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Discovering the Technology Adoption of Local OTOP Entrepreneurs in Pattani: Exploratory of the Network Structure

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Abstract: This paper explores the technology adoption of the local entrepreneurs and the intention to use the technology i.e., objectives and technology adoption behaviors. 150 local entrepreneurs located in Pattani province in Thailand voluntarily provided information. They were asked to fill in a set of questionnaires regarding the objectives, type, frequency, and time of adopted the technology. The data analytics techniques, including, hierarchical clustering, Epistemic Network Analysis (ENA) were used to explore the qualitative data. Clustering enabled to categorize the entrepreneurs into groups based on the similarity of technology adoption objectives. ENA illustrated the connections of the studied elements and formed a structure of a network. The results suggested that currently, local entrepreneurs adopt the commonly use social media technology in order to reach out to the targeted customers. The duration of technology adoption was different between the two groups. This exploration suggested that the intention of using the technology and the technology adoption behaviors were different among the local entrepreneurs who sell the different types of products. The main implication derived from this study are two twofold. That is, there are differences in terms of technology adoption between local entrepreneurs who sales necessary goods and unnecessary goods. Government and related sectors may use this insight in order to design the campaign or provide the necessary training on how to use technology effectively.

Keywords: Product of origins, marketing, technology adoption, network analysis

1. Introduction

The global pandemic of COVID-19 has a significant impact on the economy around the world. Due to the limitation of travelling and limited access to the several cities and countries, the approaches of doing business have been evolved. That is, technology and online transaction have been rapidly integrated as a part of a business process. These challenges in the global situation impact not just the big cooperation but also the local entrepreneurs. Local entrepreneurs are important for the growth of the local economy in the nation. In Thailand, the government had initiated a program to strengthen the local economy in 2006 called 'One Tambon (sub-district) One Product' also known as OTOP. OTOP was inspired by the Japanese' successful economic program called 'One Village One Product' (OVOP). It aimed to help the local entrepreneurs promote, market and sell locally made products. Since then, the OTOP program has been nationwide adopted by 7,255 Tambon (sub-district) in Thailand. The OTOP includes a variety of products from traditional handicrafts, hand-made garments, accessories, souvenirs, foods and beverages. Not only does the OTOP reach Thai customers, but it also has been promoted to export to different countries.

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Despite the successful survival of the program from 2006, local OTOP entrepreneurs are currently facing difficulty in the competitive market. Unlike the big corporation, the local OTOP entrepreneurs are groups of villagers who work together to produce the goods. Most of the products are hand-made. They often lack the resources, skills, tools, technology, knowledge, and budget to compete with the market. The hit of COVID-19, therefore, has a significant impact on the survival of the local OTOP entrepreneurs. The adoption of technology to support the OTOP business had been found to be limited [1]. Local entrepreneurs confront many problems in adopting technology. Mudor and Arttanuchit [1] pointed out that there are many factors influencing the technology adoption of local entrepreneurs in the southern border provinces of Thailand. For instance, based on their in-depth interview with the local entrepreneurs, they found that knowledge of social media is highly affected on the decision to adopt social media to support their business.

Another important point is understanding the market and technology adoption evolvement can assist entrepreneurs to sustain their business. In the present markets, a technology change is everywhere, and it seems to take some time for entrepreneurs to adopt new technology. Categorizing potential adopters is one of the possible ways to understand the market, search for target markets for new products, develop strategies in order to penetrate the different adopter categories, and to predict the obsolescence or emergence of a product through time [2]. According to Martinez et al. [2], the speed of diffusion of technology and innovation depends on many factors, including, the characteristics of the product itself, and also the predispositions of the target adopters.

The type of product influences the technology adoption behaviors. Entrepreneurs with sales and huge profits may use social media to retain existing customers and find new customers at the same time. For example, Ngsing and Kusit [3] studied the relationship between customer relationship management on social media of Starbucks coffee. They found that most Starbucks customers have a strong relationship with Starbucks products. They showed a high level of loyalty to the Starbucks brand. Starbucks uses marketing communications via YouTube and Blog, and also implement social network marketing on Facebook and Twitter, resulting in a large number of subscribers in a short period of time. In a different context, Chaengprachak [4] studied the process of community enterprise development with the participation of “Pa Phu chili sauce group”, a group of local entrepreneurs in Chonburi Province, Thailand. This product is using local wisdom to produce chili sauce as a product of OTOP. The results showed that technology adoption, such as online media, had many benefits, such as increasing customers awareness through advertising, adding product value via information, online media can also serve as a communication between members. In summary, the differences in product types may have had different purposes of technology adoption and different behaviors of technology adoption. For example, Starbucks utilizes technology to build relationships with customers, meanwhile, the local entrepreneurs use technology to give information, and sell products.

