

**WILLINGNESS TO USE SELF SERVICE TECHNOLOGIES INNOVATION  
ON OMNICHANNEL FOR RETAIL BUSINESS IN THAILAND**

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**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
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**Thesis Title** Willingness to Use Self Service Technologies Innovation on Omnichannel for Retail Business in Thailand

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## ABSTRACT

Omnichannel is multichannel shopping. Consumers can freely switch between offline and online stores (online, mobile devices, and physical stores). Many businesses use self-service technology (SST) to help customers without a cashier. Service quality SST innovation is important, which includes Artificial Intelligence (AI) and machine learning-recommendation systems, chatbots, Augmented Reality (AR), Virtual Reality (VR), e-commerce, etc. The UTAUT2 and ECM models were used in the research as part of its approach. The objective is to develop a model of customer willingness to Use SST for retail business in Thailand and to examine the direct effect, indirect effect, and combined influence relationships among Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, Service Quality, Customer Satisfaction, and Willingness to Use SST. The study adopted a quantitative survey research design using online and offline shoppers across Thailand. Primary data was collected from May to August 2021. The reliability and validity of constructs and observed variables were investigated in this research. Four hundred sixty (460) responses from the sample size of 520. In addition, the study used empirical data to develop 11 hypotheses, nine constructs, one moderating factor, and 22 observed variables. Statistical tests, including Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM) with the AMOS program. The result

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indicated that all the proposed hypotheses were supported, and the variables were seen to have direct and indirect influences on the acceptance model. Overall, these findings imply that all hypotheses explain how to encourage the willingness of the customer to use SST. If someone is interested in innovation and has watched and listened to influencers, they are more likely to use SST. Therefore, personal Innovativeness is important in trying new ways of purchasing via SST. Furthermore, SST is compatible with other technologies that require resources, knowledge, and guidance, including the important influence of willingness to use that is consumers have resources/devices ready to use self-service technology. Therefore, Facilitating Conditions is an important factor to encourage the willingness of the customer to use SST.



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# CHAPTER 1

## INTRODUCTION

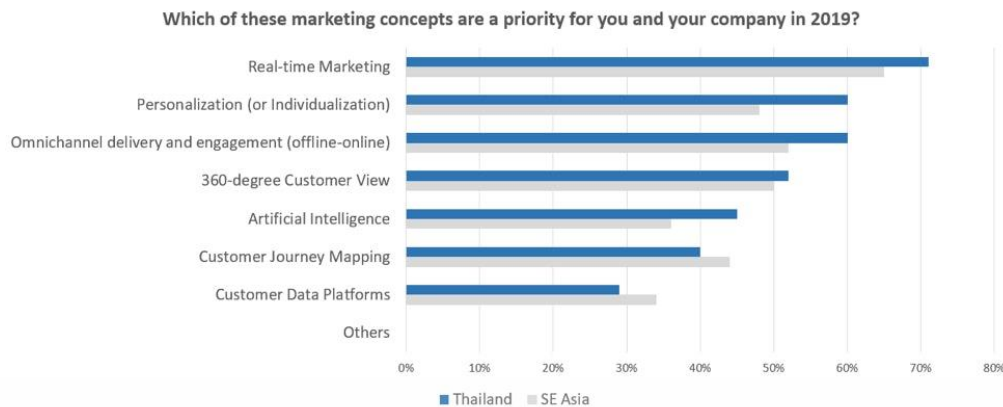
### 1.1 Background and Significance of the Research

The Omnichannel concept is seen as a form of multichannel shopping. The offline and online stores are single transaction phases; consumers switch freely between channels (online, mobile devices, and physical stores) (Kaczorowska-Spychalska, 2017). Moreover, many businesses use self-service technology (SST) to assist their customers, such as during checkouts and purchases, without having to deal with a cashier. In addition, Service quality SST innovation is important, which includes Artificial Intelligence (AI) and machine learning-recommendation systems, chatbots, Amazon Go, Augmented Reality (AR), Virtual Reality (VR), e-commerce, etc., for customer service.

In Southeast Asia, Thailand has a significantly greater online population (40 million) than nearby Malaysia (20 million) and Singapore (4 million) but a significantly smaller population (147 million) than neighboring Indonesia, according to recent estimates. Every Thai citizen on the internet (average sales per user or ARPU) is an average of around US\$110, far exceeding the lowest in the area of 20 dollars in the Philippines, but not near the top of S\$1222 in Singapore. Thailand has had an average year-over-year growth of 17 percent over the past five years for ARPU e-commerce. Econsultancy surveyed Southeast Asian marketers to find out what they were doing during their Omnichannel journey (Rajeck, 2019; RESULTICKS, 2019).

The following are summaries of the results of respondents in Thailand, but data from Southeast Asian marketers is included in the Study on Omnichannel Imperative.

1) Thai marketers are more likely than other countries in South East Asia to participate in the Omnichannel. In 2019, participants in the survey were asked to identify which marketing strategies and businesses are a priority. 71% of respondents from Thailand preferred "real-time marketing," much higher than the national average (65%) and significantly greater than neighboring Vietnam (57 percent).

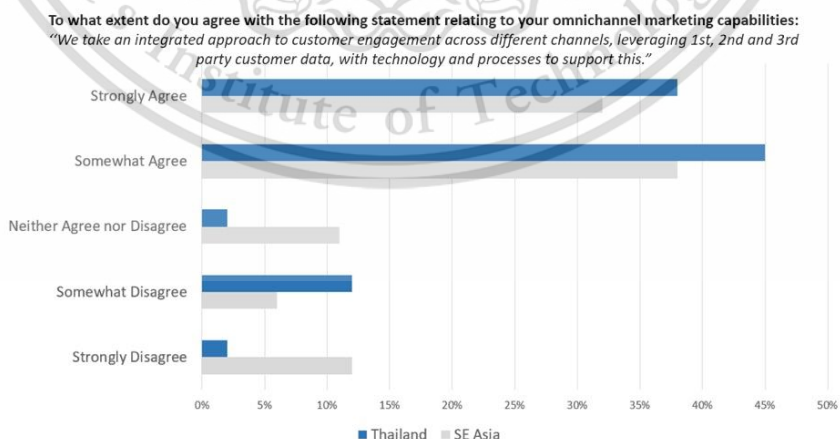


**Figure 1.1** Priority of Marketing Concepts in 2019.

**Source:** Rajeck (2019) and RESULTICKS (2019)

The other standard options for Thai marketers were "Personalization, Omnichannel Delivery, and Engagement (Offline-Online)," and were significantly higher than the average in the area in 60 percent of respondents (48 percent, 52 percent, respectively). These replies show that Thai marketers are at least at the forefront of Omnichannel marketing and core skills. Thai advertisers are reasonably confident in consumer data applications.

2) Marketers in Thailand focus on their company's Omnichannel marketing strategy. When asked if the argument "We use 1st, 2nd, and 3rd party consumer data and technology and processes to help customers interact through different platforms," 4 out of 5 respondents (83%) said that this is the right thing to do. It reflects Thailand's belief that advertisers are satisfied with their consumer data structures.

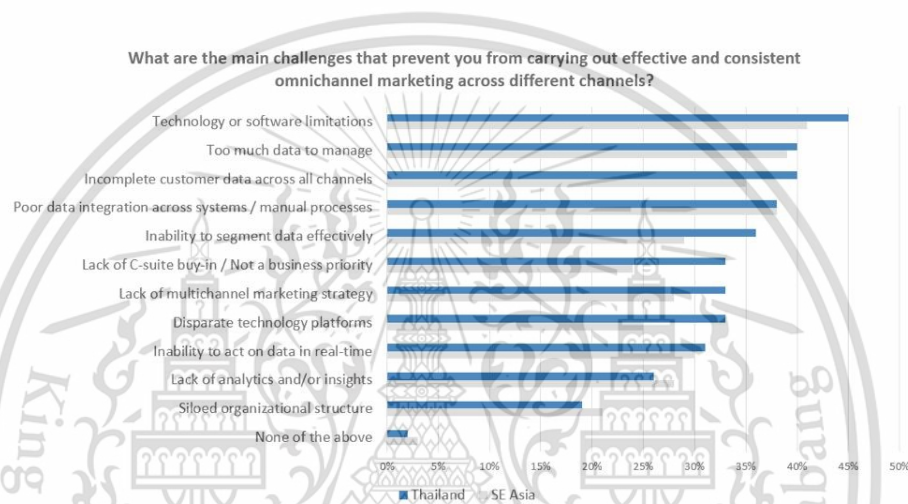


**Figure 1.2** Omnichannel Marketing Capabilities

**Source:** Rajeck (2019) and RESULTICKS (2019)

At least some marketers in Thailand feel that their companies are on the right course to launch data-intensive Omnichannel marketing. Indonesian marketers have the same feeling about their business. Singapore (84% approved, 5% unhappy) is a bit short of reliable.

3) Thai marketers face challenges in the integration of Omnichannel campaigns similar to those in the country. Thailand's marketers are likely to say that 'technology or software limitation' (45%) is the most significant barrier they face in Omnichannel marketing. The problem is that it is marginally above the global average (41%). Still, in Indonesia, where 57% of marketers have indicated that technical limitations are an obstacle, the problem does not seem familiar.



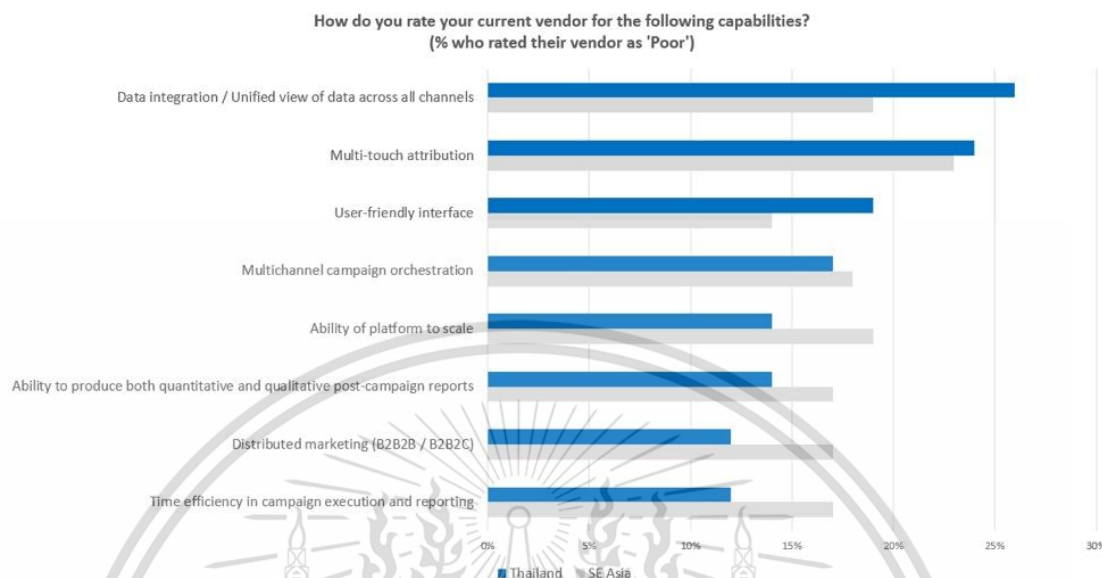
**Figure 1.3** Carrying Out Effective and Consistent Omnichannel Marketing Across Different Channels

**Source:** Rajeck (2019) and RESULTICKS (2019)

The Thai marketers reported a lack of analysis/intelligence and 'siloed organizational structure' than other marketers and had too much process data and 'incomplete consumer data across all channels.' Thai marketers reported a lack of analysis and insight. Thailand's marketers appeared on a strong basis with an organizational system. This is excellent news as problems with Omnichannel programs make launching even harder.

4) Present solutions for the Omnichannel are likely to be short-term. In the end, advertisers questioned the perception of their Omnichannel approaches. Thai citizens have again been more likely to consider technology. More than one in four people (26%) claim that their new Internet integration system is "poorer" than the country's average of 19%. Thai marketers were also concerned about multi-touch allocation,' meaning that the 'poor' solution to this capacity was

available to 24% of Thai respondents. Thai advertisers have problems in this field, which shows that Thai companies are interested in multichannel acquisitions.



**Figure 1.4** The following Capabilities

**Source:** Rajeck (2019) and RESULTICKS (2019)

The flexibility of their Omnichannel platform was one of the least discussed problems for Thai marketers. In Indonesia, only 14% said their scale efficiency was low compared with 19% regionally. They are more likely not to reach the technological limits of existing solutions.

