksomwng, 2014; Pinyoanuntapong, 2015).

Suggestion

1. Suggestion for research application

Apart from the knowledge and specific specialization that the early childhood teachers received from learning in the early childhood education program, the program and curriculum should be appropriately designed to respond with global communities' dynamics. The development guideline concerning the early childhood teacher concentrates on curriculum, teaching, and learning perspectives. Every early childhood education institute can apply this research to improve, develop, and promote their students to have sufficient capacities in the era of global communities' dynamics.

1.1 In terms of Institution, guidelines for enhancing the teacher preparation and development of Early Childhood program in Thai higher education institutions, consisting of 7 areas, (1) enhancement of the early childhood teacher profession, (2) Early Childhood teacher policy in accordance with the international standards, (3) enhancement of the early childhood teacher preparation by their identity, (4) curriculum for early childhood teacher preparation that are appropriate to the changes in the world society, (5) enhancement of teacher competency to meet the international standards, (6) enhancement of student competency for the teaching profession pathways, and (7) enhancement of supportive context for integrated teacher preparation.

1.2 In terms of organization, working for the development of early childhood teacher, the research reveals that there are seven guidelines that the research team has proposed, and these suggestions can be beneficially applied to develop and promote the teacher capacities, consisting of 4 areas, (1) teacher competency development policy, (2) stability and career development for early childhood teachers, (3) model of excellent teaching profession development, and (4) supportive context for excellent teaching development.

2. Suggestion for further research

2.1 In the case of a development perspective for the early childhood teachers, the provincial-base development model is used. The well-formulated teacher capacities result from collaborative working. Therefore, the next prototypical model for early childhood education can apply these capacities for further research.

2.2 In terms of teacher development perspective, the recommendation for student selection system to study and join the scholarship program, the next research can be conducted to develop an evaluation system for student selection, reflecting expected characteristics of early childhood teachers.

References

Chuensuksomwng, N. (2014). A Need Assessment to Develop Early Childhood Teacher's Professional Competency. *An Online Journal of Education, 9*(1), 713-727.

Jongpattana, W., Narintarangkul S., & Ayudhaya, N. (2017). A Need Analysis of Anubansuppanya School teacher development Based on the Concept of technology Leadership. *An Online Journal of Education, 14*(2), 1-12.

Knoles, M. S. (1950). *Informal Adult Education: A Guide for Administrators, Leaders, and Teachers*. New York: Association Press.

Knowles, M. S., Holton III, E. E. & Swanson, R. A. (2015). The Adult learner: *The definitive classic in adult education and human resource development.* London: Routedge.

Lindeman, E. C. (1951). *The Meaning of Adult Education, New York: New Republic*. Republished in a new edition in 1989 by The Oklahoma Research Center for Continuing Professional and Higher Education.

Meesomsarn, K. (2017). Guidelines for Learning Management Competency Development of Early Childhood Education Teachers in the 21st Century. *Valaya Alongkorn Review (Humanities and Social Science), 7*(2), 45-56.

Milana, M., & Nesbit, T. (2015). *Global perspectives on adult education and learning policy.* Hamshire: Palgrave Macmillan.

Office of the Education Council. (2019). *Early Childhood Development Act in B.E. 2562*. Retrieved September 19, 2020, from http://www.onec.go.th/th.php/page/view/Outstand/4440

Office of the Education Council. (2019). *Standard of the National Early Childhood Development Institution.* Bangkok: Prigwhan Graphic.

Phruttikul, S. (2018). The development of learning activities to enhance teacher spirituality of pre-service teachers in early childhood education, faculty of education, Burapha University. *Journal of Education and Social Development, 13*(2), 151-164.

Pinyoanuntapong, S. (2015). Development of Teacher Training Program for Promoting Young Children's Social and Emotional Development. *Journal of Education, 16*(1), 76-94.

Rogers, C. R. (1969). *Freedom to Learn*. Columbus. OH: Merrill.

Thongplew, P., & Chanawonges, A. (2017). Program Development Learning Management Competency of Childhood Teachers in the School of Udon Thani Primary Educational Service Area Office 4. *Journal of Education, Mahasarakham University, 12*(2), 156-168.

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

Review Article: An Alternative Approach to Studying Thailand's Fertility Intention

Satayu Pattarakijkusol*

Graduate School of Public Administration, National Institute of Development Administration, Bangkok, 10240 Thailand

Article info

Article history:
Received: 16 July 2019
Revised: 18 November 2019
Accepted: 29 November 2019

Keywords:
Fertility intention, Rational choice, Economic behavior, Social institutions.

Abstract

The ageing population phenomenon is becoming a global conundrum. One solution to address this problem is to balance the national demographic structure by boosting a country's total fertility. The traditional way of studying this issue is to adopt the rational choice and economic behavior approaches. However, the author is of the opinion that such approaches do not fit within Thailand's context. Thus, the author argues that it would be more appropriate to utilize the Social Institution approach to study and shed light on Thailand's fertility intention.

Introduction

The ageing population phenomenon, also known as a greying population, is becoming a global problem. Many developed countries such as the United States of America, Canada, most of the countries in Europe, Japan, Singapore, and many other countries have been facing this demographic challenge for almost a decade. The ageing population is challenging because of an imbalance in a nation's population structure. The problem occurs when a nation's fertility and mortality rates decline. In other words, people live longer, and there are fewer newborn babies.

On the one hand, the United Nations, Department of Economic and Social Affairs, Population Division (2013) reported on the situation of Thailand's ageing population and how the proportion of the country's older population dramatically increased by 62 percent in 2010 and is projected to grow by 85 percent in 2030. In addition, Thailand's life expectancy, which has climbed from 55.7 years in 1950 to 68.0 years in 2005, is projected to reach 77.3 years in 2050. At present, Thailand's life expectancy is 73 years for males and 80 years for females (Institute for Population and Social Research, 2019). Furthermore, Thailand's median age increased from 18.6 years old in 1950 to 27.5 years old in 2000. Thailand's median age is also forecast to more than double in 2025 to 36.6 years and 42.1 years in 2050. However, the recent United Nations reports indicate that Thailand's median age is increasing more quickly than expected, having already reached 38.3 years old in 2019 (United Nations, Department of Economic and Social Affairs, Population Division, 2019). All these statistics lead to the conclusion that a significant number of the elderly population will be a part of Thailand's population structure. On the other hand, Thailand's fertility rate has been dramatically declining from 5.595 children per women in 1970 to 1.671 children per women in 2000, and recent statistics show that Thailand's fertility rate is still continuing to decline to 1.512 children per women in 2016 (World Bank, 2018). Assistant Professor Dr.