The technology adoption of the big brand business and local OTOP entrepreneurs indicates different behaviors and objectives of adopting the technology. Most of the research focused on the understanding of how businesses, in general, utilize technology. There is a lacuna in understanding how local OTOP entrepreneurs have adopted technology, and which is the most effective approach of adopting the technology in order to support and sustain their business in this competitive market. Therefore, this research aims to fulfil this gap by exploring how local OTOP entrepreneurs currently utilize the technology. This is an exploratory step in order to research for the guideline on how to support the local entrepreneurs to be able to compete with the other business and be able to survive under this challenging circumstance of the global pandemic. Hence, this paper tried to discuss how do OTOP adopt technology and explore if there are any differences in technology adoption intention and behaviors.

2. Related Work

In this section, we discuss the related works in technology adoption which also refers to as technology diffusion. The factors that influence technology diffusion are discussed including, communication, social system, and time. The following section discusses the type of product and how it impacts technology adoption.

2.1 Technology Diffusion and Its Factors

The arrival of new technologies arises from the spread of technology itself. Business sectors adopt technology to support many steps of the business process such as in production process, marketing, distribution chains etc. The adoption of technology also refers to as technology diffusion. Many scholars provide the definition of diffusion. For instance, Surry [5] defines diffusion as the process by which an innovation i.e., new technology is adopted and gains acceptance by members of a certain community. Rogers [6] opted that diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. Rogers [7] described technology diffusion as 'the process through which an individual or other decision-maker unit passes from first knowledge of an innovation to a decision to adopt or reject, to implementation of the new idea'. From the point of view of an entrepreneur, a technical solution is considered to be an innovation when it is new or perceived as new by the individual or the unit of adoption.

According to Rogers [8], factors that are indicative of innovation's rates of adoption, include, relative advantage, compatibility, complexity, trialability, and observability. Rogers [8] argued that the innovations that are perceived by individuals as having a greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations.

Communication is also considering a key factor of technology adoption and diffusion. Communication through certain channels is crucial for spreading information. Not only do individuals communicate with each other, but some individuals also pass along their influence as well as their knowledge to other individuals. For example, the entrepreneur communicates the details of products or services through social media for their customers. In the 20th century, various technology has been adopted to facilitate the business communication. The most frequently and commonly use passage is social media technology. Social media is an online social system. Social System is a set of interlinked units that participate in the diffusion process. The members of units of a system may be individuals, informal groups, or organizations. Thus, the group of individuals that together complete a specific goal (adoption). Along the same line, social systems are referring to the group or groups of people that an innovation diffuses through. The structure of a social system can speed or impede the diffusion of innovations and technology in the system [9]. Rogers [6] identifies five key characteristics of social systems with respect to diffusion research, namely, social structure, system norms, opinion leaders and change agents, types of innovation decisions, and the consequences of innovation. In this particular research, the social system refers to the local OTOP entrepreneurs' group that adopted technology to support their business.

Besides the communication and social system, time is another factor involved in diffusion. This is because each individual or entrepreneur may take time to decide to adopt an innovation and technology. Not all adopters adopt an innovation at the same time. In other words, time explained how long it takes for the group to adopt innovation as well as the rate of adoption for individuals. According to Rogers [7], the time dimension is involved in technology diffusion in three ways. First, time is involved in the innovation-decision process. The innovation-decision process is the mental process through which an individual (or other decision-making units) passes from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and confirmation of this decision. An individual seeks information at various stages in the innovation-decision process in order to decrease uncertainty about an innovation's expected consequences. Narayanan [10] further explains that the decision process leads either an individual or a firm to adopt an innovation involves five steps: awareness, attitude formation, decision, implementation, and confirmation. As supported by Van de Ven [11] explains the adoption process is always based on the decision of an individual or consensus of a decision-making unit. Similarly, Rogers [7] and Frambach et al., [12] give details on adopting organization, the innovation adoption process includes awareness of innovation, attitude formation, evaluation, decision to adopt, trial implementation and sustained implementation.

Even though, technology has been diffused for decades. However, for the local entrepreneurs who own a small business, technology adoption has been found to be limited. According to Nguyen et al., [13], technology adoption among small business is relatively low. Lee and Runge [14] suggested that the factors that influence the adopt of technology by the small business were the small entrepreneurs' perception on i) technology's advantages; ii) social expectation and iii) innovativeness of management strategy. Similarly, Van Akkeren and Cavaye [15] found that the perception of business owners on the benefits of technology on business impact on the decision to adopt the technology. Based on these research studies, business owners' perception and intention of using the technology has high impact on the adoption of the technology. Therefore, in this study, the intention of local entrepreneurs on using the technology is explored.