According to a previous summary analysis by Rajeck (2019) and RESULTICKS (2019), when comparing Thailand and other countries, it is difficult for Thai marketers to successfully integrate their Omnichannel initiatives with those of their Asian neighbors. Advertisers in Thailand may claim that the stumbling block to Omnichannel marketing is a "technological or software barrier." In Thailand, Omnichannel includes self-service and innovation technology that have online and offline as in Thailand have central Group, AR (Ikea, Artistry, Shopee), etc., and other countries such as Amazon (Amazon-Whole Foods, Amazon Go, and Amazon Go Grocery), etc. The example of self-service is as follows:

**CentralGroup (2019)** introduced information and developments in the Omnichannel marketing world, offering customers the most advanced purchasing options, emphasizing imagination, and retaining their trend-setting for the retail industry. Connection the Omnichannel networks seamlessly to shopping anywhere and anytime. Online retail platforms continue to change, from individual retail to smooth connections via smartphone devices and physical and

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digital touchpoints. Customers can choose to have products delivered automatically or use the Click & Collect or Register & Collect services to collect their orders from the shop without transport. Moreover, Chat & Shop helps customers chat, ask questions, receive tips, and buy products through instant messengers. It provides the highest retail experience level with real advantages and internet access convenience through the retailer's guidance.



Figure 1.5 Omnichannel of Central Retail

Source: Ratirita (2019)

DEPA (2019) presented that AI, AR/VR, Automation, Cloud Storage, Data Analytics, DLT, IoT, Surveillance, Quantum Computing, and Fifth Generation Telecommunication Technology (5G) can drive e-commerce and convenience store transition. New apps, including AI, Chatbot, and AR/VR, offer new ways to connect with consumers online and in stores to provide a unique retail consumer experience. These innovations enable retailers to surpass and grow customized, linking interactions as they use mobile shopping as a benchmark in the industry that customers expect today. The importance that innovations offer to existing consumers is not missed. According to a new study by Tech Pro Research, 88 percent of people reacting to in-store technology (including smartphones, AR/VR, and automatic payments) reported that it made shopping simpler. Ultimately, consumers get what they are asking for: specific items,

knowledgeable and fast-track customer support, and the chance to sample goods until they hit their door.

Augmented reality (AR) (Cook, Ohri, Kusumoto, Reynolds, & Schwertzel, 2020) is now a better service for over 1 billion smartphones and tablets. Over 100 million customers are expected to shop online and in-store AR in the next year. Since 2018, the number of mobile AR users has almost doubled, and social media is mainly driven by popularity and use. 46% of retailers expect it to be more or less valid by 2020.

#### WHAT IS AUGMENTED SHOPPING?

**Augmented shopping:** Enables customers to engage with brands and products via digital experiences that allow them to try on, try out, interact, or personalize their product virtually; these experiences help deliver more detailed, intuitive product information than standard web experiences.



**Augmented reality (AR):** Overlays digitally created content into the user's real-world environment; features include transparent optics and a viewable environment in which users are aware of their surroundings and themselves.

**Virtual reality (VR):** Creates a fully rendered digital environment that replaces the user's real-world environment; features body- and motion-tracking capabilities.

**WebAR:** Refers to AR experiences delivered via a web browser, without the need to download a third-party application.

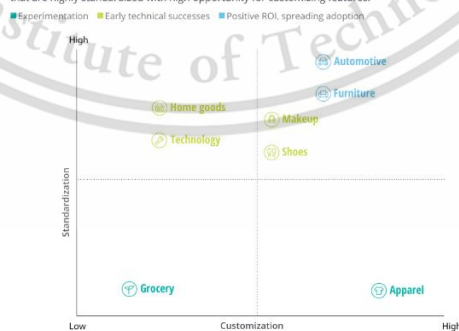
**3D assets:** Three-dimensional digital models of physical products that users can interact with in AR/VR experiences; the process by which products are turned into digital models is referred to as the 3D asset pipeline (for more details, see sidebar, "3D assets: A primer").

**Figure 1.6** Augmented Shopping

Source: Cook et al. (2020)

#### Augmented shopping opportunity matrix 2020

The sweet spot for today's augmented shopping capabilities generally lies with product sets that are highly standardized with high opportunity for customizing features.



Source: Deloitte analysis.

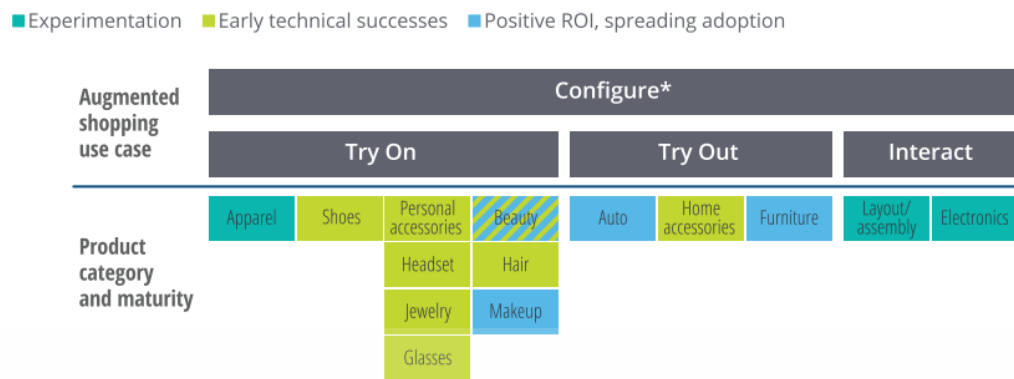
**Figure 1.7** Augmented Shopping Opportunity Matrix 2020

Source: Cook et al. (2020)

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## Augmented shopping use cases and maturity by product type



Note: This graphic is meant to give a directional understanding of the varying maturity levels for augmented shopping as of January 2020. It is not meant to be exhaustive, and this technology is rapidly evolving.

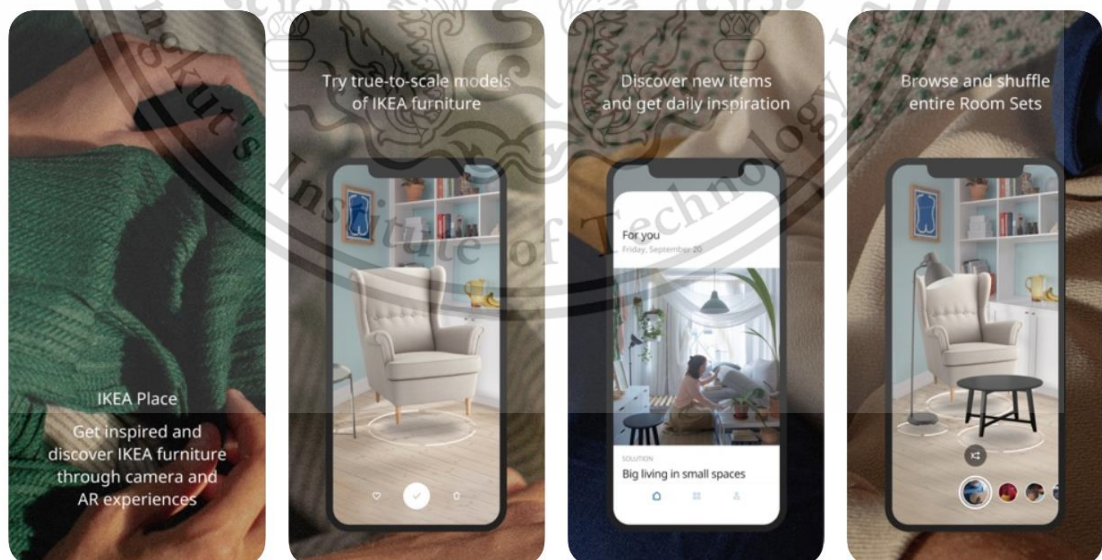
\*Configure refers to added or customized features that can be offered for any product type.

Source: Deloitte analysis.

**Figure 1.8** Augmented Shopping Use Cases and Maturity by Product Type

Source: Cook et al. (2020)

AR technology is being used in the business sector. For example, IKEA, Artistry, SHOPEE, True as follows: IKEA (2020) Place helps you almost put the furniture in your area. All IKEA Spot products, from couches to tables and wardrobes, are truthful and 3D to ensure your room is the right thing to do.



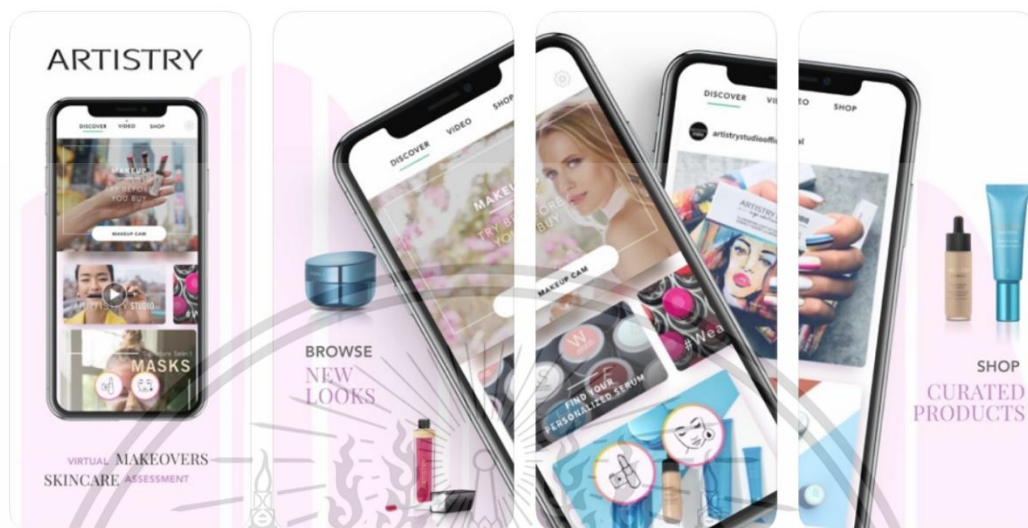
**Figure 1.9** IKEA Place

Source: Place (2020)

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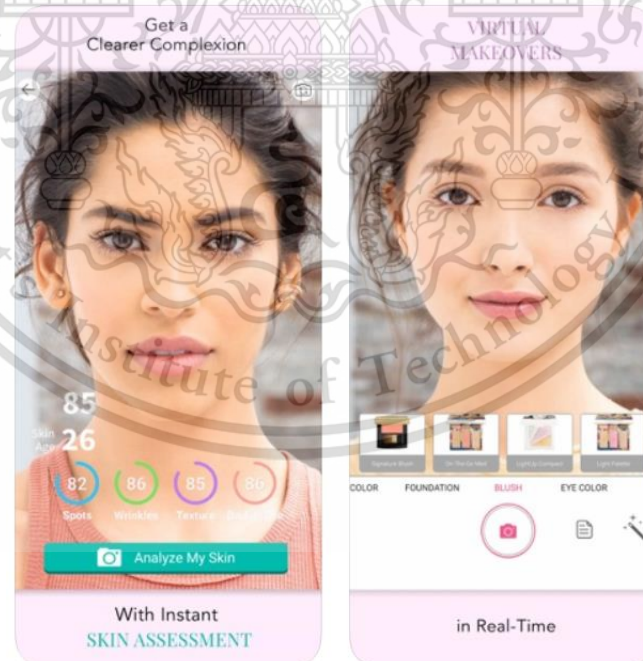
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**Artistry Virtual Beauty's** intelligent facial sensing device gives you the real-time feature of self-photo making. To make every occasion look good, mix and match different makeup and beauty products as illustrated in Figure 1.10 and Figure 1.11.



**Figure 1.10** Artistry Virtual Beauty

Source: Beauty (2020)



**Figure 1.11** Artistry Virtual Beauty

Source: Beauty (2020)

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Augmented reality in SHOPEE has the same features and functions as the artistry application but a different cosmetic brand is shown in Figure 1.12. In addition, Figure 1.13 shows the True 5G AR/VR application to support new customer experiences in promotion, payment, and virtual reality.

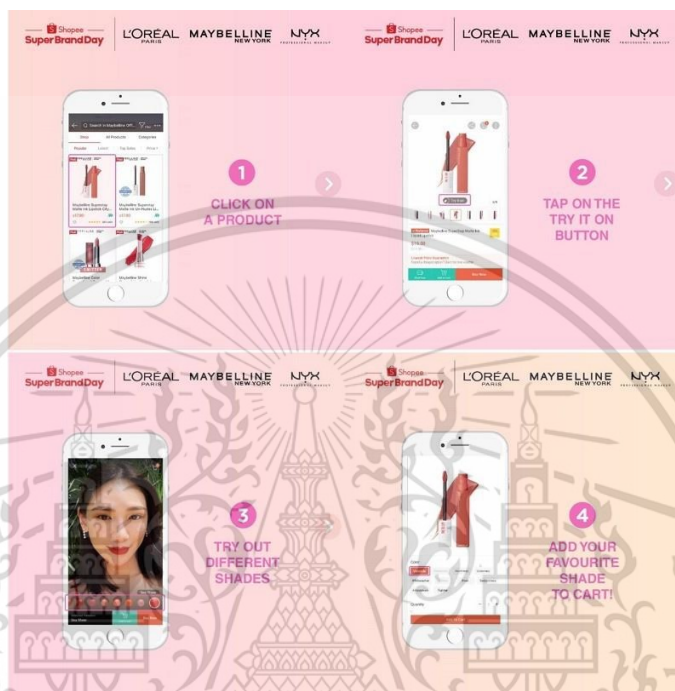


Figure 1.12 SHOPEE AND L’ORÉAL Provide Beauty and Skincare Tools Using AI and AR

Source: Teh (2019)



Figure 1.13 True 5G AR

Source: True (2020)

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Yang Chen, Cheung, and Tan (2018), in explaining Virtual Reality (VR), noted that technological advances have blurred the boundaries between physical and virtual environments, creating rapidly developing Omnichannel enterprises where online and offline channels converge to provide a seamless shopping experience. The overall importance of Omnichannel businesses is growing because consumers tend to alternate between online and offline sales channels. It is not unusual for consumers to get product information on one channel, i.e., by navigating a local store) and buy the product on another channel (e.g., an e-commerce website). For this reason, Omnichannel companies provide retailers with an unprecedented opportunity to exploit synergies between channels in synchronizing interactions with consumers across multiple touchpoints. In particular, retailers may use various technologies throughout the physical and virtual environments to track consumer behavior, culminating in a more comprehensive knowledge of each consumer and enabling a tailor-made shopping experience. This study has shown that consumers interacting with a single retailer on multiple channels tend to show higher happiness and loyalty. Likewise, emerging technologies like enhanced augmented and virtual reality as wearable realities can be merged with Omnichannel environments to provide an immersive shopping experience that tends to lock consumers.