* Corresponding Author
e-mail: Satayu.pattarakijkusol@gmail.com

Patama Vapattanawong and Professor Dr. Pramote Prasartkul from the Institute for Population and Social Research, Mahidol University forecast that Thailand's fertility rate would decline to as low as 1.43 children per women in 2030 (Vapattanawong & Prasartkul, 2014).

To reduce the risks associated with an ageing society and the negative consequences, Thailand has to raise the fertility rate of a particular population group, one which is able to provide a better quality of life for newborn babies. At present, there is no official consensus concerning how the country's fertility rate can be used as a guide on how many children per women would ideally increase the country's population ratio. However, peer review research revealed that Thailand's replacement level, or the optimal fertility rate, should be 2.10-2.25 children per woman (Hirschman, Tan, Chamratrithirong, & Guest, 1994; Searchinger, Hanson, Waite, Harper, Leeson, & Lipinski 2013; Wilson, 2004).

This paper reviews the alternative approaches to conduct the study on Thailand's fertility intention with the aim of boosting the nation's total fertility.

Fertility intention

The theory of Intentionality

Brentano (2014) seems to be the very first scholar who used the word "intention" in 1874. In his famous book entitled *Psychology from an Empirical Standpoint,* he states that Every mental phenomenon is characterized by what the Scholastics of the middle ages called the intentional (or mental) in existence of an object, and what we might call, though not wholly unambiguously, reference to a content, direction toward an object (which is not be understood here as meaning a thing), or immanent objectivity. Every mental phenomenon includes somethings as object within itself, although they do not do so in the same way. In presentation, something is presented, in judgement something is affirmed or denied, in love loved, in hate hated, in desire desired and so on.

The intentional inexistence is characteristic exclusively of mental phenomena. No physical phenomenon exhibits anything like it. We can, therefore, define mental phenomena by saying that they are those phenomena which contain an objective intentionally within themselves (Brentano, 2014). In short, Brentano attempts to explain that intention is the process of mentally directing a behavior toward an object. How people's behaviors represent their mental state is based on the individual experiences and their environment in the past (McIntyre & Smith, 1989). Therefore, those who have similar intentions do not necessarily behave in a similar manner.

Later, Ajzen (1991) introduces the planned behavior theory in which he suggests that subjective norms, which are the perceived social pressure that influence individuals to perform or not to perform the behavior, would influence the individual's intention to perform a given behavior. Finally, an individual would perform some behavior.

When it comes to the fertility intention, there are a large number of studies on the factors affecting intention (see Social Institutions approach), but the reason behind the intention is rarely found. In Thailand, Chuanwan & Katewongsa (2014) suggest that the intention is to strengthen families' security and to ensure that there is continuity from one generation to another.

Approaches to studying Thailand's fertility intention

Rational choice and economic behavior approaches

The ageing society is not a new phenomenon, but it has long been an issue all around the world. This is especially the case in developed countries such as the United States of America, Canada, most of the countries in Europe, and countries such as Japan and Singapore. Recently, the less developed countries and the developing countries are also facing a similar ageing society issue as well. However, there are differences in terms of how the countries are becoming ageing societies when comparing developed countries and developing countries: the population structure in the developed countries are slowly changing, while the population structure in the developing countries are changing rapidly (Cai, 2010; McNown & Ridao-cano, 2004; Ridao-Cano & McNown, 2005).

The reasons for the changes in the population structure which result in an aging society are attributed to the new generation of women who attain higher levels of education (Davia & Legazpe, 2014; Prifti & Vuri, 2013) and the increases in the number of women participating in the labor market (Brewster & Rindfuss, 2000). As a result, the age people get married, the age women give birth the first time, and the length of birth intervals of additional children have all subsequently changed (Davia & Legazpe, 2014; Goedele Van Den & Miet, 2015).

However, many scholars found that the cause of the decline in woman's fertility was not as simple as previously thought. The concepts of rational choice and economic behavior have been wildly used to conduct research on the cause of the fall in woman's fertility in the developed countries. The main idea of the research was that individuals think and act to maximize the benefits they would possibly gain (Day, 1971; Day, 2004). An individual sees that having a baby is a cost, for example the cost of raising a baby, the cost of education, the cost of medication, etc. If the cost is too high, an individual would rather not have a child. If policy makers could lower the cost of having a baby, then the possibility of raising fertility would also be increased (Furtado, 2016). As a consequence, policy makers are more likely to focus on initiating policies which involves a reduction in the cost of having babies such as taxes transferred (Fehr & Ujhelyiova, 2013), childcare subsidies (Masaya, 2013), employment benefits (Prifti & Vuri, 2013; Raymo & Shibata, 2017) and more.

The adoption of the economic behavior and rational choice theories to study the fertility intentions has some advantages, namely that these theories could predict that an economic man would choose the best options in a given situation. The advantage of the theory, however, is the simultaneous disadvantage. In order to predict the outcome, the predictor must possess perfect information on the options available to the economic man. Therefore, it is almost impossible that such information would be available. In addition, the economic behavior and rational choice theories neglect social norms which play an important role in shaping individual behavior. Finally, the economic behavior and rational choice theories tend to lead to a more methodological and individualistic prediction. As a result, it could only explain outcomes at the individual level rather than at a societal one.

To boost the fertility among woman of reproductive age, tax policies have been adopted in a number of developed countries. A tax policy leads to both an increase in income as well as a reduction in expenses. For example, Laroque & Salanié (2014) studied the tax policy on woman's fertility in France. The policy on woman's fertility was that those who have a baby would receive tax reduction, while those who stay single would pay more taxes. Fehr & Ujhelyiova (2013) found that the tax reforms and child benefits in Germany had an impact on the national birth rate after their implementation. Masaya (2013) found that paying a large amount of tax lowers the total household income; therefore, the total fertility was also reduced.

Childcare benefit is also provided to those woman who have a baby. Fehr & Ujhelyiova (2013) reveal that the birth rate is significantly raised when woman receive childcare benefits. This is because they can get back to work more quickly and have less concerns about their child. In addition, Furtado (2016) found in her study in the United States of America that the existence of large numbers of child care services in the study area lowered the childcare service fees; thus, mothers feel more comfortable to have additional children.

In terms of employment benefits, McNown & Ridao-cano (2004); Raymo & Shibata (2017) suggested that the high rate of male unemployment lowers the total fertility while the high rate of women unemployment affects the rise of total fertility. This is in line with Davia & Legazpe (2014) who suggested that those woman who are participating in the labor market would postpone their pregnancy which would in turn result in the reduction of the number of children they would have. Therefore, providing employment benefits such as leave with pay would be able to increase total fertility.