Besides the aforementioned factors, technology adoption is also dependent on the type of products that the business sectors produced.

2.2 Type of Product

The type of goods and products is one of the important factors that has been recognized as the factors that impact the decision and the approach to adopting the technology. For example, Jiewju et al., [16] studied the channel of marketing communication of the OTOP group from Kamphaeng Phet Province, Thailand who produce Hammock broom. They used social media i.e., Facebook to sell the products. The use of this social media has resulted in an increase of the distribution channel of the group. It makes the group known to a large number of consumers. Along the same line, Thongkot, Wongtaw and Suttarachai [17] studied the marketing factors affecting the purchasing decision of OTOP products of Kunnapat Spa Salt, Udon Thani Province, Thailand. Survey research was collected data from a sample of 400 people. The results showed that the distribution channel of OTOP group through the website created the satisfaction of consumers at the highest level. To summarize, the different product types affect the use of different technologies.

Similarly, Rhee et al., [18] conducted a large-scale web survey to examine the customers' web technology usage across three categories of products/services. They found a significant association between the customers' perceived technology usage and the type of products. These research studies suggested that the decision to adopt the different types of technology also depends on the type of product.

Based on the presented gap highlighted through the review of literature, the aims of this research are twofold. First, to classify the group of technology adopters based on the objectives and intention of utilizing the technology. Second, to examine the connection between the technology adoption behaviors of the classified adopters. Hence, two research questions were formulated to guide the development of this research including:

- RQ1: What are the aims of adopting the technology among the local OTOP entrepreneurs? Were there any differences in terms of different types of goods/products?
- RQ2: Were there any connections between technology adoption behaviors among the local OTOP entrepreneurs in the Pattani province?

3. Methodology

3.1 Data Collection

The data used in this study was collected from 150 local OTOP entrepreneurs located in Pattani province. Based on the data collected by Pattani Community Development Office, there were 959 registered local OTOP entrepreneurs in Pattani Province. Hence, by using a well-accepted sampling calculation model of Yamane [19], at the precision of 90%, the sample size of this study should be more than 100 entrepreneurs to ensure the precision of the collected information. The samples were selected from all districts in the area of Pattani province. A random sampling was used to gain representatives of the samples. Therefore, the set of questionnaires was distributed to 150 local OTOP entrepreneurs by using a multi-stage sampling process. The questionnaire was formed and reviewed by the five experts. The pilot test was carried out with 50 participants involved in the initial pilot study to test for the reliability of the questionnaire. Cronbach's alpha was 0.737 indicated the reliability of the formulated questionnaires. The questionnaire is comprised of 5 sections. The first three sections aim to collect general information about the entrepreneurs and their businesses. The fourth and fifth sections aim to collect information about the technology adoption and the strength, weakness, threat, and opportunities (SWOT analysis) of the business based on the entrepreneurs' point of view.

In section four of the questionnaire, which is the main focus of this research study, local OTOP entrepreneurs were asked to rate the importance of seven specified objectives of using the technology by using the Likert scale (1 indicate the highly unimportant – 7 indicate the highly important). Seven objectives were:

- Technology is used to provide information about the product
- Technology is used to receive the order from the customers
- Technology is used to provide the answer to question raised by customers
- Technology is used to present the review of customers who buy the products
- Technology is used to support the billing process
- Technology is used to inform the customers of the delivery process
- Technology is used to provide information on the promotion and sales

They also were asked to identify the types of social media technology used, the frequency of technology usage and the time i.e., how long they have adopted the technology to support their business. Table 1 provides a brief description of collected data regarding the technology adoption behaviors.

Table 1 – Collected data

Data	Item	Description
Type of social media technology to support their business	Tech_Facebook	The local OTOP entrepreneurs reported on using Facebook
	Tech_Line	The local OTOP entrepreneurs reported on using Line Application
	Tech_Instagram	The local OTOP entrepreneurs reported on using Instagram
	Tech_Twitter	The local OTOP entrepreneurs reported on using Twitter
	Tech_YouTube	The local OTOP entrepreneurs reported on using YouTube
	Tech_Email	The local OTOP entrepreneurs reported on using email
	Tech_Weblogs	The local OTOP entrepreneurs reported on using weblogs
	Tech_Others	The local OTOP entrepreneurs reported on using other types of technology
Frequency of usage technology to support their business	Tech_Frq1.5	The local OTOP entrepreneurs used technology for 1 to 5 times per week
	Tech_Frq6.10	The local OTOP entrepreneurs used technology for 6 to 10 times per week
	Tech_Frq11.15	The local OTOP entrepreneurs used technology for 11 to 15 times per week
	Tech_Frq15Plus	The local OTOP entrepreneurs used technology for more than 15 times per week