AIS promoted Virtual Reality Mall includes Siam One, TV Direct, and SME Shop. Customers will be shopping from home with Virtual Reality Mall like their shopping in a real mall. This application has been launched as shown in Figure 1.14 and Figure 1.15.



**Figure 1.14** AIS 5G Virtual Reality

**Source:** Lupang (2020)



**Figure 1.15** AIS 5G Thailand Virtual Expo

**Source:** mgronline (2020) and Techsauce (2020)

**Amazon** ([www.amazon.com](http://www.amazon.com)), Amazon's revolutionary retail technology has never been supported worldwide, like Shop and Just Walk Out. They have the same kind of car technology as computer vision, sensor integration, deep learning, and checkouts. Just Walk Out Software automates the collection or the return of products to their racks via virtual cart surveillance. Once customers shop, customers can leave the shop. Then customers are requested and given an account receipt from Amazon.

Both Amazon Go and Amazon Go Grocery offer only shopping. Customers can get it fast without lines or check-outs, whether it is a pleasant lunch or dinner. Amazon Go offers a wide variety of breakfast, lunch, and snack options. Amazon Go foods sell everything from the nearest grocery store to fresh foods, seafood, bakeries, cooking products, and dining options. They provide various organic and conventional products from well-known brands, exclusive finds, and classics worldwide.

A new Amazon Wallet, Amazon Go app, and a new epoch iOS or Android phone is required for customers. The Apple App Store, Google Play, and Amazon Appstore are available to consumers with the go-amazon software. Download this app to the shop when customers go and are free to leave—customers cannot shop. Then navigate and buy just like any other shop. The customer is alone before the shopping is completed. No lines, no checkout! No lines! that is the Slogan of Amazon Go. Figure 1.16 and Figure 1.17 show How to shop at Amazon Go and Amazon Go Grocery.

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## How to shop at Amazon Go



**Figure 1.16** How to Shop at Amazon Go

Source: [www.amazon.com](http://www.amazon.com)

## How to shop at Amazon Go Grocery



**Figure 1.17** How to Shop at Amazon Go Grocery

Source: [www.amazon.com](http://www.amazon.com)

Whole Foods Market Stores Pick up products shipped from Amazon.com or send back returns to select Whole Foods Market stores as shown in Figure 1.18, Figure 1.19, and Figure 1.20.

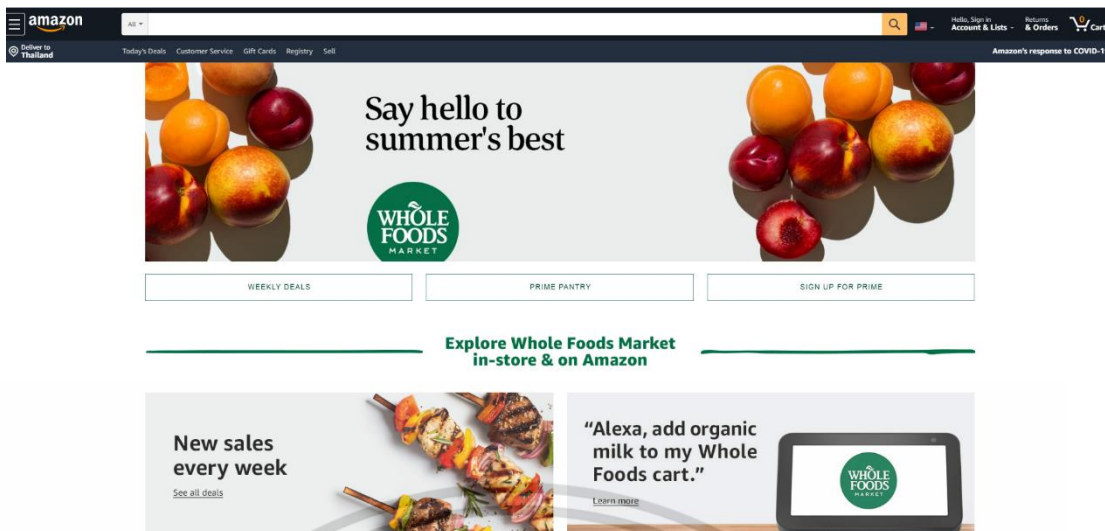


Figure 1.18 Whole Foods Market stores.

Source: www.amazon.com

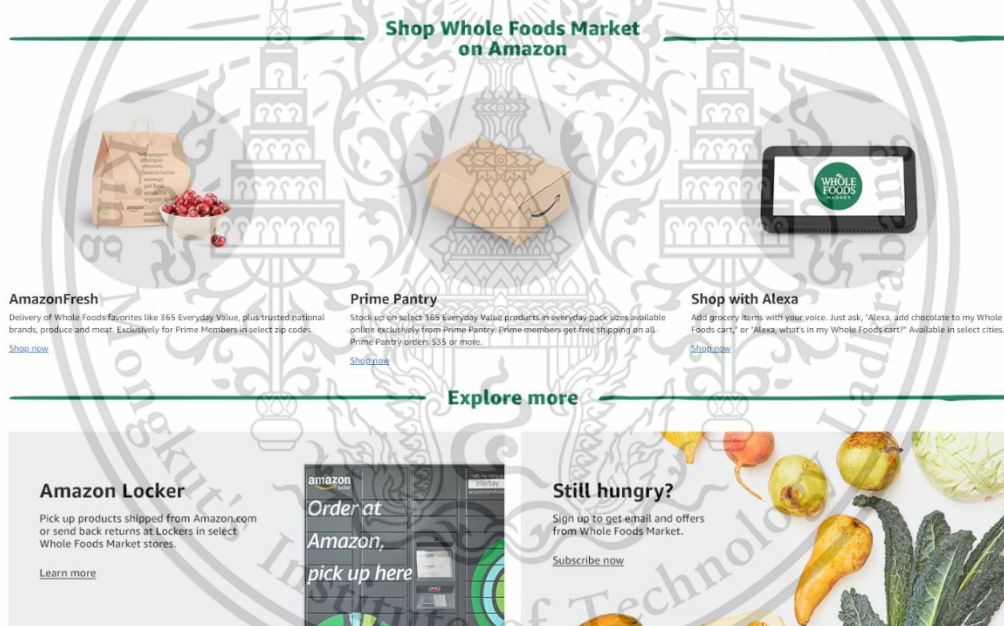


Figure 1.19 Whole Foods Market stores.

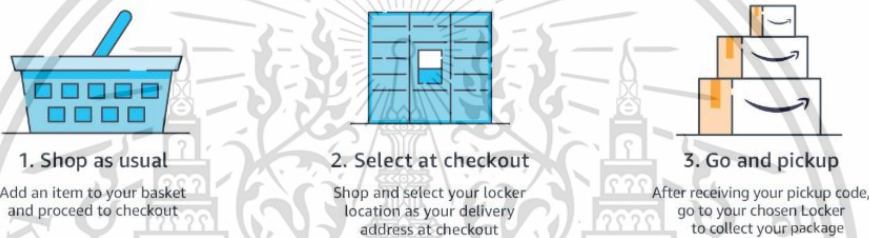
Source: www.amazon.com



## Benefits of using lockers

- ✓ Open early and late
- ✓ No waiting in lines
- ✓ Deliveries and returns
- ✓ No additional fees

## How to use Locker



**Figure 1.20** Whole Foods Market Stores.

**Source:** [www.amazon.com](http://www.amazon.com)

Emerging innovations enable retailers to surpass and grow individual interactions by using mobile shopping to guide the market today. In addition, to the COVID-19 situation, everyone has changed to the New Normal and Social Distancing, and the transformation of e-commerce and stores has been driven by AI, AR/VR, Automation, Cloud Computing, IoT, Encryption, and 5G. New apps, including AI, Chatbot, and AR/VR, offer new means of interacting with customers online and in shops. Therefore, self-service technology will help reduce participation between customers and cashiers.

In addition, advertisers in Thailand may argue that Omnichannel marketing is constrained by technology or software (Rajeck, 2019; RESULTICKS, 2019). However, in Thailand, Omnichannel has self-service and innovations such as the Central Group and AR (Ikea, Artistry, Shopee), which are also unpopular. Therefore, customer perspective is important for encouraging customer willingness to use SST. Thus, to examine the direct effect, indirect effect, and combined influence of the Customer Willingness factor to use Self-Service Technology Innovation on

Omnichannel for Retail Business in Thailand variable from the literature review section, there are

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Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction and Willingness to Use SST. These factors will help many companies develop self-service technology and innovation from the customer perspective.

Therefore, this thesis focuses on the conceptual framework of Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST for Retail Business in Thailand. In the end, this will provide insight into the factors that influence the willingness to use SST Innovation on Omnichannel for Retail Business in Thailand by Structural Equation Modeling (SEM) and the questionnaire that tested the reliability and validity of Cronbach's alpha.

## 1.2 Research Questions

- a) What factors influence Customer Willingness to use Self-service technology innovation on Omnichannel for Retail business in Thailand?
- b) How do businesses encourage the willingness of the customer to use SST?

## 1.3 Research Objectives

The following objectives are outlined to guide this study, the objectives are listed as:

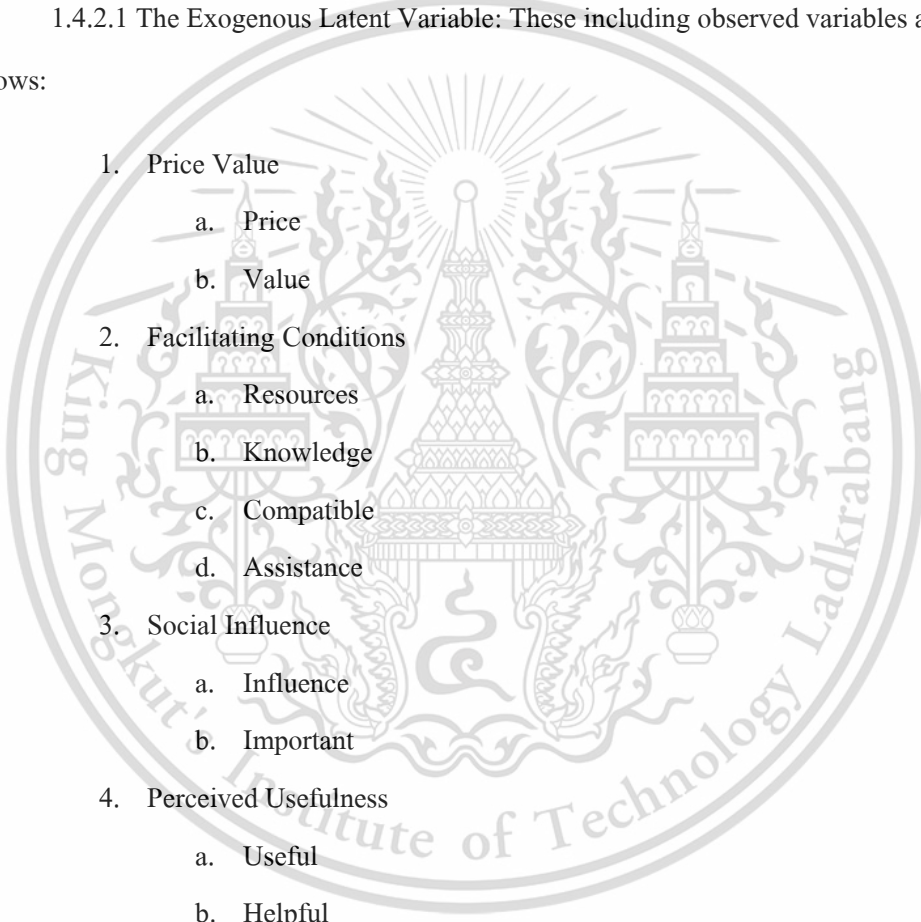
- a) To explore the factors that influence customer willingness to Use SST for Retail Business in Thailand.
- b) To encourage the willingness of the customer to use SST by using the direct effect, indirect effect, and combined influence relationship among Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST.