Although there is empirical evidence that providing benefits to the people of reproductive age could influence their fertility intention, some issues have arisen after the implementation of the policies. First and foremost, the government has to invest a large amount of money to implement these benefits to boost national fertility; hence, there would be a significant burden on the government's coffers as well as an increase in public debt (Fraser, 2001; Ishida, Oguro, & Takahata, 2015). Chen (2011) also suggested that the tax benefits are usually not equally distributed to all income classes, but the tax benefits are more likely to benefit those who are in the higher income class. This kind of problem was also identified in a recent research of Buracom (2011) which revealed that the tax incident and the benefits incidence are not often equally distributed; those who are in the higher income class would gain more benefits from the policies.

In addition to the problem of unequal distribution of benefits, the number of tax payers also plays an important role in the effectiveness of Thailand's fertility-related policies. According to ThaiPublica (2016), there are 55.3 million people who are 15 years old and older in Thailand, and 38.8 million people are participating in the labor market which accounts for 70 per cent of the population who are aged 15 years old and older. However, only 10.3 million people out of 38.8 people who are participating in the labor market file personal income tax returns. Furthermore, only 4 million people have paid personal income taxes. Such statistics clearly reveal that the fertility-related policies regarding tax benefits may attract at most 4 million people which is a very small number when compared with the total population.

As a result, the policies regarding taxes and transfers may not be efficient enough to attract Thais to boost their fertility. We can also see evidence from the World Bank's data that Thailand's total fertility is still declining despite the implantation of fertility-related policies such as childbearing subsidies, maternity leave, maternity benefits, and long term tax subsidies for a long time.

Social institutions approach

Social institution is the concept which has of late begun to be adopted in studies dealing with population. This is especially the case for social institutions which have employed such theory to explain and distinguish the population growth rates in developed and developing countries in the past. Therefore, the social institutional factors play an important role in prescribing the fertility behavior in a particular area of study.

Scott (2005) states that "Institutional theory attends to the deeper and more resilient aspect of social structure. It considers the process by which structures, including schemas, rules, norms, and routines, become established as authoritative guideline for social behavior". Martin (2004) summarized and used institution and social institution interchangeably, writing that "many socialist equated social institutions with ideas, norms, values, or beliefs with no attention to process or practice". In a similar manner, Miller (1994) suggests that norms and values are associated with social institution. For this reason, social networks such as friends and families are influencing the fertility intention of those women who are in the network. Beside these scholars, there are numerous other scholars such as Zucker (1987); Urpelainen (2011); Parsons (1990); Miller (2019) who define the institution in a similar manner, stating that the institution consists of the values, norms, and beliefs in a particular society which influence the member of that society to make decisions or influence the members' behaviors.

Contrary to the economic behavior and rational choice theories, the institutional theory focuses on social norms which influence individuals in the decision making process which the economic behavior and rational choice theories can not explain. Nonetheless, the institutional theory suggests that the individual relies too much on social norms. Although the theory reveals that individuals tend to follow social norms, the theory is not able to explain why.

As an extension of the institutional theory, this paper suggests that the researchers focus on and examine the social issues which influence the women's fertility intention. Therefore, the concepts of social institutions need to be explored. According to Miller (2019), the social institution is composed of the rules, norms, and beliefs which have become institutionalized and that regulate the action of different members in the society. This theory describes how different people and actors in society are related to each other and impact one another. Consequently, the collective actions in the society are similar.

The following are social institutions which should be taken into consideration when studying fertility intention.

1. Marriage age and fertility intention

Marriage is the process which facilitates the extension of the social institution unit. The aim of marriage is to strengthen families' security and to ensure that there is a continuity from one generation to another (Chuanwan & Katewongsa, 2014). Although people regard marriage in terms of their desire to value their culture, the younger generation feels financial stability is more important. Hence, they have decided to postpone their marriage and ensure they would have job and financial stability before deciding on marriage and babies (Samutachak & Darawuttimaprakorn, 2014).

Marriage age is one of the important factors which determine fertility intention. Studies in developed countries suggest that the higher age groups have a negative relationship with the reproductive population when it comes to their fertility intention (Fehr & Ujhelyiova, 2013). Billingsley & Ferrarini (2014) studied the fertility intention in 21 European countries and found that women aged 40 years and above tend to lower their fertility intention for their first child. At the same time, women aged 35 years and above have a negative effect when it comes to their fertility intention for their second child. Lastly, all women have a negative effect regarding their fertility intention for their third child and above. In Korea, Park, Cho, & Choi (2010) found similar results for fertility intention when it comes to the second and third child. However, they did not find any relationship among age groups and the fertility intention for the first child. The research results of Luo & Mao (2014) in China suggested that the fertility intention of women would decrease at the age of 35 and older. McQuillan, Greil, Shreffler, & Bedrous (2015) found that women in the United States of America who are aged 35 and above have a lower fertility intention because they think they are too old to bear children.

In Thailand, the norm for the age of marriage has been gradually increasing since 1960. The average age of marriage in 1960 was 25 years old for males and 22 years old for females. Subsequently, the norm for the age of marriage of Thais shifted to 27 years old for males and 24 years old for females in 2000. In a similar manner, the number of single individuals who are of reproductive age (16-45 years old) accounted for 60 per cent of the total population (Podhisita, 2009). In contrast, married couples accounted for only 37 per cent of the total population. However, the reason cited for marriage postponement is still unknown or inconclusive.

In summary, the research pointed out that age groups have negative effects on the fertility intention. This means that women are less likely to have plans to give birth.

2. Family support and division of labor in the Family and Fertility Intention

Family support could be defined as types of family, including nuclear and extended families. In addition, the hours of shared housework must also be taken into account. Having children would consume a great deal of time in order to care for and raise them. Receiving the support of family members such as parents and grandparents would influence the fertility intention (Snopkowski & Sear, 2012). For example, Luo & Mao (2014) found that there is a tendency that women would have a higher fertility intention if there is a person to help mothers take care of their child.

Modernization and the industrialization play important roles in transforming different forms of Thai families. Many Thai families have changed from extended families to nuclear families because the young generation migrate from their hometowns to work in industrialized areas. As a result, the elderly population is left behind in rural areas and the younger population raise their family away from their hometown, resulting in smaller family sizes (Shoichiro, 1997).