Duration/Time of using technology to support their business	Tech_LessYear	The local OTOP entrepreneurs had been using the technology less than a year
	Tech_OneTwoYear	The local OTOP entrepreneurs had been using the technology for one to two years
	Tech_ThreeFourYear	The local OTOP entrepreneurs had been using the technology for three to four years
	Tech_FourPlusYear	The local OTOP entrepreneurs had been using the technology for more than four years

3.2 Data Collection

In order to answer the highlighted research questions, descriptive statistics were used to provide the overall pictures of the data. Then, the hierarchical clustering technique was used to automatically categorize the local OTOP entrepreneurs into groups based on the similarity in terms of objectives. Hierarchical clustering is considered as an unsupervised machine learning algorithm that is widely used to automatically categorize the data into a group based on a similarity of the data point. In this study, the local OTOP entrepreneurs who participated in this study were asked to give feedback on the objectives of adopting the technology in their business. They were asked to rank the importance of these objectives. Also, the behaviors of technology usage, including, type of social media technology, frequency of usage, and duration of using the technology were collected.

Network analysis is one of the well-established data analytic techniques that can be used to discover the connection of the elements contained in the data. Networks, in graph theory, are usually created by computing the location of the nodes based on the occurrences. A node refers to the data point which can be people, factors, or things that researchers are explored. For instance, this research aims to explore the behaviors of using the technology to support the local business, therefore, the nodes were the types of social media technology, the frequency of usage, and the duration of using the technology. The links or edges indicate the connections between nodes. Nodes and links form a network that illustrates the graphical relationship of the explored elements based on the occurrences within a unit of analysis.

In this study, the Epistemic Network Analysis (ENA) which is one type of network analytics was used. ENA was build based on the epistemology theory [20]. Unlike other types of network analysis techniques, ENA is suitable for the dataset that is not too large and not too small. The computation of nodes by using the ENA give the advantage over the other types of network analysis. That is, given the same dataset, the ENA algorithm projects the location of the node at the same ENA space. Therefore, the comparison between the two groups is possible [20]. Moreover, ENA considered the frequency of co-occurrence of the elements. Hence, the most frequently co-occurred of the nodes were illustrated with the darker and thicker links. This enables the researchers to observe the relationship of the elements within a network [21]. The mentioned functions of ENA allowed us to observe the mutual connections and differences in structures of the groups of local OTOP entrepreneurs, hence, address the second research question.

4. Result

The result section is divided into two parts based on the formulated research questions.

4.1 RQ1: Objectives of Using the Technology

There were 150 local OTOP entrepreneurs who participated in this research study. In general, more than 72 percent of participants sell the edible goods including, food made from local ingredients such as Velvet tamarind, pickled fish etc. 12 percent sell products related to clothes such as traditional clothes and Muslim attire. 10.67 sales the products that can be used for house decorations and other types of souvenirs and 0.02 percent sales the herbal made medicines.

The participants were also asked to rate how they use technology and how using technology is important with regard to their business process. Overall, local OTOP entrepreneurs adopted the technology to support their business process for one to two years (67 out of 150 local OTOP entrepreneurs). 37 entrepreneurs started to used technology in less than one year. 29 of them used technology for more than three years. 29 of them used technology to support their business for more than four years. The most frequently used applications were Facebook (129 of 150 local OTOP entrepreneurs). 125 of them noted that they used the Line application. 33 local entrepreneurs mentioned the use of Instagram. Email and YouTube were stated to be the least used application (16 and 11 local entrepreneurs, respectively). Most of them used technology for marketing at least 1-5 times per week (73 out of 150 local entrepreneurs). 32 of them stated that they use technology 6 – 10 times per week. 42 of them stated that they used technology more than 15 times per week. Only 3 of them stated that they used technology about 11-15 times per week.

Regarding the objectives of using the technology, Table 1 provides descriptive statistics of the collected data. In general, participants rated the use of technology as slightly important for their business, including, providing information about the product (median (Q1 and Q3) = 4 (2, 7)); receiving the order from the customers (4 (2, 6)); providing the answer to the questions asked by the customers (4 (3, 5)); presenting the customers' review of the product

(4 (2, 5)); supporting the billing process; informing the customers of the delivery process (4 (2, 6)) and providing the information about the promotion and sales (4 (2, 6)).

Table 2 - Table captions should be placed above the table

Code	Objectives	Median (Q1, Q3)
obj1_information	Technology is used to provide information about the product	4 (2, 7)
obj2_order	Technology is used to receive the order from the customers	4 (2, 6)
obj3_QA	Technology is used to provide the answer to question raised by customers	4 (3, 5)
obj4_review	Technology is used to present the review of customers who buy the products	4 (2, 5)
obj5_bill	Technology is used to support the billing process	4 (2, 5)
obj6_delivery	Technology is used to inform the customers of the delivery process	4 (2, 6)
obj7_promotion	Technology is used to provide information on the promotion and sales	4 (2, 6)

Based on the presented information on the objectives of the technology application (refer to Table 1), Hierarchical Clustering is used to automatically categorized the local OTOP entrepreneurs based on the similarity of the objectives.