## 1.4 Research Scope

1.4.1 Population: The sampling population consists of Thai people who used SST, such as e-commerce, kiosks, Augmented Reality (AR), Virtual Reality (VR), etc., in Omnichannel (store and online) for Retail business.

1.4.2 Study Variable: The variables in this study are classified into three types: exogenous latent, endogenous latent, and Moderator Variables, using a type interval rating scale.

1.4.2.1 The Exogenous Latent Variable: These including observed variables are listed as follows:

- 
1. Price Value
    - a. Price
    - b. Value
  2. Facilitating Conditions
    - a. Resources
    - b. Knowledge
    - c. Compatible
    - d. Assistance
  3. Social Influence
    - a. Influence
    - b. Important
  4. Perceived Usefulness
    - a. Useful
    - b. Helpful
  5. Expectation Confirmation
    - a. Experience
    - b. Service
  6. SST Service Quality
    - a. Functionality / Customization / Convenience / Security
    - b. Assurance
    - c. Design / Enjoyment

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## 7. Customer Satisfaction

- a. Satisfied
- b. Pleased

### 1.4.2.2 Endogenous latent variables including observed variables:

#### 1. Willingness to Use SST

- a. Continue Use
- b. Intend to use
- c. Intend to adopt

### 1.4.2.3 Moderator variables including observed variables:

#### 1. Personal Innovativeness

- a. Experiment
- b. Trying

## 1.5 Research implementation

- a) Collection of quantitative data (Primary data)
- b) Statistics for data analysis
- c) Structural Equation Modeling – SEM

## 1.6 Expected Benefits

The expected benefits to be derived from this study include:

- a) The results will ascertain the willingness to use SST from a customer perspective of academic practice in the retail business. Thus, students and academic researchers will benefit from this.
- b) To enhance and develop the willingness to use SST for the Thailand model from the customer perspective for further academic and professional development in the retail business. Thus, students and academic researchers will benefit from this.
- c) To prove how factors such as direct effect, indirect effect, and combined influence of variables on the willingness to use SST in the retail business for Thailand. Thus, this will be of benefit to students, academic researchers, and entrepreneurs.

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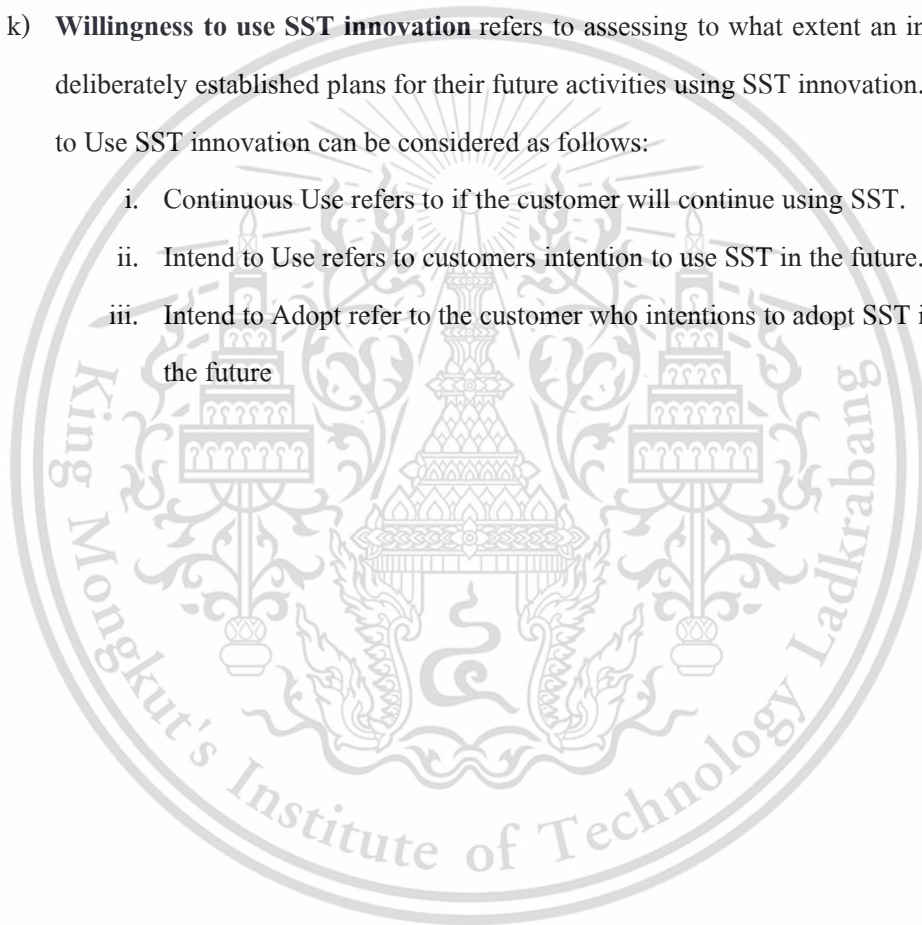
- d) To benefit entrepreneurs in establishing strategic planning, the best approach for improving the revenue and number of customers on Omnichannel is in the view of consumers.

## 1.7 Definitions

- a) **Omnichannel** for Retail refers to multichannel shopping that contributes to a store's (offline) and online shopping separation. Consumers can purchase goods and services online and in-store (offline).
- b) **Self-Service Technology (SST)** refers to helping consumers buy without cashiers but with checkouts and transactions by themselves. SST can be considered as follows:
- i. Self-Service Technology innovation refers to innovations related to service simplification, customer service, or experience improvement. For example, technological advancements in terms of the time the service can be delivered or improvements in the spatial dimension of the service.
  - ii. SST Omnichannel in-store or offline, such as Big C, Tops Supermarket, Gourmet, 7-Eleven, TESCO Lotus, etc.
  - iii. SST Omnichannel online such as Central Online, Shopee, Big C online, etc.
- c) **Price Value** refers to the 'customers' mental trade-offs between the methodological gain and the deal's financial expense. Price value can be considered as follow:
- i. Price refers to a good value for reasonably priced money and is worth using or paying by SST.
  - ii. Value refers to the SST, which provides a good deal and good value for the money paid.
- d) **Facilitating Conditions** refers to 'consumers' knowledge of resources and behavior support. Facilitating Conditions include the following:
- i. Resources refers to the corporate assets required for the use of the SST.
  - ii. Knowledge - refers to the knowledge necessary to use SST.
  - iii. Compatible refers to how SST is adaptable with other technologies.
  - iv. Assistance refers to guidance, or the availability of an employee to help the consumer use SST.

- e) **Social Influence** refers to a consumer's belief that others (e.g., family and friends) think technology should be used for specific purposes. This reflects environmental factors like user friends, family, and superiors. Social Influence can be considered as follows:
- i. Influence refers to people who sway/inspire customers, which means I am influenced to use SST.
  - ii. Importance refers to the prominence customers give to SST for purchasing actions, which means It is important that I use SST for purchasing.
- f) **Perceived Usefulness** refers to a person who believes it would increase their work performance by using a particular system. Empirical findings show that the expected value is a significant indicator of technology use. Perceived Usefulness can be considered as follows:
- i. Useful refer to if SST helps customers to perform functions more conveniently.
  - ii. Helpful refers if SST assists customers to do things better and effectively.
- g) **Expectation Confirmation** refers to the actual user experience that matches the original requirements or exceeds them; customer satisfaction is verified. Expectation Confirmation can be considered as follows:
- i. Experience refers to a better customer experience with SST than what customers expect.
  - ii. Service refers to the service level or function provided by SST better than customers expected.
- h) **Personal Innovativeness** refers to Innovativeness is an individual's ability to try out some new IT. Personal Innovativeness can be considered as follow:
- i. Experiment refers to customers who like to experiment using SST
  - ii. Trying to refer to customers are usually among the first to try new ways of buying through SST.
- i) **SST Service Quality (SQ)** refers to the quality of the SST service. SST SQ was tested using several samples around the company and consumer behaviors using a scale replication process. In multiple settings, efficiency and validity tests have been tracked. Service Quality can be considered as follows:
- i. Functionality / Customization / Convenience / Security refers to the service process of a firm's SST being clear, easy to use, and reliable in Functionality, Customization, Convenience, Security

- ii. Assurance refers to the firm providing self-service technology that has a good reputation.
  - iii. Design / Enjoyment refers to the layout of the SST that is aesthetically appealing.
- j) **Customer Satisfaction** refers to the satisfaction that can be derived if a customer is sure that its demands from service are fulfilled. Customer Satisfaction can be considered as follows:
- i. Satisfied refers to customer satisfaction with SST.
  - ii. Pleased refer to customer pleasure using self-service technology.
- k) **Willingness to use SST innovation** refers to assessing to what extent an individual has deliberately established plans for their future activities using SST innovation. Willingness to Use SST innovation can be considered as follows:
- i. Continuous Use refers to if the customer will continue using SST.
  - ii. Intend to Use refers to customers intention to use SST in the future.
  - iii. Intend to Adopt refer to the customer who intentions to adopt SST innovation in the future



## **CHAPTER 2**

### **LITERATURE REVIEW**

The research objective is to develop a model of customer willingness to use SST for retail business in Thailand. The study examines and gathers data from research papers on concepts, theories, literature, and related research and reviews the literature to determine the conceptual framework to be used as a guideline for this research as follows.

- 2.1 Retail business Innovation and Omnichannel
- 2.2 Self Service Technologies and Innovation Concept
- 2.3 Expectation-Confirmation Model (ECM)
- 2.4 Unified Theory of Acceptance and Use of Technology (UTAUT2)
- 2.5 Customer Willingness to Use
- 2.6 Customer Satisfaction
- 2.7 Service Quality in Self Service Technologies
- 2.8 Personal Innovativeness in Self Service Technologies personal
- 2.9 Variables Relationship Analysis
- 2.10 Conceptual Framework

#### **2.1 Retail business Innovation and Omnichannel**

Various companies in the retail business model are pushing for creativity in the Retail Business Model (RBM) (Sorescu, Frambachb, Singh, Rangaswamyd, & Bridges, 2011). They view innovation as an adaptation to the retail business model, i.e., the retail structure, operations, and administration, and their interdependencies beyond current practices. There are three points from Sorescu et al. (2011) to note.

First, the Retailing Business Model (RBM) definition means a company-wide shift for retail business models: although adjustments may arrive from only one business model element, they also trigger improvements to other system aspects. Indeed, an independent improvement in

one of the aspects of a business model that does not impact other parts can be called innovation in retail but is not RBM innovation.

Second, the critical role of creativity in the business paradigm is to radically modify the commodity's meaning creation or appropriation philosophy. Therefore, it is necessary to concentrate on potential value creation or appropriation logic changes to analyze and classify creativity in the business model. This emphasis allows management to set growth expectations and assess its performance after introducing the innovative business model.

Third, business model innovation often includes "new to the world" formats, practices, governance mechanisms, and inter-relationships.

A retail business model innovation classification, as illustrated in Table 2.1 Sample related to the self-service model: Value appropriation, operational efficiency, self-service model, Value creation, customer efficiency, and Innovation format facilitates the shopping experience, such as the automated selling of Redbox.

**Table 2.1** Sample Related to the Self-Service Model

	<b>Design theme</b>	<b>Was traditionally implemented as</b>	<b>Innovative ways to implement the design themes</b>	<b>Main premise of the model</b>	<b>Example</b>
Value appropriation	Operational efficiency	Streamlined store environment and back end operations	Fast fashion model	Reduce assortment, implement a fast inventory turnaround	Zara
			Self-service model	Streamline dispensing of merchandise	Redbox

	<b>Design theme</b>	<b>Was traditionally implemented as</b>	<b>Innovative ways to implement the design themes</b>	<b>Main premise of the model</b>	<b>Example</b>
			"Name your own price"	Minimize unused perishable product	Priceline
	Operational effectiveness	Vendor management; Inventory management; Market research studies	Leverage complementarities	Offer products tied-in with services and company knowledge	Apple stores, Best Buy
			Adjacency model	Capitalize on adjacent demand by expanding outside the boundaries of the business	Ikea's Mega Mall division
	Customer lock-in	Subscription-based model	Leverage exclusive products	Product assortment in unique, inimitable and contains products with a clear and strong value proposition	Target; Trader Joe

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	<b>Design theme</b>	<b>Was traditionally implemented as</b>	<b>Innovative ways to implement the design themes</b>	<b>Main premise of the model</b>	<b>Example</b>
			Enduring consumer relationships via multichannel processes	Continuous experimentation to identify appropriate assortments and customer experiences	Recreational Equipment, Inc. (REI)
Value creation	Customer efficiency	Multiple locations; product displays, sales support, and so forth	Innovative format which facilitates the shopping experience	Store within store	Sephora inside JC, Penryn
				Automated selling	Redbox
	Customer effectiveness	Depth of assortment	Rely on stakeholders to determine the optimal depth of assortment and supporting services	Customer co-creation	Mix my granola, Chemstation
	Customer engagement	<b>Reliance on advertising</b>	Rely on added value tie-ins	Supplier co-creation	Amazon affiliates
				Product sourced from sustainable source, sustainable	Walmart

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	<b>Design theme</b>	<b>Was traditionally implemented as</b>	<b>Innovative ways to implement the design themes</b>	<b>Main premise of the model</b>	<b>Example</b>
				business practices Embedding the product into a complex store experience	American Girl

**Source:** Sorescu et al. (2011)

In addition, Pantano (2014) proposed that retailers implement emerging technology to the extent that consumers will utilize them, and managers can receive accurate data to forecast potential patterns. Consequently, the primary area of research was more concerned with industry integration than with the successful adoption and enforcement of sophisticated programs by retailers and workers. Acceptance has been routinely examined using the Technology Acceptance Model (TAM), initially established for forecasting Internet behavior based on four fundamental elements: perceived ease of use, perceived use, attitude, and behavior. Innovation Management is associated with focusing on studies to emphasize the design, development, and deployment of innovations focused on emerging technology developments attributable to a significant number of scientific advancements. Besides, in terms of market innovation management viewpoints, the emerging innovations introduced at the point of sale are in several respects linked to the management that has improved the operation from many points of view (i.e., consumers, suppliers, etc.). Emerging retail growth drivers have shown the degree to which innovation strategy is at the crossroads of study areas such as marketing, technology management, IT, and psychology. With the latest disruptive phenomenon from multiple sides in mind in this particular area, innovation drivers in the retail sector can be defined and measured.