In 2018, a survey revealed that the size of the Thai family shifted from an extended family to a nuclear family. A recent survey was conducted in 2018 for the northern region, central region, north-eastern region, and southern region. The result showed that the proportion of extended families accounted for only 28 per cent, and the proportion of single families almost doubled in size, accounting for 43 per cent of the families surveyed (Phuphaibul, Jongudomkarn, Nieamsup, Tejagupta, Kumhom, Wacharasin, & ityasuddhi, 2018). This survey demonstrated that the social value of family members living together has changed.

According to Pimonpan from the Population and Development Newsletter, a similar survey also revealed that the size of Thai families fell from 6.3 people per family in 1964 to 5.3 people per family in 1980. Statistics also showed the size of Thai families shrank even more to an average of 2.7 people per family in 2014 to only 1.6 people per family in 2017. This means that there are large numbers of people who are living alone in Thai society.

When a couple is living together, they need to share their housework. Thus, the division of labor plays a role for people living together. The division of labor in the family does not take into consideration skills, educational level or husband's/wife's qualifications. What the division of labor encompasses are gender, age, and status (Soriano, 1991). Similar to family support, the division of labor in the family is how family members share domestics tasks among each other. Billingsley & Ferrarini (2014) found that family support has a significant effect on fertility intention across European countries. In addition to the support from family members, the hours of shared housework between husband and wife play an important role in the fertility decision. The fertility intention for a second child would increase according to the husband's shared housework and childcare hours (Park, Cho, & Choi, 2010).

3. Gendered division of work and fertility intention

Gendered division of work refers to whether husbands or wives are active in paid work (being employed) which has an influence on their fertility intention (Jang, Jun, & Lee, 2017). There is an inverse relationship when it comes to the gendered division of work. More specifically, the increase in employment of wives resulted in lower numbers of total fertility compared with the total fertility of those wives who were not employed (Scanzoni, 1975; Soriano, 1991). Also, the latter tend to also have more children than the former. Hakim (2003) categorized women into three groups: work-focused, home-focused, and combine-focused. She suggested that women who are work-focused, in other words women who are in the workforce, tend to have a lower fertility intention than those who are home-focused and combine-focused. In addition, Hakim (2003); McQuillan, Greil, Shreffler, & Bedrous (2015) found that women who are employed in a part-time job have a lowered fertility intention. However, they did not find a relationship between women who are employed full-time and their fertility intention. Eguchi, Shimazu, Fujiwara, Iwata, Shimada, Takahashi & Kawakami (2016) conducted a study in Japan, and the results revealed that the fertility intention for additional children is associated with men who are active in the labor market; however, this fact was not associated with women. The study in South Korea also affirmed that gendered division of work influences the fertility intention. Park & Cho (2011) revealed that women who are stay-at-home mothers have higher fertility intention for their second child than women who are employed in full-time employment.

Despite the fact that the women participating in the labor market is not a new phenomenon, there are changes in the family institution from being male dominated with female subordination to one which features more female domination (Soriano, 1991). In the past, most of the women had less participation in the labor market because they had to be responsible for the domestic work and take care of their babies (Scanzoni, 1975). The increase in the number of women participating in the labor market has a direct correlation with the decline in the total fertility in many countries such as Canada, USA, Australia, Japan, UK, Germany, and many more (Brewster & Rindfuss, 2000; Goedele Van Den & Miet, 2015; Soriano, 1991). This is because the woman who are in the labor market are more likely to postpone their motherhood compared to those who are not in the labor market (Davia & Legazpe, 2014). After a certain period of time, these women would feel that they are too old to have a child. Hence, they ultimately decide not to have one (Billingsley & Ferrarini, 2014; Fehr & Ujhelyiova, 2013). However, the participation of the male labor force has an opposite effect on the fertility: the fertility will be reversed when the level of male participation in the labor market reduces (Raymo & Shibata, 2017).

4. Educational level and fertility intention

Formally, Thai social norms viewed that females are unable to attain a high level of education. The National Statistical Office (n.d.) revealed that such social norms in which people do not see the necessity of females attaining a high level of education has changed. The new generation of females attain the same levels of education as males.

Educational level plays an important role when it comes to an individual's fertility intention. Evidently, those women who attain a higher level of education tend to be more modernized. In contrast, those women who are unable to attain a high level of education tend to behave more traditionally. As a result, those women who attain a higher level of education would gain better access to a career path which allows them to have better benefits from society (Scanzoni, 1975; Soriano, 1991) The higher educational level would lead to a better income level; therefore, the population with a higher educational level might not have a higher level of fertility intention if they do not feel that it is worth their while. The evidence has been found in many European countries. Highly educated women are exposed to life course paths that compete with childbearing, but they do not necessarily plan to have larger family sizes than less educated women (Hayford, 2009; Heiland, Prskawetz, & Sanderson, 2008; Mills, Begall, Mencarini, & Tanturri, 2008). Some women in high-status occupations may intend to have fewer children from the beginning of their reproductive careers (Friedman, Hechter, & Kanazawa, 1994), while others may later decide to forgo having some of the children they had initially planned to have over the course of their reproductive careers (Tavares, 2010). Better educated women are more prone to postponing the idea of having children than less educated women (Heaton, Jacobson, & Holland, 1999; Schoen, Astone, Kim, Nathanson, & Fields, 1999); consequently, they are more likely to have fewer children than they had initially intended.

5. Urbanization and fertility intention

People in rural areas were more likely to participate in the agricultural sector; as a consequence, parents hoped that they would gain benefits from having more children to help them carry out their work (Soriano, 1991). Urbanization has played important roles in transforming how Thai families live their lives. Many Thais in rural families have migrated from rural areas to urban areas to work instead of continuing agricultural work from their parents. As a result, the elderly population is left behind and the younger population raise their family someplace else, resulting in smaller family sizes (Shoichiro, 1997).

The data sheds light on the fact that the childbearing rate in the rural areas is much higher than the childbearing rate in urban areas. This is due to the differences of the working styles between those who reside in rural and urban areas. More specifically, urbanites tend to spend more of their time at their workplaces and spend less of their time at home. In addition, those who are in rural areas are more likely to participate in the agricultural sector. Because of this, the parents hope that they would gain benefits from having more children to help them carry out their work (Soriano, 1991) There is no official study that has been carried out regarding this matter that specifically focuses on Thailand's context. However, revealed in 2000 that the People's Republic of China's life expectancy of their rural population was six years lower than that of the population in the urban areas. In terms of the discrepancy of the fertility rate, *China Daily* reported that there was a large gap when it comes to the fertility rate between people in rural and urban areas. For instance, the average Chinese fertility rate is estimated at two children per woman, but the most urbanized Chinese cities such as Shanghai has a fertility rate of 0.7 children per woman. In attrition to this, the urbanization factor was one of the factors influencing fertility intention in China. Therefore, there are valid reasons to believe that urbanization is affecting the national fertility intention.