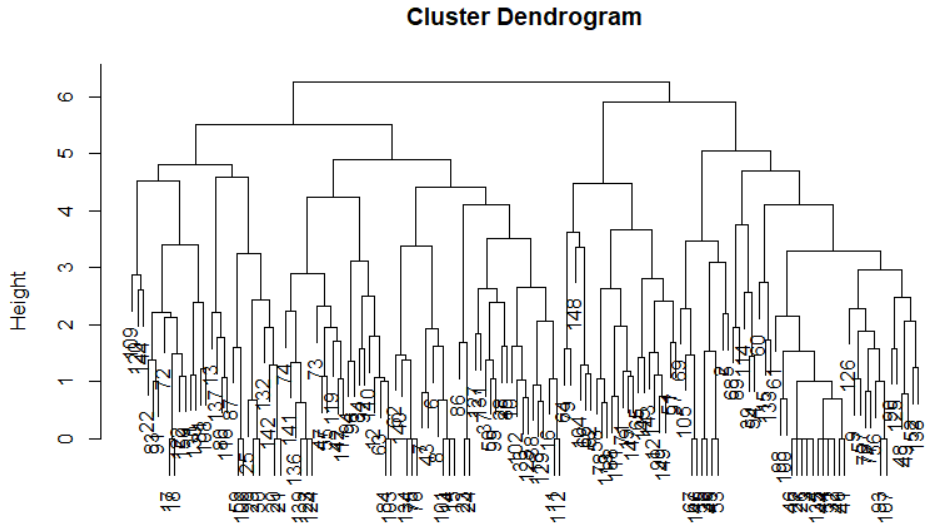

Fig. 1 - Dendrogram produced by the hierarchical clustering

The dendrogram produced by the data analytics algorithms (Fig. 1) suggested that two groups are a suitable solution to this dataset. Fig. 2 presents the objectives of using the technology. Note that the data were collected by using the Likert scale. 1 indicated that the local OTOP entrepreneurs viewed the objectives as highly unimportant while 7 indicated that the objectives are highly important.

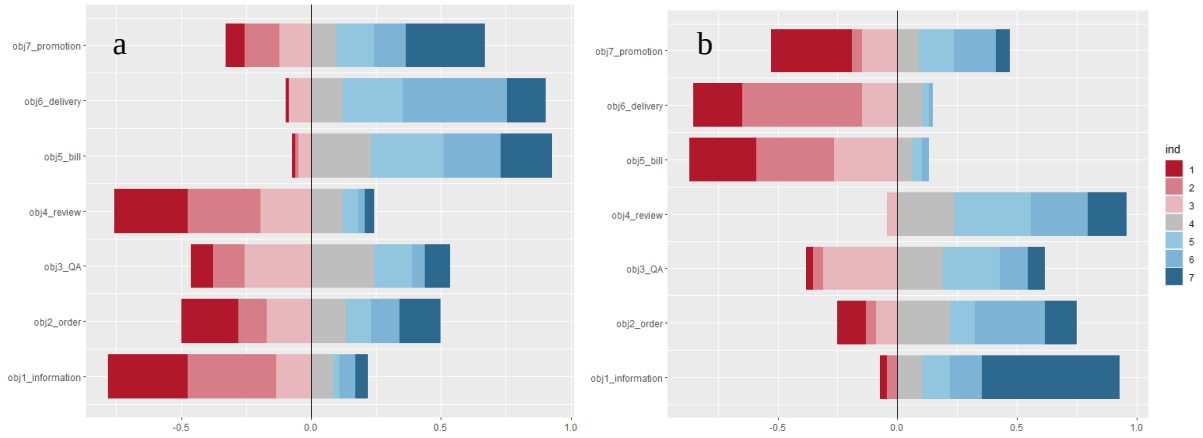

Fig. 2 - Objectives of Group 1 Business Process-Necessary Goods (a) and Group2: Information Provision-Unnecessary Goods (b) based on the Likert scale (1-highly unimportant to 7-highly important)

• **Group 1-Business Process- Necessary Goods:** 82 out of 150 local OTOP entrepreneurs who participated in this study were automatically categorized in Group1. 60 percent of foods, 80 percent of beverage, 60 percent of clothes and 30 of decorated products were grouped in this group. Food, beverage and clothes are considered as the necessary products. In terms of objectives, this group indicated that they used technology in order to provide information about the billing process (obj5_bill), delivery (obj6_delivery) and promotions (obj7_promotion). They rated the providing general information (obj1_information) and review (obj4_review) of the product as the least important goal.