**Table 2.2** Innovation Diffusion in Retail Industry.

<b>Technology</b>	<b>Number of adopters</b>	<b>Amount of investment</b>	<b>Typology of adopters</b>
Digital Signage	Medium	Medium (mainly in hardware)	Fashion industry (i.e. luxury brands)
Self-service technologies	High	Medium (mainly in hardware)	Groceries and department stores
Mobile apps	High	Low (mainly in software)	Both small-medium retailers and large retailers, both luxury brands and low cost ones, etc.
Ubiquitous stores	Low	Low (mainly in software)	Small and frequently ad-hoc enterprises

**Source:** Pantano (2014)

**Table 2.3** Summary of Findings from Cross-Retailer Analysis

<b>Retailers</b>	<b>Innovation</b>	<b>Level of exploitation</b>	<b>Role of innovation</b>
Fashion	Digital signage	Medium	Informative (providing consumers information)
Groceries and (large) department stores	Self-service technologies	High	Providing new services for consumers
(Large) department stores	Self-service technologies and mobile apps	High	Providing new services for consumers
Ad-hoc new retailers	Ubiquitous computing	Low	Creating new services for consumers, reducing the number of employees, managing data on market trends

**Source:** Pantano (2014)

Moreover, Pantanoa, Priporasa, Soraceb, and Iazzolinob (2017) defined the retail industry as highly competitive and diverse due to rapid technological changes and diffusion. Studies on innovation are critically utilized to examine and monitor developments in different sectors of patent research. The goal is to analyze the retail industry's technological strengths by classifying and analyzing the developments in ownership by focusing on calculating innovation rates. The results indicate that retailers can use increasingly innovative approaches to implement a new market strategy based on the technological improvements demonstrated by a consistent patent record. Their review contributes scientific data to this literature on core areas of retail disruption and bibliometric and patent reviews of disruptive retail capabilities that can accelerate the industry's competitiveness. The high degree of patent protection (as specified by the large numbers of patents) induces retailers to spend further on approved technologies to gain competitive advantages or implement innovative management techniques that circumvent patents. Table 2.4 indicates the percentage of development by the technology of granted patents.

**Table 2.4** Percentage of Growth of Granted Patents by Field of Technology

Years	2010	2011	2012	2013	2014
Electrical machinery, apparatus, energy	1	1,081019	1,121099	1,059548	1,144002
Telecommunications	1	0,961705	1,036715	0,912357	0,751678
Basic communication processes	1	1,016234	1,058442	1,079545	0,813312
Semiconductors	1	1,244838	1,235988	1,107178	1,023599
Optics	1	1,161765	1,26548	1,228328	1,130805
Measurement	1	1,051684	1,088489	1,189115	1,095928
Analysis of biological materials	1	0,963532	0,909789	1,017274	1,142035
Control	1	1,021111	1,135556	1,205556	0,862222
Medical technology	1	1,135786	1,190982	1,259912	1,269241
Organic fine chemistry	1	1,066275	1,127936	1,32047	1,400587
Biotechnology	1	0,981584	0,961326	0,964549	1,083333
Pharmaceuticals	1	0,969116	1,117146	1,142705	1,234824
Macromolecular chemistry, polymers	1	1,062213	1,163065	1,115914	1,204322
Food chemistry	1	1,172786	1,276458	1,330454	1,483801

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**Table 2.4** Continue

<b>Years</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Basic materials chemistry	1	1,164458	1,326578	1,293063	1,344505
Materials, metallurgy	1	1,098105	1,230769	1,294314	1,360089
Surface technology, coating	1	1,139723	1,210162	1,375289	1,218245
Micro-structural and nano-technology	1	2,115385	2,346154	2,461538	2,807692
Chemical engineering	1	1,008147	1,057705	1,071283	1,056348
Environmental technology	1	0,995031	1,147826	0,976398	0,959006
Handling	1	1,071066	1,117174	1,111675	0,992809
Machine tools	1	1,126652	1,096916	1,106828	1,02478
Engines, pumps, turbines	1	1,02733	1,084919	1,109322	1,016105
Textile and paper machines	1	1,026064	1,056915	0,859043	0,921809
Other special machines	1	1,19144	1,259688	1,373048	1,314633
Thermal processes and apparatus	1	1,234043	1,243714	1,350097	1,44294
Mechanical elements	1	1,19052	1,230483	1,194238	0,996283
Transport	1	0,986941	0,999336	1,039177	0,920983
Furniture, games	1	0,880694	0,966739	1,106291	1,135936
Civil engineering	1	1,008475	1,004237	1,097458	1,141646
RETAILING	1	1,129032	1,395161	1,487903	1,931452

**Source:** Pantanoa et al. (2017)

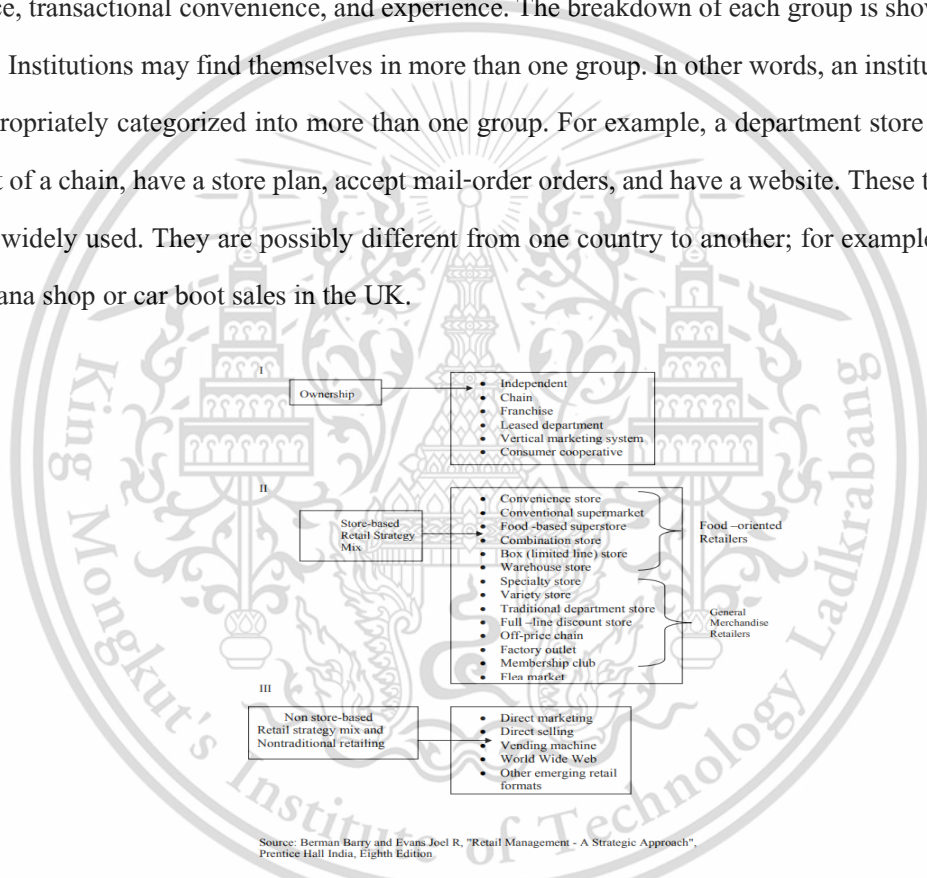
Furthermore, C. Y. Lin (2019) has reviewed customer awareness technology advancement analysis that indicates that technical indicators in the consumer's understanding of the innovation capacity of a dealer's sector are of crucial importance for service quality. Company-innovation work can rely on two consumer experience forms the visibility and emotional satisfaction of business gains (for example, increased productivity or service quality).

**Table 2.5** Business Model Innovation Definition

<b>Researcher</b>	<b>Definition</b>
Sparks (2000)	Southland has reinvented itself as a contemporary dealer by operating innovations such as a proprietary retail information system, new products, enhanced marketing, and a higher franchise system.
Yahagi and Kar (2009)	Incremental, ongoing management innovations can create innovative business models and replace existing models.
Sorescu et al. (2011)	Business model innovations are increasingly critical for building a sustainable market advantage defined by continuous change, increasing customer expectations, and intensive competition.
Pantano, Iazzolino, and Migliano (2013)	Decision-makers would take the radical ones into account when assessing the outdated risk of adopting a new technology introduced at the point of sale.
Pantano (2014)	Increased demand for innovative, state-of-the-art market research tools and insecurity in innovation adoption as the main elements influencing retail innovation.
Pantano et al. (2017)	With the support of technological advances underlined by the strong patent record, retailers could move towards more innovation-based strategies to propose innovative consumer solutions.
C. Y. Lin (2019)	Innovative services should focus on the two consumer processing routes mentioned above to increase the quality of services and experience by offering emotional satisfaction (e.g., more awesome fun or hedonic happiness) to increase material values.
Vakulenko, Shamsb, Hellströma, and Hjorta (2019)	As the growing flow of e-commerce orders produces new annual revenues, key players in the last mile face the challenges of growing customer demand and transport volumes. In response, e-retailers and logistics service

Researcher	Definition
	providers seek innovatively, often technologically driven, service solutions.

Sinha (2004) proposed that the retail format is the "package" of the store that the retailer provides to the shopper. A structure is described by a group of retailers as a type of retail mix. Store formats are physical shop formats in which the retailer communicates with the consumer. They are a combination of variables that retailers use to create their business strategies, mix assortment, price, transactional convenience, and experience. The breakdown of each group is shown in Figure 2.1. Institutions may find themselves in more than one group. In other words, an institution may be appropriately categorized into more than one group. For example, a department store unit may be part of a chain, have a store plan, accept mail-order orders, and have a website. These typographies are widely used. They are possibly different from one country to another; for example, in India, a Kirana shop or car boot sales in the UK.



**Figure 2.1** A Classification Method for Retail Institutions

**Source:** Sinha (2004)

The omnichannel concept is viewed as a form of multichannel shopping that leads to physical and online shopping isolation in the same transaction process (Kaczorowska-Spychalska, 2017). Consumers move freely between channels (online, mobile, and physical shops). The marketing strategy of Omnichannel aims at a consistent and well-integrated consumer product across a range of distribution platforms, from traditional retailers to catalogs, mobile devices, and

social media. The matter is for a product of the same price and quality, regardless of how and where consumers purchase it, to be produced with all the associated benefits. More hypermedia spaces and user saturations use mobile devices, which are becoming increasingly popular in the Big Data sector for multi-dimensional analysis of information from off-line and online markets, customer intelligence applications, and current and potential growth opportunities. The buyer's experiences are multi-dimensional and multi-contact, often at the same time across multiple networks and in real-time. Companies/brands face increasing challenges in optimizing customer space, retaining consumer loyalty, quality, and sophisticated service. In such a situation, customers expect benefits to be sought or produced. Their continued development is necessary to ensure a wide range of positive experiences contributing to consumer loyalty and satisfaction.

**Table 2.6** Omnichannel Retailing Innovation Definition

<b>Researcher</b>	<b>Definition</b>
Beck and Rygl (2015)	Business professionals have enthusiastically planned a seamless retail world where customers can shop anywhere and anytime. This type of multichannel distribution is often called Omnichannel Retailing.
Barnes (2016)	As the popularity of e-commerce increases, the number of ways (or channels) that consumers can buy their products increases, and shoppers' travels have many new routes and possibilities.
Rodríguez-Torrico, Cabezudo, and San-Martín (2017)	The number of sources of information has increased with the arrival of digital devices. Consumers combine this with brick-and-mortar facilities to search and buy, leading to Omnichannel behavior.
Kaczorowska-Spychalska (2017)	The Omnichannel model is a complementarity concept that enables conversion to be increased due to synergies between sales on several channels. The Omnichannel strategy implementation is not user convenient.
Yurova, Rippé, Weisfeld-Spolter, Sussan, and Arndt (2017)	Computer-mediated technologies have increased the Omnichannel, which shops on mobile, online, and traditional retail channels for products and services.