In summary, the changes taking place in social institutions have led to modern people's fertility intentions. This is an important topic for policymakers to study and understand the demographic changes and their significant impacts in order to determine effective policies to address such issues and mitigate their impacts on the wider society and the country's future economic prospective.

Conclusion

This paper offers an alternative approach which can be used when studying Thailand's fertility intention. It is argued that the rational choice and economic behavior approaches might not be suitable to Thailand's context because most of the factors which are employed to such studies are related to taxes and transfers. However, in reality, the number/ratio of Thailand's tax payers is small compared to the number/ratio of tax payers in the developed countries where the rational choice and economic behavior approaches were found to be efficient.

Instead of adopting rational choice and economic behavior approaches to study Thailand's fertility intention, the author suggests that the social institutions approach should be adopted. For example, the following questions should be explored. Why do Thais postpone their marriages? How should public policy be formulated in order to shorten the age at which Thais marry? If the family's support affects the fertility intention of the Thai family, what benefits should the government provide to boost national fertility? What should the Thai government do to deal with lifestyle trends where both the husband and the wife participate in the labor market which in turn result in a lower number of newborn children? How should the government respond to the lower birth rate of people living in the city as a result of urbanization? These could be alternative approaches that have a better fit within Thailand's context, one where family institutions have a greater deal of influence on people's lifestyle choices and behaviors.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Billingsley, S., & Ferrarini, T. (2014). Family policy and fertility intentions in 21 European countries. *Journal of Marriage and Family, 76*(2), 428-445.

Brentano, F. (2014). *Psychology from An Empirical Standpoint.* London: Taylor & Francis Ltd.

Brewster, K. L., & Rindfuss, R. R. (2000). Fertility and women's employment in industrialized nations. *Annual review of sociology, 26*(1), 271-296.

Buracom, P. (2011). The Determinants and Distributional Effects of Public Education, Health, and Welfare Spending in Thailand. *Asian Affairs: An American Review, 38*(3), 113-142.

Cai, Y. (2010). China's below- replacement fertility government policy or socioeconomic development?. *Population and development review, 36*(3), 419-440.

Chen, D. (2011). Can countries reverse fertility decline? Evidence from France's marriage and baby bonuses, 1929–1981. *International Tax and Public Finance, 18*(3), 253-272.

Chuanwan, S., & Katewongsa, P. (2014). *Why women are not married: where have men gone missing.* Bangkok: Institute for Population and Social research, Mahidol University.

Davia, M. A., & Legazpe, N. (2014). The Role of Education in Fertility and Female Employment in Spain: A Simultaneous Approach. *Journal of Family Issues, 35*(14), 1898-1925.

Day, R. H. (1971). Rational choice and economic behavior. *Theory and Decision, 1*(3), 229-251.

Day, R. H. (2004). Behavioral economics: implications for economic theory and policy. *Journal of Socio-Economics, 33*(6), 715-724.

Eguchi, H., Shimazu, A., Fujiwara, T., Iwata, N., Shimada, K., Takahashi, M., & Kawakami, N. (2016). The effects of workplace psychosocial factors on whether Japanese dual-earner couples with preschool children have additional children: a prospective study. *Industrial Health, 54*(6), 498-504.

Fehr, H., & Ujhelyiova, D. (2013). Fertility, Female Labor Supply, and Family Policy. *German Economic Review, 14*(2), 138-165.

Fraser, C. D. (2001). Income Risk, the Tax- Benefit System and the Demand for Children. *Economica, 68*(269), 105-125.

Friedman, D., Hechter, M., & Kanazawa, S. (1994). A theory of the value of children. *Demography, 31*(3), 375-401.

Furtado, D. (2016). Fertility Responses of High-Skilled Native Women to Immigrant Inflows. *Demography, 53*(1), 27-53.

Goedele Van Den, B., & Miet, M. (2015). Female employment reduces fertility in rural Senegal. *PLoS ONE, 10*(3), 1-15.

Hakim, C. (2003). A new approach to explaining fertility patterns: Preference theory. *Population and development review, 29*(3), 349-374.

Hayford, S. (2009). The evolution of fertility expectations over the life course. *Demography, 46*(4), 765-783.

Heaton, T. B., Jacobson, C. K., & Holland, K. (1999). Persistence and Change in Decisions to Remain Childless. *Journal of Marriage and Family, 61*(2), 531-539.

Heiland, F., Prskawetz, A., & Sanderson, W. (2008). Are Individuals' Desired Family Sizes Stable? Evidence from West German Panel Data. *European Journal of Population / Revue européenne de Démographie, 24*(2), 129-156.

Hirschman, C., Tan, J., Chamratrithirong, A., & Guest, P. (1994). The path to below replacement-level fertility in Thailand. *International Family Planning Perspectives, 20*(3), 82-107.

Institute for Population and Social Research. (2019). *Mahidol Population Gazette: Population of Thailand, 2019.* Retrieved September 29, 2020, from http://www.ipsr.mahidol.ac.th/ipsr/Contents/Documents/Gazette/Gazette2019TH.pdf

Ishida, R., Oguro, K., & Takahata, J. (2015). Child benefit and fiscal burden in the endogenous fertility setting. *Economic Modelling, 44*(C), 252-265.

Jang, I., Jun, M., & Lee, J. E. (2017). Economic actions or cultural and social decisions? The role of cultural and social values in shaping fertility intention. *International Review of Public Administration, 22*(3), 257-275.

Laroque, G., & Salanié, B. (2014). Identifying the response of fertility to financial incentives. *Journal of Applied Econometrics, 29*(2), 314-332.

Luo, H., & Mao, Z. (2014). From fertility intention to fertility behaviour. *Asian Population Studies, 10*(2), 195-207.

Martin, P. Y. (2004). Gender As Social Institution. *Social Forces, 82*(4), 1249-1273.

Masaya, Y. (2013). Can child-care support policies halt decreasing fertility?. *International Journal of Economics and Financial Issues, 3*(2), 409-419.

McIntyre, R., & Smith, D. W. (1989). Theory of intentionality. In W. R. McKenna & J. N. Mohanty (Eds.), *Husserl's Phenomenology: A Textbook.* Washington D.C.: University Press of America.

McNown, R., & Ridao-cano, C. (2004). The Effect of Child Benefit Policies on Fertility and Female Labor Force Participation in Canada. *Review of Economics of the Household, 2*(3), 237-254.