• **Group 2-Information Provision- Unnecessary Goods:** This group contained 68 out of 150 local OTOP entrepreneurs. 40 percent of foods, 20 percent of beverage, 40 percent of clothes and 70 of decorated products and 100 percent of herbal made products were grouped in this group. Even though the result contained quite a similar type of products, but the proportion of products are different. Group2 contained more unnecessary goods. The objectives of this group were different from the first group. That is, local OTOP entrepreneurs focused more on using the technology to provide general information about the product (obj1_information), receiving the order from customers (obj2_order), answering the question asked by customers (obj3_QA), and review of the product (obj4_review). They pay less attention to the use of technology to provide information about the billing process (obj5_bill) and delivery (obj6_delivery).

4.2 RQ2: Connection between Objectives and Technology Adoption Behaviors

To answer the second research question on the connection of the detected clusters and the technology adoption pattern, the ENA is used. ENA technique enables us to explore the network of connections between the interested elements. It illustrates the structure of the network. In this study, three elements based on the technology usage behaviors were explored, including, i) the type of social media that is being used; ii) the frequency of using the technology per week; and iii) the time/duration of using the technology to support the business and marketing. A brief description of the items in each element was explained in Table 1. Fig. 3 presents the network of these three elements for each group detected in RQ1. Note that the thicker and darker line indicate a stronger connection between the nodes. This indication denotes the co-occurrence and links of the nodes.

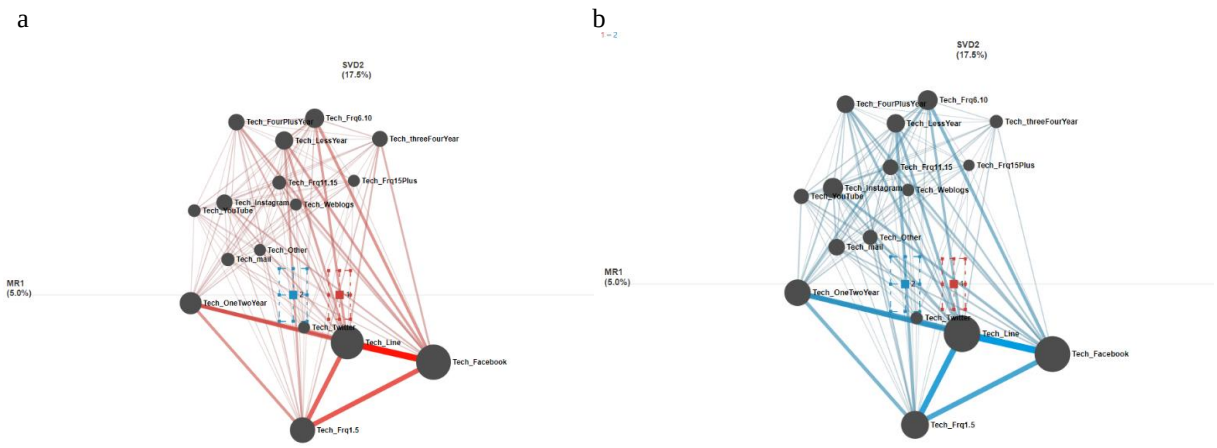

Fig. 3 - The network structure of two detected groups based on the objectives of using the technology Group 1 Business Process-Necessary Good (a) and Group2: Information Provision-Unnecessary Goods (b)

As presented in Fig. 3 (a and b), it can be observed that both networks show similar patterns. That is, most of the local OTOP entrepreneurs used Facebook and Line Application for marketing communication. Most of them had been using the application for one to two years as shown by the thickened lines linked between *Tech_OneTwoYear* to Tech_*Line* and Tech_*OneTwoYear* to Tech_*Facebook*. Most of them used Facebook and Line for business purposes about one to five times per week as illustrated by the strong connection between *Tech_Frq1.5* to *Tech_Facebook* and to *Tech_Line*.

Even though the two detected groups showed similar patterns of connection among the technology usage behaviours, however, when exploring the density of connection (Fig. 4) by subtracting the two networks, the differences can be observed.