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Researcher	Definition
Kim and Chun (2018)	An advanced version of a multichannel system that offers customers an integrated shopping experience, allowing customers to move freely between online, mobile devices, and brick-and-mortar stores in a transaction process. E.g., Apple, Disney, Virgin Atlantic, Starbucks, Carrefour, Clinique, and Lancôme
Shen, Li, Sun, and b (2018)	In addition to the rapid development of in-store systems, multichannel services are being shifted to Omnichannel. Omnichannel services provide customers with an integrated, seamless, and consistent cross-channel shopping experience by integrating different parallel channels.
Cao and Li (2018)	Channel integration decisions of retailers, mainly cross-channel integration, is a relatively new trend that remains a process of innovation for the retail industry.
Hosseini, Merz, Röglinger, and Wenninger (2018)	Customers want to define how to interact with companies during their customer journeys on their own. Many organizations, therefore, struggle to implement an all-channel strategy that meets and efficiently operates their customers' preferences for the channels
Wiener, Hoßbach, and Saunders (2018)	Since the Internet's emergence, many brick-and-mortar companies from different industries and offline traditional business models have established an online business model.
Ilk, Brusco, and Goes (2018)	Omnichannel service centers, in which customers can request services on various communication channels (e.g., phone, e-mail, live chat, social media) with various quality of service and response requirements.
Xua and Jackson (2019)	The ever-changing retail environment of all channels provides customers with various channels to choose from when shopping and returning.

Table 2.6 shows that Omnichannel Retailing innovation definition of omnichannel services provides consumers with an integrated and reliable cross-channel shopping experience by combining multiple parallel channels on various communication channels (e.g., phone, e-mail, live chat, social media).

## 2.2 Self Service Technologies and Innovation Concept

Self-service technologies, such as e-commerce websites, ATMs, or kiosks, are examples of markets in which no communication between buyers and sellers is needed (Yujong Hwang & Kim, 2007). In addition, self-service technology provides customers with control of their service experience, and maybe no service provides a better example than e-commerce. Buying products and services online offer customers the ability to choose when and where to shop and the opportunity to study the product, the seller, and any other choices available. Shopping has been transformed by the availability of online information (Daniel Castro, Robert Atkinson, & Ezell, 2010).

**Table 2.7** Evolution of Self-Service.

Service industry	Human contact	Machine assisted service	Electronic services
Retail banking	Teller	ATM	Online banking
Grocery	Checkout clerk	Self-checkout station	Online order/pickup
Airline	Ticket agent	Check-in kiosk	Print boarding pass
Restaurants	Waiting staff	Vending machine	Online order/delivery
Movie theater	Ticket sales	Kiosk ticketing	Pay-per-view
Book store	Shop assistant	Stock-availability terminal	Online ordering
Education	Teacher	Computer tutorial	Distance learning
Retail store	Checkout clerk	Self-checkout station	Online Shopping

**Source:** Orel and Kara (2014)

Service innovation is often more closely related to the way goods are delivered; for example, technological changes are often associated with the number of hours during which the service can be provided or improvements in the service's spatial dimension (Georg Licht & Moch, 2014). This material is reserved for educational use only, not allowed for commercial use.

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1999). Also, Yulia Vakulenko, Poja Shams, Daniel Hellström, and Hjort (2019) summarized that service innovations are related to streamlining the service, supporting the customer, defining the service, or improving the experience. The focus of service innovation, in practical terms, is the new focus on customer engagement which translates into the relationship between service design and customer relationship management.

In Figure 2.2 and Figure 2.3 (Linzbach, Inman, & Nikolova, 2019), Process automation tools are commodity management systems that make shopping trips easier for customers and enable retailers to reduce prices. Such systems automatically support check-outs and payments, merchandising, refilling, and downloading processes. Shopper-facing technologies are product delivery technologies that enhance retailer cost efficiency and make consumer travel easier. These systems automatically control backend operations such as check-out or payment, like merchandising, refilling, or downloading. Customer reactions depend on availability, accessibility, and perceived appeal. Conventional, widely implemented, and contact services such as click-and-collect are well established and used by customers. Modern shopper-reflecting technologies like mobile payments are not only unknown but are not available; other technologies such as shop navigation or increased reality are not currently available or used.



**Figure 2.2** Shopper – Facing Retail Technologies

**Source:** Linzbach et al. (2019)



**Figure 2.3** Awareness and Utilization of Selected Digital Retail Services

Source: Linzbach et al. (2019)

Kaushik and Rahman (2015) proposed that the assessment of innovation development is the major challenge faced by researchers engaged in innovation diffusion and research into acceptance. A revolutionary measurement scale for SST use is also required because SST has significantly increased in recent decades. They examined the development and validation of the self-service innovation (SSI) scale, which applies to several SST applications. Their study presents the development and validation of six distinct phases of the six-point self-relief scale. The innovativeness scale is validated in different contexts and enables comparisons in other samples (i.e., student vs. non-student) and various industries.

In addition, Nijssen, Schepers, and Belanche (2016) avers that innovations such as SST are often considered cost savings by service providers rather than customer service standards. Their study examined how customers use these qualifications to adjust their views on the relative value. Table 2.8 shows Self Service Technologies and Innovation Definition of self-service applied with technology, i.e., AR, VR, AI, robots, etc.

**Table 2.8** Self Service Technologies and Innovation Definition

Researcher	Definition
T. Turner and Shockley (2014)	One area where retailers are expanding is the use of SST, such as interactive kiosks that empower buyers to gather information, personalize and upgrade traditional products so that retailers can avoid

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Researcher	Definition
	showroom-like shopper compartments and distinguish their services from competitors.
B. h. LI, HOU, YU, LU, and YANG (2017)	The continuous development of smart cities, intelligent health, smart transport, intelligent logistics, smart robotics, self-driving vehicles, smartphones, smart toys, smart communities, and smart economies – to name a few – provide a broad market demand and driving power for new AI technologies as well as applications.
Poola (2017)	For companies to gather insights and decisions, dynamic BI and decision technologies are crucial to the efficient and dynamic operation of the business with real-time data monitoring. With the help of fully automated machine learning models, narrative science technology, cloud, big data use, Big Data decision-making for organizations, and every preferred option, self-service, operator, and business is the most efficient way to take these additional and develop innovative technologies.
Javiya (2017)	Innovations, in turn, provide customers with a superior shopping experience. International retailers are already adopting artificial intelligence. As never before, artificial intelligence is transforming e-commerce.
Bonetti, Warnaby, and Quinn (2018)	Augmented Reality (AR) and Virtual Reality (VR) have emerged to enhance sales and shopping experiences through rapidly emerging physical and online retail innovations. A significant factor is a partnership between AR and VR technology

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Researcher	Definition
	<p>providers and retailers. Therefore, comparing views, exchanging viewpoints and sensibilities on consumer character of embracing technology, addressing challenges and implementation requirements, appropriate technologies, the developments in the market, etc., is crucial to building Marketing and Retail strategies that effectively enrich and enhance the customer shopping experience.</p>
Huang and Rust (2018)	<p>AI is developing in a predictable order, with mechanical analysis preceding mainly intuitive, analytical, and intuitive intelligence predominantly empathic. The theory says that job replacement for AI is primarily at the task level, not the job level, and firstly for "lower" (easier for AI) intelligence tasks. AI replaces some of its functions; first, a transitional phase is seen as an increase and then progresses to fully replace human labor when it can take on all its tasks. The progress of AI task substitution from the lowest to higher intelligence leads to predictable changes in intelligence's relative importance to service employees over time. Their theory's important implications are that analytical skills become less important as AI takes on more analytical tasks and adds even more importance to "softer" intuitive and empathic skills for service employees.</p>
Yuangao Chen, Yu, Yang, and Wei (2018)	<p>Self-service pickup machines need to supply human-friendly interfaces and smart services through new information technology such as artificial intelligence virtual reality and meet consumer demand for human</p>

Researcher	Definition
	interaction. For example, the pickup machine can present a virtual smart agent to introduce the service process; guide the operation of the pickup machine, and answer the questions often asked if users have problems.
Ping, Hussin, and Ali (2019)	Limiting conventional customers to service, AI is now increasingly used in service to act like a human being's assistant. In addition to integrating AI into customer service, human officers and AI can work together to provide customers with the perfect services and increase productivity.
Chi, Chang, and Chang (2019)	The Omnichannel focuses more on seamless experience. Applications in artificial intelligence technology and the Internet of Things tend to mature. The sales patterns have entered the retail era of Omnichannel. The competition between consumers' shopping habits and patterns and retailers has brought about unprecedented changes.
J. Li (2019)	The cross-border e-commerce shopping guide platform based on large-scale information and artificial intelligence can improve the competitive advantage; of big data and a cross-border e-commerce shopping guide. The value of logistics service quality can improve artificial intelligence. The collaboration between e-commerce and logistics becomes closer with the breakthrough of cloud computing, the internet of things, and data applications.

Researcher	Definition
Vakulenko, Oghazi, and Hellströma (2019)	Self-service kiosks (SSKs) appear to be one of the most diverse technical forms of SST. Several industries have successfully adopted ATMs, parcel lockers, self-checking stations in grocery stores and libraries, and other types of SSKs.
Ostrom, Fotheringham, and Bitner (2019)	A larger set of potential consequences of AI's customer acceptance; including what clients may experience (e.g., more personalized service meetings) and how AI can influence clients (e.g., lead to increased well-being due to more access to services).
P. H. Lin, Lin, Hung, Chen, and Liang (2020)	Enables the robot to guide clients on the pre-planned route to find their commodities. The robot can notify the client that they plan to purchase when arriving at each product in conjunction with the vocal service. They also create a light APP for customers to install and manage their shopping list easily, request the help of a robotic shopping cart, and interact with the robot for a shopping cart.

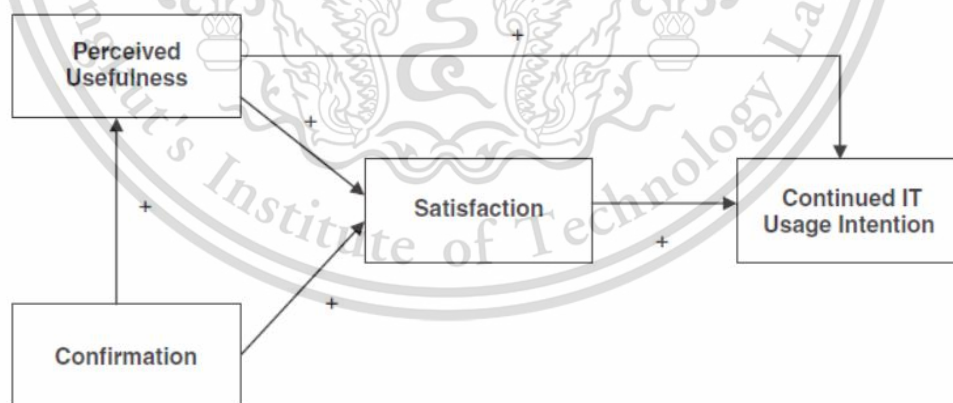
According to the theory and conceptual model, there are seven theories related to the acceptance of using technology. Firstly, the Theory of Reasoned Action (TRA) explains the relationship between beliefs and attitudes towards behavior, saying that changes in human behavior are the result of changes in beliefs and that people will behave because they think it's the right thing to do. After all, a person always considers the reason before the action. Secondly, the Theory of Planned Behavior (TPB) developed from TRA theory can be applied to study intentions and behaviors in various contexts and help build an understanding of acceptance of individual technology use. Thirdly, the Diffusion of Innovation (DOI) is a fundamental sociological theory

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that describes the process by which innovations are distributed from new inventions via any channel. Fourthly, the Technology Acceptance Model (TAM) is a widely accepted and appreciated theory used to measure the success of the technology. The TAM principle will investigate the factors that influence the intention to demonstrate the behavior of using information technology. Fifthly, the Unified Theory of Acceptance and Use of Technology (UTAUT) can use prediction and technology adoption effectively, with variables as extensions in which models can improve prediction accuracy. Sixthly, the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) studies behavior driven by the intention to show behavior by factors influencing the intention to show behavior and can be applied to the study of consumer technology use. Lastly, the Expectation-Confirmation Model (ECM) explains the relationship between factors affecting the willingness to continue using them. Therefore, after considering that this study selected two theories: UTAUT2 and ECM, to explore the factors affecting Customer Willingness to use self-service technology innovation and encourage the willingness of the customer to use SST in Omnichannel retail business in Thailand. In addition, because of current societal equality, this study excludes age, gender, and experience as moderators in UTAUT2.