McQuillan, J., Greil, A. L., Shreffler, K. M., & Bedrous, A. V. (2015). The importance of motherhood and fertility intentions among U.S. women. *Sociological Perspectives, 58*(1), 20-35.

Miller, S. (2019). Social Institutions. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Summer 2019 ed.): Metaphysics Research Lab, Stanford University.

Miller, W. B. (1994). Childbearing motivations, desires, and intentions: a theoretical framework. *Genetic, social, and general psychology monographs, 120*(2), 223.

Mills, M., Begall, K., Mencarini, L., & Tanturri, M. L. (2008). Gender equity and fertility intentions in Italy and the Netherlands. *Demographic Research, 18*(1), 1-26.

Park, S. M., & Cho, S. i. (2011). Factors associated with second childbirth intention: focusing on value of children in Korean married women. *Journal of Reproductive and Infant Psychology, 29*(3), 292-304.

Park, S. M., Cho, S. I. L., & Choi, M. K. (2010). The effect of paternal investment on female fertility intention in South Korea. *Evolution and Human Behavior, 31*(6), 447-452.

Parsons, T. (1990). Prolegomena to a Theory of Social Institutions. *American Sociological Review, 55*(3), 319-333.

Phuphaibul, R., Jongudomkarn, D., Nieamsup, T., Tejagupta, C., Kumhom, R., Wacharasin, C., & ityasuddhi, D. (2018). Structural Change of Thai Families, according to Family Life Cycle: A Preliminary Study. *Journal of Demography, 34*(1), 1-15.

Podhisita, C. (2009). Nuptiality Change in Thailand, 1960-2000 :Implication for Future Fertility. *Songklanakarin : E-Journal of Social Sciences & Humanities, 15*(5), 140-165

Prifti, E., & Vuri, D. (2013). Employment protection and fertility: Evidence from the 1990 Italian reform. *Labour Economics, 23*(C), 77-88.

Raymo, J., & Shibata, A. (2017). Unemployment, Nonstandard Employment, and Fertility: Insights From Japan's "Lost 20 Years". *Demography, 54*(6), 2301-2329.

Ridao-Cano, C., & McNown, R. (2005). The effect of tax- benefit policies on fertility and female labor force participation in the United States. *Journal of Policy Modeling, 27*(9), 1083-1096.

Samutachak, B., & Darawuttimaprakorn, N. (2014). *Lifestyle, life plans and the decision to have children among generation Y.* Paper presented at the Birth abnd Security in Population and Society, Bangkok.

Scanzoni, J. H. (1975). *Sex roles, life styles, and childbearing : changing patterns in marriage and the family.* New York: Free Press.

Schoen, R., Astone, N. M., Kim, Y. J., Nathanson, C. A., & Fields, J. M. (1999). Do Fertility Intentions Affect Fertility Behavior? *Journal of Marriage and Family, 61*(3), 790-799.

Scott, W. R. (2005). Institutional theory: Contributing to a theoretical research program. *Great minds in management: The process of theory development, 37*(2), 460-484.

Searchinger, T., Hanson, C., Waite, R., Harper, S., Leeson, G., & Lipinski, B. (2013). *Achieving replacement level fertility.* Retrieved September 29, 2020, from http://www.wri.org/sites/default/files/achieving_replacement_level_fertility_0.pdf

Shoichiro, T. (1997). *Family, community, and modernization in Asian societies : Japan, Vietnam, and Thailand.* Fukuoka, Japan: Fukuoka, Japan : Asian-Pacific Center.

Snopkowski, K., & Sear, R. (2012). Kin influences on fertility in Thailand: Effects and mechanisms. *Evolution and Human Behavior, 34*(2), 130-138.

Soriano, G. (1991). *The changing role of the family as a social institution in development in the Asia-Pacific region.* New York : ESCAP.

Tavares, L. (2010). *Yearning, learning and conceding: (Some of) the reasons people change their childbearing intentions.* In (Vol. 029): "Carlo F. Dondena" Centre for Research on Social Dynamics (DONDENA), Università Commerciale Luigi Bocconi.

The National Statistical Office. (n.d.). *Gender Statistics*. Retrieved September 29, 2020, from http://web.nso.go.th/gender/edu.htm

ThaiPublica. (2016). *Unvealing the Lastest Data Base of Tax Payers for 2016.* Retrieved September 29, 2020, from https://thaipublica.org/2016/01/personal-income-tax-structure-29/

United Nations, Department of Economic and Social Affairs, Population Division. (2013). *World Population Ageing 2013.* New York: The United Nations.

United Nations, Department of Economic and Social Affairs, Population Division. (2019). World Population Prospects 2019. Retrieved September 27, 2020, from https://population.un.org/wpp/

Urpelainen, J. (2011). The origins of social institutions. *Journal of Theoretical Politics, 23*(2), 215-240.

Vapattanawong, P., & Prasartkul, P. (2014). *The situation of births during the past half century.* Paper presented at the Birth and Security in Population and Society, Asia Hotel, Bangkok.

Wilson, C. (2004). Fertility below replacement level. *Science (New York, N.Y.), 304*(5668), 207.

World Bank. (2018). *Fertility rate, total (births per woman).* Retrieved September 29, 2020, from https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=TH&name_desc=true

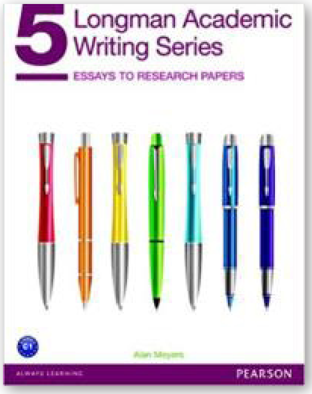
Zucker, L. G. (1987). Institutional Theories of Organization. *Annual Review of Sociology, 13*(1), 443-464.

JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : http://jmss.dusit.ac.th

Book Review

Alan Meyers



Bibliographical Details:

Book title: Longman Academic Writing Series 5: Essays to Research Paper

Author: Alan Meyers

Publisher: Pearson Education Year published: 2014 249pp. ISBN 9780132912747 THB432

For English language learners in the university level, their skill in writing is one of the many important skills they need to learn and master, more specifically their academic writing skills. As students' progress in developing their writing skills, the level of difficulty with regard to vocabulary, writing structures, and the process of writing compositions gets more and more complicated, formal and, in most cases, compositions become much longer. For some English language learners, the degree of difficulty can be doubled when instruction of academic writing is not thorough, detailed, or comprehensive.