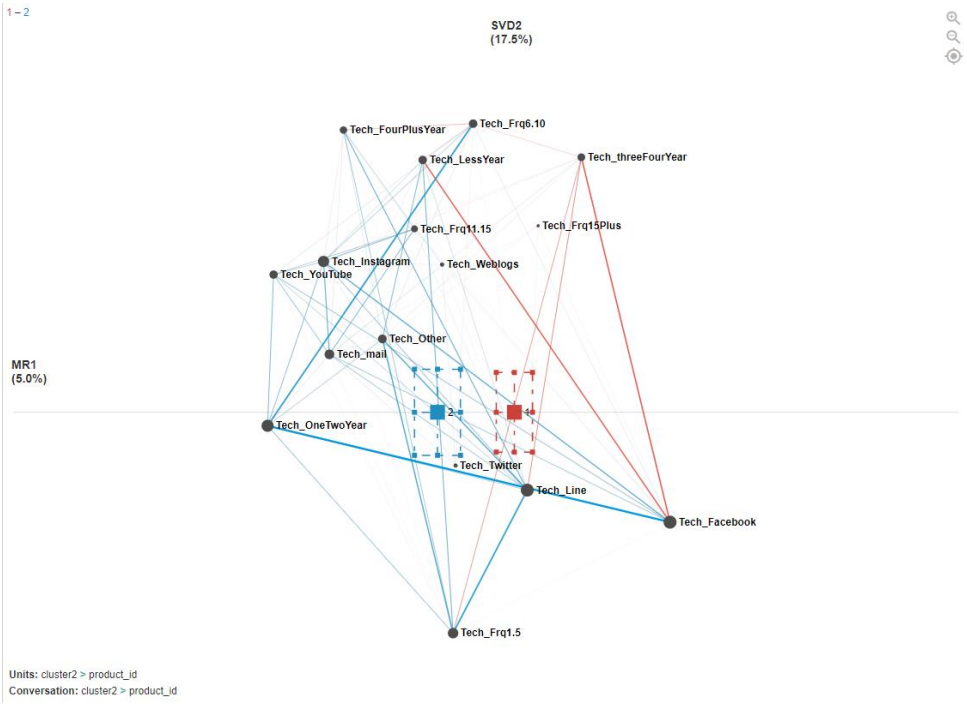

Fig. 4 - The subtract network of Group 1 and Group 2

Fig. 4 showed that when putting the networks on top of one another and subtract the similarity, it can be observed that the red color which indicated Group 1 Business Process-Necessary Good had stronger connections between *Tech_Facebook* and *Tech_LessYear* and *Tech_Facebook* to *Tech_threeFourYear*. Also, they are using the email for a long time as illustrated by the links between *Tech_email* to *Tech_threeFourYear*. Meanwhile, Group2: Information Provision-Unnecessary Goods showed stronger connections among the rest of the explored factors. They used other types of social media technology such as Line, Instagram, Twitter, Weblogs and YouTube much more often as compared to the first group. The frequency of the use is also different. There were higher entrepreneurs who adopted technology for one to two years and accessed to the technology 6-10 times per week.

5. Discussion

As presented in the result section, we detected two groups based on the patterns of how local OTOP entrepreneurs rate the importance of the specified objectives. Overall, Group 1 Business Process-Necessary Good argued that the use the technology to inform the customers of billing and delivery were highly important in their business. Billing and delivery of goods are considered as the process of doing business. When exploring the type of products, the entrepreneurs focused on, it can be observed that most of the products were considered as the necessary goods i.e., the goods that is the products that are important in daily life. Customers will buy this product regardless of circumstance, economic changes, or income levels. The objectives of Group 1 showed that they understate the use of technology for giving the information and reviewing the necessary goods. This complies with the nature of necessary goods which the customers usually have general information about this type of goods. hence, the product information and previous customer reviews showed less importance for the customers' decision to buy the products.

Group2: Information Provision-Unnecessary Goods focused on using the technology to provide information regarding the products and goods. They rated the review of the products, advertising the promotion plans and answer customers' questions as highly important objectives of using the technology. These objectives were related to providing the information to customers which is important for the marketing purpose. This is well-aligned with the nature of doing business for unnecessary goods. Since the decision to buy unnecessary goods depends on several factors, especially, the economic status of the customers. The customers who buy the unnecessary items, hence, may require extra information about the product to take into account before purchasing such as how many colors does the product have? How many sizes, how many styles?

The edible good, clothes, decorations, souvenirs, and herbal made medicines were the main types of products that the local OTOP entrepreneurs in this group sold. As compared to the first group, the type of products in this group contained fewer necessary goods. Based on the law of demand, buying unnecessary goods is depended on the level of income, economic situation, and brand. Hence, those local OTOP entrepreneurs who sell these types of products may require higher affords to advertise in order to encourage the customer to buy the products. Providing external information, answering to the questions asked by customers and also provide the customers' review information are among the advertisement strategy that has shown to be increasing the sales.