### 2.3 Expectation-Confirmation Model (ECM)



**Figure 2.4** Expectation-Confirmation Model of continued IT usage (ECM-IT)

**Source:** Se-Joon Hong, James Y.L. Thong, and Tam (2006)

Se-Joon Hong et al. (2006) proposed that the vast majority of previous studies based on this paradigm suggest that consumer satisfaction decisions are determined through two main constructions: initial product/service expectations (pre-purchase expectations) and discrepancies. This material is reserved for educational use only, not allowed for commercial use.

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between product/service performance and expectations (disconfirmation). Under this framework, buyers first develop product/service expectations before buying. Secondly, their experience with consumption creates perceptions of their performance. Thirdly, they confirm or dis-confirm their pre-purchase expectations by assessing perceived performance against the reference frame (e.g., expectations). The expectations of the purchaser are confirmed when a product/service is performing as well as expected; negative when it is worse than expected, and positively discredited when it is performing better than expected.

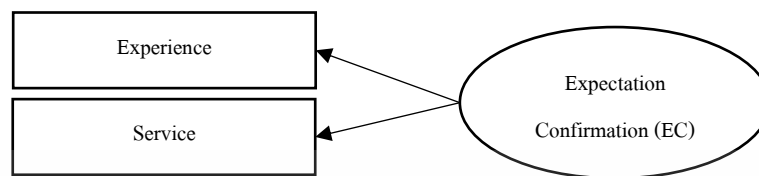
Considering the study of Se-Joon Hong et al. (2006) and this study, which has the same purpose concerning the confirmation of the purchaser's expectations when a product performs as well as expected. This study focuses on SST innovation and new technology, which study expands the work of Se-Joon Hong et al. (2006) on SST innovation.

Moreover, Michael Humbani and Wiese (2019) found that ECM-IT enhances their understanding of mobile payment services' continued use by examining the key factors influencing the user's use of new technology after adoption. It uses consumers' affective and cognitive beliefs during consumption to predict satisfaction and use new technology. The model applies to many repurchasing and maintenance information systems services and has been widely accepted in the literature to predict satisfaction and continuity.

**Table 2.9** Latent and Observed Variables of Expectation Confirmation in Self Service Technologies

Researcher	Latent variables	Observed variables	Area
Oghuma, Libaque-Saenz, Wong, and Chang (2016)	Confirmation	1) experience 2) service	Mobile instant messaging (MIM)
Shang and Wu (2017)	Confirmation	1) experience	Mobile shopping
Rahi and Ghani (2019)	Expectation confirmation	1) experience 2) features	Banking
Wu and Wu (2019)	Confirmation	1) experience 2) service	Library
Jumaan, Hashim, and Al-Ghazali (2020)	Confirmation	1) experience 2) service	Mobile internet

Researcher	Latent variables	Observed variables	Area
Chiu, Cho, and Chi (2020)	Confirmation of expectations	1) experience 2) service	Fitness and health apps



**Figure 2.5** Expectation Confirmation Model.

**Table 2.10** Latent and Observed Variables of Perceived Usefulness in Self Service Technologies

Researcher	Latent variables	Observed variables	Area
Oghuma et al. (2016)	Perceived usefulness	1) useful 2) helps 3) increase productivity	Mobile instant messaging (MIM)
Natarajan, Balasubramanian, and Kasilingam (2017)	Perceived usefulness	1) useful 2) increase productivity	Mobile shopping applications
Kazancoglu and Yarimoglu (2018)	Perceived usefulness	1) control 2) reduce	Food retailing
Rahi and Ghani (2019)	Perceived usefulness	1) improves	Banking
Taufik and Hanafiah (2019)	Perceived usefulness	1) Enhances 2) Speed 3) Allows 4) enhance	Kiosks in Airport
Jumaan et al. (2020)	Perceived usefulness	1) useful 2) increase productivity 3) enhances	Mobile internet

Researcher	Latent variables	Observed variables	Area
Ashraf, Ahmad, Hamyon, Sheikh, and Sharif (2020)	Perceived usefulness	1) enabled 2) assisted 3) allowed 4) helpful 5) enhanced	Online product recommendation
Chiu et al. (2020)	Perceived usefulness	1) improves 2) enhances 3) increases productivity	Fitness and health apps
Liebana-Cabanillas, Japutra, Molinillo, Singh, and Sinha (2020)	Perceived usefulness	1) Useful 2) helpful	Mobile payment services



Figure 2.6 Perceived Usefulness Model.

### 2.4 Unified Theory of Acceptance and Use of Technology (UTAUT2)

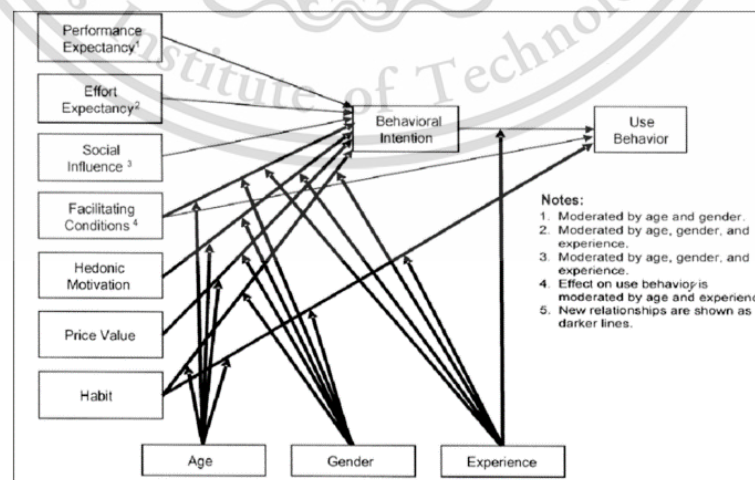


Figure 2.7 UTAUT2 Model.

Source: Oliveira, Thomas, Baptista, and Campos (2016)

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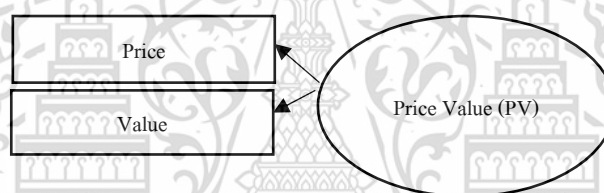
Oliveira et al. (2016) studied UTAUT2 with innovative DOI theory characteristics, technological safety, and the intention of recommending structures to understand mobile payment phenomena better. This combination of theories is based on the assumption that consumer acceptance of new technology is a complicated phenomenon that requires more than just one model; an integrative perspective provides a complete account of the causation mechanisms behind the relationships and unique insights that cannot be obtained through a single theory; and they include six drivers from the UTAUT2 model (performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivations, and price value). The custom building has not been included in the research model because mobile payment is a relatively new technology that consumers have not used enough to produce a custom.

Furthermore, Patricio Ramírez-Correa, Francisco Javier Rondán-Cataluña, Jorge Arenas-Gaitán, and Martín-Velicia (2019) note that to adapt UTAUT to a consumer context, Venkatesh et al. (2012) proposed UTAUT2 instead of its professional framework. UTAUT2 seeks to explain why people are using information technology on an aggregate basis. In particular, UTAUT 2 proposes that use behavior, defined as the frequency of use of information technologies, be determined jointly by behavioral intention, defined as the degree to which a person makes conscious plans to conduct or not perform any specific future behavior. For other backgrounds, behavioral intention construction is expected. However, the facilitating conditions and habit constructs are directly linked to a consumer context. The variables Hedonic motivation, price value, and habit as antecedents of the behavioral intention were recently incorporated into UTAUT2. Similarly, the habit variable also directly correlates with using a specific technology.

**Table 2.11** Latent and Observed Variables of Price Value

Researcher	Latent variables	Observed variables	Area
Alalwan, Dwivedi, and Ran (2017)	Price Value	1) reasonably priced 2) good value	Mobile banking

Researcher	Latent variables	Observed variables	Area
Alalwan, Dwivedi, Rana, and Algharabat (2018)	Price Value	1) reasonably priced 2) good value	Internet banking
Dhiman, Arora, Dogra, and Gupta (2020)	Price Value	1) reasonably priced 2) good value	Smartphone fitness apps
El-Said and Tall (2020)	Perceived Value	1) Using	Kiosks in Fast Food Restaurants

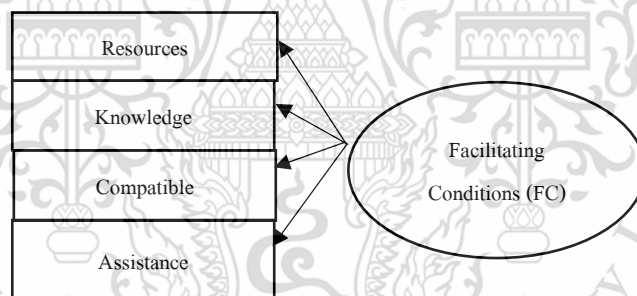


**Figure 2.8** Price Value Model.

**Table 2.12** Latent and Observed Variables of Facilitating Conditions

Researcher	Latent variables	Observed variables	Area
Wu and Wu (2019)	Facilitating Conditions	1) resources necessary 2) knowledge 3) assistance	Library
Lua, Cai, and Gursay (2019)	Facilitating Conditions	1) Interactions 2) understand and use 3) learn 4) intimidating	Four service industries (e.g., hotels, restaurants, airlines, and retail stores)

Researcher	Latent variables	Observed variables	Area
El-Said and Tall (2020)	Facilitating Conditions	1) Resources needed 2) Knowledge 3) Compatible 4) assistance	Kiosks in Fast Food Restaurants
Patil, Tamilmani, Rana, and Raghavan (2020)	Facilitating Conditions	1) resources necessary 2) knowledge necessary 3) assistance	Mobile payment
Alam, Hoque, Hu, and Barua (2020)	Facilitating Conditions	1) Resources needed 2) Knowledge 3) Compatible 4) assistance	Health

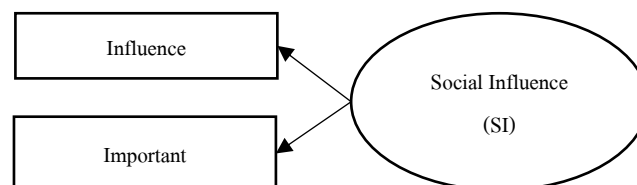


**Figure 2.9** Facilitating Conditions Model.

**Table 2.13** Latent and Observed Variables of Social Influence

Researcher	Latent variables	Observed variables	Area
Celik (2016)	Social Influence	1) Influence 2) Important 3) Closely	Online shopping

Researcher	Latent variables	Observed variables	Area
Oliveira et al. (2016)	Social Influence	1) Influence 2) Important 3) Opinions	Mobile payment
Okumusa, Ali, Bilgihan, and Ozturk (2018)	Social Influence	1) important 2) Closely	Food at restaurants
Baabdullah et al. (2019)	Social Influence	1) Influence 2) Important 3) Opinions	Banking
El-Said and Tall (2020)	Social Influence	1) Influence 2) Important	Kiosks in Fast Food Restaurants
Jeon, Sung, and Kim (2020)	Social Influence	1) Influence 2) Important 3) Opinions	Restaurant
Dhiman et al. (2020)	Social Influence	1) Influence 2) Important 3) Opinions	Fitness apps
Patil et al. (2020)	Social Influence	1) Closely	Mobile payment
Alam et al. (2020)		1) Influence 2) Important 3) Opinions	Health



**Figure 2.10** Social Influence Model.

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## 2.5 Customer Willingness to Use

According to the research conducted by Hong and Slevitch (2018), they attempted to explore customers' retentiveness decisions as a proxy for their willingness to continue using an SSK. In the expectation confirmation model (ECM), prior product or service consumption strongly influences future purchases about repurchase intention or continued usage. A customer's willingness refers to an individual's openness to the opportunity to perform a certain behavior in a situation that is conducive to that behavior.

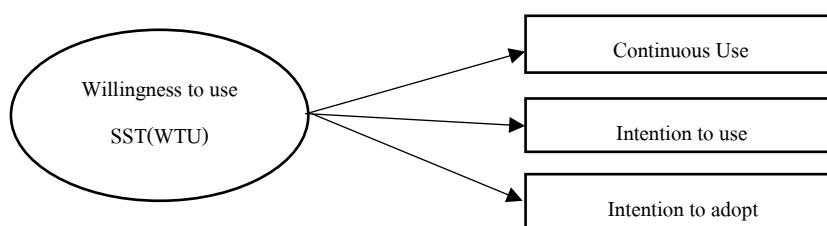
The consumer's willingness to pay for online shopping (Chatterjee & Kumar, 2017) was calculated for products that differ in their product life, such as robust and unpaid omnichannel goods, compared with online gambling retailers. An empirical study of multi-site price data based on consumer data reveals that consumers are willing to pay higher rates in the online market than home retailers. However, they vary in how realistic and articulated they are. These findings help Omnichannel's pricing strategies and retailers.

Moreover, Lua et al. (2019) service robots and artificial intelligence are becoming more popular with hospitality and tourism companies as new technologies improve the consumer experience. Their study aims to design and test the Service Robot Integration Willingness (SRIW) scale to identify key dimensions that characterize the consumer's long-term willingness to integrate artificial intelligence and service robots into normal service transactions. Using the five-stage development process, including performance, inherent motivation, anthropomorphism, social influence, and facilitating conditions and emotions. In four service industries (e.g., hotels, restaurants, airlines, and retail outlets), with or without service robots, the SRIW scale has rigorous psychometrical properties based on construction validity, reliability analysis, and invariance analysis. The theory and management consequences of the SRIW scale are developed, and guidelines for future research are developed.