Longman Academic Writing Series 5 is the fifth of a series of academic writing books published by Pearson Education. The target audience of this book are university-level learners of the English language. In the book series, the level of instruction progresses as students learn to write sentences, paragraphs, essays, and longer texts like research papers. Book 5 focuses on academic writing instruction transitioning from essays (short compositions) to research papers (long compositions). It provides students the knowledge on and techniques in writing compositions, particularly academic texts, and allow them to develop their English academic writing skills and expand the vocabulary knowledge. The book is a valuable resource for both teachers in providing a comprehensive instruction on academic writing, and for students in helping to write academic compositions, specifically essays and research papers.

The book comprises of nine chapters. Each chapter is logically structured with different parts that give a detailed instructional approach to writing a specific writing genre— expository essays, classification, process, cause/effect, definition, problem/solution, summaries, argumentative essays, and lastly, research papers. Writing models or example compositions are presented in each chapter to introduce students to the structure of the particular type of composition. In addition, skill-specific exercises or practices are included to help students apply the concepts being learned and have a hands-on experience in using the concepts as they complete the writing assignments. Vocabulary practices are also included in the book. The vocabulary is based on the writing models and these sets of vocabulary will be further practiced by the students and then used in their writing assignments.

The chapters contain instructions and strategies in writing the specific writing genre. The contents are presented in a way that follows the process of writing compositions. This is believed to be a rational approach as it provides students with step-by-step instructions as they complete the tasks assigned to them. Specific grammar concepts are presented in each chapter depending on the relevance and connection of the grammar concepts to the genre being learned. Moreover, further information and explanation is given for the grammar concepts as well as on how to write the composition in the appendices listed at the end of the book. Finally, the writing practices are given as writing assignments, wherein students can apply what they have learned in the chapter. These writing assignments are provided with step-by-step instructions so that students will be familiar with and practice the writing process as they do the tasks for each chapter.

The structure that the author employed in writing this book follows a pattern that is easy for students to follow as well as for teachers to provide instructions. It is structured as such so as to deliver a logical approach to giving instructions for writing and providing additional and equally essential concepts that will aid students in writing academic compositions. For some academic writing books, the focus is more on the structure of the text, the process of writing it and the formatting. *Longman Academic Writing Series 5* is a book on academic writing focusing on essays and research papers. It, likewise, provides language instruction with the inclusion of vocabulary learning parts, grammar concept presentations, explanations, and practices. With these additional instructions, students not only learn the technicalities of academic writing but also they are imparted with the linguistic concepts that English language learners need to develop their language skills in a more comprehensive scope.

Overall, Longman Academic Writing Series 5 is a comprehensive resource for learning academic English writing that will be highly useful for university-level English language learners who will be required to write essays and research papers as part of their academic requirement. The author's design of this book highly considers the logical presentation of the writing concepts with regard to how students will effectively learn to write academic compositions. The inclusion of vocabulary learning as well as grammar concepts makes this book suitable for learning both the technical aspects as well as the linguistic aspects of academic writing.

Guidelines for Writing and Submitting Original Manuscripts for Publication in Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences is an academic publication that aims to publish manuscripts such as original articles, review articles, and book reviews concerning multidisciplinary knowledge related to the field of humanity and Social Science and other related fields. The journal is published thrice annually. All manuscripts accepted for publication are copyrighted by Suan Dusit University; reproduction, in whole or in part, requires written approval from Suan Dusit Unversity. Excluding errors incurred during the printing process, all content contained within articles is the author's responsibility.

Publication Process

1. The journal accepts original manuscripts for consideration, from January to December.
2. The editorial board adjourns to consider the merits or submitted manuscripts and the scope of the journal. During this phase the integrity and accuracy of the manuscripts content is assessed.
3. An editorial letter is issued to the author for manuscripts that the editorial board deems inappropriate for publication. If the editorial board approves the manuscripts, an editorial letter will be sent to the author and the article will be subjected to peer review.
4. Articles that are deemed appropriate for publication are subjected to peer review by a panel of three experts in the appropriate field. In order to be deemed appropriate for publication, an article must be by recommended two of the three experts.
5. The qualitative assessments of the expert panel returned by the manuscript’s author. The author is expected to make the appropriate alterations indicated by the experts’ feedback.
6. The author returns the edited document; the editorial staff examines the changes to make sure they are congruent with the experts' recommendations as well as the journal format.
7. The revised version is granted the University's recognition of "Accepted" for publication status with the Journal of Multidisciplinary in Social Sciences Stamp on every page. Information regarding publication status (Accepted) is located on the journal's website (http/ research dusit ac.th/new/e-Journal)
8. The editorial tearm conducts an accuracy check for all articles before sending the manuscripts to the printer to create a draft journal issue.
9. The editorial board conducts a review of the draft journal issue before publication on the journal's website (http://research.dusit.ac.th/new/e-Journal). Suan Dusit University will place their official seal of approval on each page of the manuscript and to verify before formal publication.
10. Upon approval by each author, the final version of the journal will be published as a online publication, accessible on website (http://research.dusit.ac.th/new/e-Journal).

Publication Criteria

1. The original manuscript is concise and interesting to the academic community.
2. The content of the manuscript represents quality and theory of the discipline and also possesses knowledge with practical applications.
3. The manuscript's content is consistent with the aim and scope of the journal.
4. Manuscripts submitted to Journal of Multidisciplinary in Social Sciences must not have been published previously in or actively involved in the publication process of another journal.
5. All content within the manuscript must be the product of the author himself. Any use of intellectual property within must be appropriately credited to its original authors.
6. The author must comply with the writing style established by Journal of Multidisciplinary in Social Sciences.

7. There are four levels of assessments given to reviewed manuscripts:
   7.1 Requires minor or no revisions prior to publication.
   7.2 Requires moderate revisions prior to publication.
   7.3 Requires intensive editing and revisions followed by a future evaluation.
   7.4 Unsuitable for publication

In order to be assigned the "Accepted" status, an article must be assessed as “Requires minor or no modification prior to publication” by two of the three experts from the peer review process.

Formatting Guidelines

It is the author's responsibility to format manuscripts to the standards of Journal of Multidisciplinary in Social Sciences. The details of format style are contained herein,

1. Format

1.1 Single page printing on A4 paper with a width of 19 cm and height of 26.5 cm. The vertical and horizontal spacing from the margins must be 3.5 cm and 2.5 cm, respectively.

1.2 Typefaces and layout: English must be typed using TH SarabunPSK using Microsoft word. Specific font format guidelines are as follows.

1.2.1 The header contains the page number, aligned on the right side, in 12 pt. font.

1.2.2 The title in English languages must be 16 pt. font, bolded, and center aligned. The title should not exceed two lines of text.