When exploring in terms of the network structure, the local OTOP entrepreneurs in both groups commonly used Facebook and Line for the business proposed. This is aligned with the exploration of technology usage in Thailand [22, 23]. About 75 percent of the Thai population use social media. Line and Facebook are the two most frequently used technology. 50.77 million Facebook and 45 million Line accounts were registered by Thai [22]. Using the commonly used technology by intended customers is the best way to reach out to the customers. Praditphonpanich [24] studied alternative marketing communication strategies in creating brand engagement of Central Plaza Shopping Centers. His study has emphasized that entrepreneurs prefer to use the Facebook FanPage to help disseminate promotional images and messages of retailers in shopping centers. The Facebook Fan Page resulted in quick information among customers. In addition, showing likes (Like) and publishing (Share) makes it possible to expand more customer base. Somprasong and Thongmak [25] study the use of online media in small and medium-sized enterprises in Thailand. With a sample size of 200 organizations, it was found that the most popular media was Facebook. It can build relationships with customers, with a total of 179 organizations, increasing sales and expanding the customer base. Khamkruea and Chokudomchai [26] revealed that based on 385 consumers who purchased OTOP products via social media in Kanchanaburi province, most of them received communication/promotion of OTOP products from social media. The source of OTOP products information were mostly through the most frequently used social media such as Facebook. The reason for choosing to purchase OTOP products via social media was mainly because the purchasing process was easy. The most popular products purchased by the customer who volunteer participated in this study was clothes and apparel. They reported that each time they spent about 500 to 1,000 Thai Baht on purchasing the products. Thongkot, Wongtaw and Suttarachai [17] studied the marketing factors affecting the purchasing decision of OTOP products of Kunnapat Spa Salt, Udon Thani Province, Thailand. The results showed that the distribution channel of OTOP group through the website created the satisfaction of consumers at the highest level.

To summarize, the entrepreneur may utilize the different type of technology in line with the product type as well as the target customers. This concise with the different groups of local OTOP entrepreneurs in this study who used different types of social media technology. Group 2 utilize more diverse types of social media technology. In addition, the frequency of technology used by Group 2 was more often as compared to Group 1. Thus, the product differentiation impacted the type and the frequency used of technology.

5.1 Implication and Limitation

The main implication from this study is divided into two parts, firstly, the study showed that local OTOP entrepreneurs use technology differently. This finding suggested that selecting the suitable technology for their product is important. As for necessary goods, local OTOP entrepreneurs should consider adopting technology based on to provide information related to the business process such as billing and delivery process. In contrast, for the unnecessary goods, OTOP entrepreneurs might need to adopt technology for marketing communication such as to provide general information and reviewing the product.

Secondly, the government agency may be able to make use of this information for formulating policies for developing OTOP operators. For example, local government might initiate the strategy to empower entrepreneurs in communication technology. They may design the suitable strategy for each group of local entrepreneurs by considering the type of goods they are selling, i.e., dividing the local entrepreneurs' goods into necessary and unnecessary in order to apply the suitable strategies in stimulating their skills. In addition, the government agency could also provide courses to informing the local OTOP entrepreneurs in order to make use of the availability of current and future technology.

The limitation of the study includes the difficulty in collecting data of local OTOP entrepreneurs in vulnerable areas. Moreover, the study area is culturally diverse from other parts of Thailand. Therefore, other factors may need to be included when exploring the business process, marketing, and consumers' behaviors in this area, such as religion. In addition, this study currently explored the behaviors of local entrepreneurs in the three southern border provinces of Thailand. Hence, the applicability may be diverse in other areas. The current study recommended that the implication of the study suggested above may be adopted by the local entrepreneurs in the same areas such as Yala and Narathiwat provinces. This is because the market environments in these provinces are quite similar. As for other areas of Thailand and other regions, more studies are required in order to confirm the findings and derive its generalizability of the findings

6. Conclusion

In this paper, the exploratory analysis on the objectives of technology adoption was explored. Technology has been recognized as one of the driving forces that have the potential to increase the sale of goods and products. More important, the COVID-19 situation has a significant impact on the shift of business and economy worldwide. Sooner or later, all businesses will need to adapt to these changes. Local business is unexceptional. Due to several limitations in terms of resources, skills, and knowledge of local entrepreneurs, their business survival is crucial during this period of time. Hence, research in supporting the local entrepreneurs is highly demanded. In this study, we presented the results of technology adoption of the data collected prior to the COVID-19 pandemic. This exploratory study provided an initial idea on the adoption of technology and how local entrepreneurs who produced different types of goods utilized the technology. In general, different type of goods impacts on the objectives of adopting the technology, hence, contributed to the frequency of using the technology. We found that entrepreneurs utilized the commonly social media technology in order to reach out to potential customers. Nonetheless, further research is needed in order to fully understand the technology adoption and also provide a suggestion that could help the local entrepreneurs increase their sales and therefore, be able to compete and survive in this crisis.

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