1.2.3 The author's name in English language must be typed 14.5 pt. font and centered below the title. Asterisks (*) should proceed the authors' names which is correspond to the appropriate author.

1.2.4 Affiliations should match each author with their appropriate affiliated institutions and organizations. In case of different affiliations, superscript numbers should follow the surname1 and affliation1.

1.2.5 A footnote must be placed on the first page of the article with the text “*Corresponding Author”, the next line of text should contain “e-mail”, and the final line “**Affiliations” which specifies funding sources and agencies, for example “This research was supported by research grants from Suan Dusit University”.

1.2.6 “Abstract” in English must be 14.5 pt. font, bolded, left aligned, and placed below the Thai keywords section. Abstract text must be 14 pt. font, with 1 tab indentation from left and right margins.

1.2.7 “Keywords:” should appear in English language in 14.5 pt. font, placed beneath the English abstract text and be aligned with the left margin. English keywords must be 14 pt. font, and should not exceed four words. Each keyword should be separated by a comma (,) and space.

1.2.8 Regardless of language choice, the main text headings used throughout the paper must be 14.5 pt. font, bolded, and aligned with the left margin.

1.2.9 Bulleted items must appear as 14 pt. font, bolded, and be indented 1.5 tabs from the left margin.

1.2.10 Body text must appear as 14 pt. normal font, and be indented 1 tab from the left and right margins.

1.2.11 “References” must be 14.5 pt. font, bolded, and be aligned with the left margin. Individual entries must be 14 pt. font and should follow American Psychological Association (APA) formatting guidelines. Any lines of text for a single entry that exceed the first line should use a “hanging indent” of 1.5 tabs from the left margin.

1.2.12 Authors' names in Thai must be 14.5 pt. font, bolded and be aligned with the left margin. Name should contain Mr., Mrs. and academic title for each author. Affiliations should be below in both Thai and English as 14 pt. font. An address must be listed for each author.

1.3 An appropriate page length for publication in the Journal is approximately 15 pages.

2. Citing

Should follow American Psychological Association (APA) formatting guidelines. Guidelines for references can be found on the journal's website: http//research dusit ac.th/new/th/pr/

3. Ordering of Titles in Journal of Multidisciplinary in Social Sciences

The written manuscript may contain only English. The content should be easy to understand and clear. If the author uses abbreviation, full word must appear before any abbreviation.

3.1 The title should be brief, the length should not exceed 100 characters.

3.2 The authors if there are more than six authors only the first author is listed, followed by "et al."

3.3 Affiliated entities associated with the author should appear in English languages.

3.4 The abstract must be written in English language. The abstract should briefly summarize the research and not exceed 250 words or 15 lines of text.

3.5 The "Keywords" section must contain no more than four keywords that allow for appropriate searching and selection based upon the article's topic.

3.6 The "Introduction" section should provide background information relevant to the research and provide information regarding the manuscript's content.

3.7 A statement of purpose should accompany the article to explicitly state the purpose of the study.

3.8 The framework clarifies the dependent and independent variables examined in the study.

3.9 The "Methodology" section delineates the procedures, how the research was conducted, sampling method (i.e. simple random samples) and population, and the creation and development of research tools used for data collection and analysis.

3.10 The "Results" section presents data obtained during the research and may be displayed as tables, graphs, illustrations, and accompanying explanations. Tables should be not have left and right borders and are normally black and white printed. No more than five tables should be present in the "Results" section. Pictures within the section should be clear and use simple black and white coloring with an accompanying caption, the author wishes to use colors for any item they may do so; however, the author will be responsible for the additional costs of color printing.

3.11 The "Discussion" section should include a summary of the findings and address whether or not the data support the research hypothesis and compare research findings to other similar research works.

3.12 The "Suggestions" section should provide recommendations for the application of the current work as well as potential areas for future research inquiries.

3.13 A final section should include contact information, address and e-mail, for each author. The list of authors should match the same order presented below the title on the title page.

Sending Original manuscript

1. Compose the manuscript using the format of the Journal of Multidisciplinary in Social Sciences.
2. Send the manuscript via the R-Sytem research database website http://research.dusit.ac.th/r-system.

Journal of Multidisciplinary in Social Sciences Publication Ethics

Editorial Regulations

• The duty of editors is to consider and evaluate the submitted manuscripts related to field of the multidisciplinary body of knowledge in Social Sciences based on the content only. The ethnicity, country of origin, gender, sexual orientation, political affiliation, or religious belief of authors will have nothing to do with the editor's decision.

• The editors shall not share the information about the submissions to anyone except the authors, reviewers and JMSS staffs throughout the processes.

• Editors always make sure the manuscript has no substantial vested interests authors or affiliated organizations.

• It is the duty of editorial staff to assure that the manuscript has been peer-reviewed by at least two reviewers in the field of Social Sciences or other related field appropriate for each manuscript. The editorial staffs also have to be careful about the copyright Infringement, falsification of data, and plagiarisms. If there is an offense according to the said regulations, the editor must investigate and seek for evidence before consider reject the manuscript.

• If the Editors suspect that the manuscript might has been published elsewhere, the editor should investigate and consider reject.

• In case of unethical publishing practices that are later uncovered, the action will still be taken seriously.

Reviewer Regulations

• Reviewer should give constructive and professional comments. Improper criticism must be avoided.

• If the manuscript given is not in the area of expertise, the reviewers should inform the staff immediately.

• Reviewers must not share any information of the manuscript to anyone other than the editorial staff.

• If other works contained in the manuscript are not properly credited, reviewers are required to inform the editorial staff.

• If there are conflicts of interests, reviewers should inform the editorial staff. Editors will decide whether the reviewer is appropriate for the manuscript or not.

Author Regulations

• The authors should write the manuscript related to the theme of multidisciplinary in Social Sciences. The research manuscript should contained relevant background information, proper methodology, APA style citation, accurate results, and reasonable discussion.

• The authors should follow the journal guidelines strictly.

• Any opinion or perspective made in the manuscript must be explicitly highlighted as "opinion" or "perspective"

• The authors must be aware that fraudulent information and omission of important information are unethical author behaviors.

- The authors must be able to provide research data if the Editor see needed.
- Authors must reference other works properly. Any work involved in the manuscript also must be well credited.
- The authors must make sure that the manuscript has not been published elsewhere before and is not currently in the publication process in other journals.

Journal of Multidisciplinary in Social Sciences

Vol. 17 No. 2 May - August 2021

RDI
SUAN DUSIT UNIVERSITY

Research and Development Institute
Tel: 066-2244-5280 Fax: 066-2668-7460
jmss@dusit.ac.th