Therefore, this study adopts the concept of willingness because it thoroughly explains the situation in which customers have options for purchase on omnichannel that have evolved from the Continuance Intention of ECM to the willingness to use.

**Table 2.14** Latent and Observed Variables of Willingness to use SST

Researcher	Latent variables	Observed variables	Area
Wang (2012)	Continued behavioral intention	1) continue using	Retail
Natarajan et al. (2017)	Intention to use	1) Intend to use	Mobile shopping applications
Shang and Wu (2017)	Continuance intention	1) continue using	Mobile shopping
Iqbal, Hassan, and Habibah (2018)	Behavioral Intentions	1) Intend to use	Retail
Hong and Slevitch (2018)	Willingness	1) willing to use	Retailing
Lian (2018)	Intention to continue usage	1) continue using	Self-service technology
Lee and Lyu (2019)	Intention to use	1) Intend to use	Self-checkouts
Rahi and Abd.Ghani (2019)	Intention to adopt	1) intend to adopt	Banking
Rahi, Mansour, Alghizzawi, and Alnaser (2019)	Intention to adopt	1) intend to adopt	Banking
Jumaan et al. (2020)	Continued intention	1) continue using	Mobile internet
Ashraf et al. (2020)	Continued intention	1) continue using	Online product recommendation

**Figure 2.11** Willingness to Use Model.

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## 2.6 Customer Satisfaction

Catherine Prentice, Sergio Dominique Lopes, and Wang (2020) proposed that Due to the rapid development of technologies and digitalization over the past few years, AI has impregnated the wider community, especially service industries such as hospitality and tourism, to improve business efficiency and customer experience. AI is manifested in intelligent behavior and performance by machines, computers, or robots that support people and businesses. AI mainly refers to customers' digital and robotic services to facilitate their purchasing and consumption journeys in the service context. In other words, AI is part of the services offered by providers to produce customer positivity (satisfaction) and behavior (buying and loyalty) by influencing the customer experience. The value of any business service is demonstrated in customer assessments. Such an evaluation of service reflects the quality of service. To date, research has not tried to incorporate AI service into the perception and assessment of service quality to understand its impact on customer satisfaction and loyalty. This study bridges this gap to increase customer loyalty and service quality.

In addition, Md Shamim HOSSAIN, Xiaoyan ZHOU, and RAHMAN (2019) studied that SST helps customers achieve benefits without organizational representatives. SSTs include ATM, hotel check-in/check-out kiosks, retail auto scanners, automated telephone banking, online tickets, and many other types of SST. The banking sector previously adopted SST and has always tried to develop innovative technological services to distinguish itself from competitors. Their study found that adopting a banking service differs according to the SST, making it challenging to understand customer satisfaction. Their research only focused on homogeneous SST and incompletely showed customer satisfaction. Their study examined the diversity of SST technologies to obtain a complete picture of overall customer satisfaction.

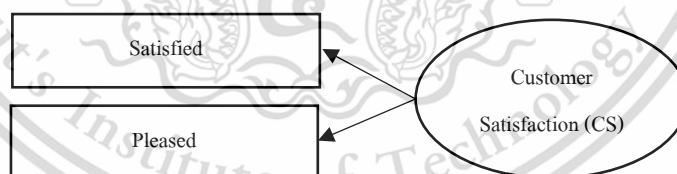
**Table 2.15** Latent and Observed Variables of Customer Satisfaction

Researcher	Latent variables	Observed variables	Area
Orel and Kara (2014)	Customer Satisfaction	1) Expectations 2) service provided	Supermarket self-checkout
Shang and Wu (2017)	Satisfaction	1) Pleasant 2) Delightful	Mobile shopping

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Researcher	Latent variables	Observed variables	Area
Iqbal et al. (2018)	Customer Satisfaction	1) satisfied 2) Expectations	Retail
Hong and Slevitch (2018)	Customer satisfaction	1) satisfied	Service industries
Lyua, Lim, and Choi (2019)	Satisfaction	1) satisfied	Convenience Stores
Wu and Wu (2019)	Satisfaction	1) Satisfied 2) Pleased	Library
Chiu et al. (2020)	Satisfaction	1) Satisfied 2) Pleased 3) delighted	Fitness and health apps
Rahi and Ghani (2019)	Satisfaction	1) Satisfied	Banking
Ashraf et al. (2020)	Customer Satisfaction	1) Satisfied 2) Pleased	Online product recommendation
Jumaan et al. (2020)	Satisfaction	1) Satisfied 2) pleased with using 3) delighted	Mobile internet



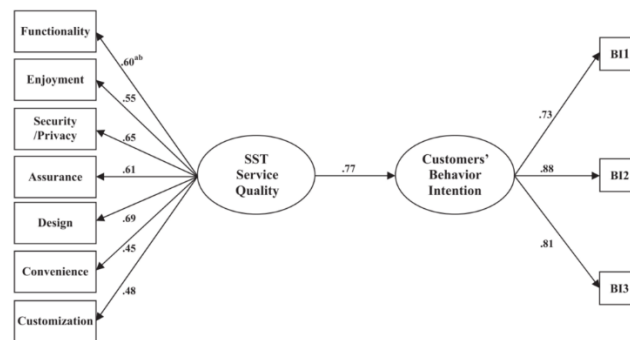
**Figure 2.12** Customer Satisfaction Model.

## 2.7 Service Quality in Self Service Technologies

SST service quality (SQ), Jiun-Sheng Chris Lin and Hsieh (2011) examined customer expectations of SSTSQ in the emerging context. Their research gap is addressed by developing a quality measurement tool based on SSTSQ customer interaction in every context to deal with a sound psychological gap.

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**Figure 2.13** Causal Model Relating SSTSQ Factors to Overall Service Quality.

**Source:** Jiun-Sheng Chris Lin and Hsieh (2011)

Furthermore, Ahn and Seo (2018) explain that SSTQUAL initially included seven aspects: features, enjoyment, security, security, confidentiality, layout, convenience, and custom. The dimensions mentioned in SSTQUAL include safety/privacy (for example, the confidentiality of personal information), assurance (for example, good reputation), and comfort (e.g., accessibility). First, "assurance" is prominent and represents a good reputation for self-service services.

Moreover, Joko Sadoso Priyo, Bahtiar Mohamad, and Adetunji (2019) studied the direct and indirect effects of service quality and customer satisfaction on customer loyalty in the hotel services industry. It suggested confirming a theoretical model not identified in Indonesian literature on the hotel industry. A quantitative methodology was used in this study. In Indonesia, 182 hotel customers were surveyed about their perceptions of service quality, customer loyalty, and satisfaction. PLS-SEM was used to analyze collected data and specify the hypothesized structural equation model (SEM). The results demonstrated that SERVQUAL has a positive impact on customer satisfaction and loyalty. The tests also demonstrated that customer satisfaction has a positive impact on customer loyalty. Customer satisfaction was a significant mediator in SERVQUAL's relationship with customer loyalty. This model will increase customer satisfaction and loyalty by helping the hotelier develop its customer service development program, thus increasing the profitability of the sector. They contribute to the hotel services industry by confirming the proposed structural model and providing insights into the client's perceptions, helping hoteliers integrate better quality of service to build customer loyalty and satisfaction.

Catherine Prentice et al. (2020) discussed AI-motorized applications as a business service focused on the hotel industry. Their research is approached from the customer point of view and examines how AI and quality of service affect customer satisfaction and loyalty. The study was carried out in several hotels in Portugal, focusing on departure guests who experienced both AI and

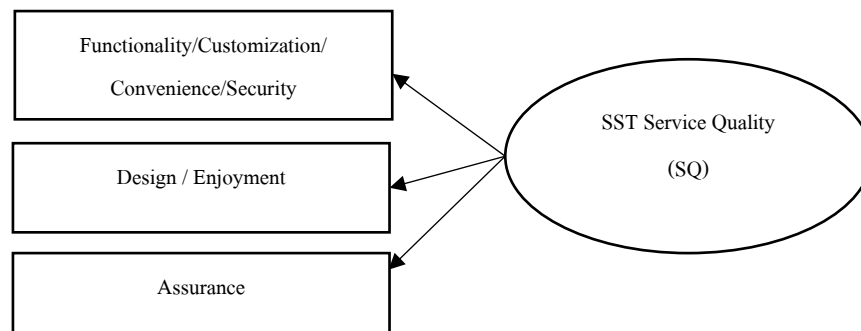
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the services related to the hotels surveyed. The results show that the quality of AI and employee service shows significant variances in the assessment of the overall quality of service and customer satisfaction and loyalty. However, only certain service quality dimensions made unique changes in the results of interest. AI becomes negative and insignificant when both AIs and employee service quality return in the same equation.

In addition, Fernandes and Pedroso (2017) studied the causal model for assessing (i) whether consumers evaluate the quality of service for self-checking based on five different attributes: speed, ease of use, control, reliability, and fun; (ii) whether the quality of service is assessed on a demographic basis and frequency; and (iii) if the quality of service provided by self-checking relates to overall. They conclude that successful use of self-checkout can "tune" consumers to a provider that distinguishes the retailer from competitors.

**Table 2.16** Latent and Observed Variables of SST Service Quality

Researcher	Latent variables	Observed variables	Area
Orel and Kara (2014)	Service quality	1) Functionality 2) Enjoyment 3) Assurance 4) Convenience	Supermarket self-checkout
Oghuma et al. (2016)	Perceived service quality	1) Functionality 2) Convenience	Mobile instant messaging (MIM)
Iqbal et al. (2018)	SST service quality	1) Functionality 2) Customization 3) Convenience 4) Security 5) Design 6) Enjoyment 7) Assurance	Retail
Lian (2018)	Service quality	1) Enjoyment	Self-service technology



**Figure 2.14** SST Service Quality Model.

## 2.8 Personal Innovativeness in Self Service Technologies

Thakur, ArifinAngriawan, and Summey (2016) studied that personal innovativeness is a personality characteristic associated with risk-taking. Gadget lovers are highly motivated consumers to adopt and use various cutting-edge technology-driven goods. They can be expected to be challenging consumers as they enjoy experimenting with state-of-the-art high-tech products with a certain amount of uncertainty. Personal innovation, characterized by the risk and ability to cope with insecurity, is generally more prominent in gadget lovers who are believed to be aware of gadgets. Using the new devices, they become more aware of them, increasing their ability to cope with new technologies and the uncertainties or challenges that may arise during their use.

Similarly, Syed Muhammad Abbas Rizvi and Siddiqui (2019) innovativeness considers individual features that are higher and lower by-births. In different contexts, innovation was used as a predictor that influenced the intention of buying. Previous studies based on consumer performance have taken innovation in technological adoption as a moderating variable but argued that innovative consumers are more complex because of their extensive technical knowledge and personalization of software. Show the negative impact on purchase intent while arguing that highly innovative individuals can effectively address uncertainty and are prepared to acquire new technology.

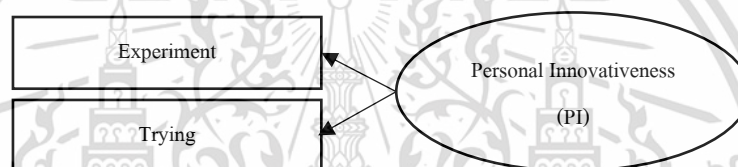
**Table 2.17** Latent and Observed Variables of Personal Innovativeness in Self Service Technologies

Researcher	Latent variables	Observed variables	Area
Natarajan et al. (2017)	Personal innovativeness	1) know more circle of friends	Mobile shopping applications

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Researcher	Latent variables	Observed variables	Area
		2) experiment 3) first to try	
Dhiman et al. (2020)	Personal innovativeness	1) Experiment 2) first to explore	Smartphone fitness apps
Taghreed Abu Salim, May El Barachi, Okey Peter Onyia, and Mathew (2020)	Service user innovativeness	1) advise others 2) adopt earlier	Smart city services
Patil et al. (2020)	Personal Innovativeness	1) experiment 2) first to try	Mobile payment



**Figure 2.15** Personal Innovativeness Model.

## 2.9 Variables Relationship Analysis

### 2.9.1 Facilitating Conditions and Willingness to Use SST

According to the research conducted by Wu and Wu (2019), the intention of library managers to continue was influenced by their perceived performance expectations, effort performance, facilitating conditions, and their satisfaction when using self-identification and return systems after adoption. Their research model showed acceptable model levels and strong predictive power. The results of their study showed that satisfaction and three post-adoption expectations, performance expectation, effort anticipation, and facilitating conditions significantly affected continuing intentions.

In addition, Lua et al. (2019) studied facilitating conditions, including available resources and assistance to facilitate the use of technology. Their design proposes aspects of the technology or organizational environment designed to minimize obstacles to its use by consumers. Although service robots are equipped with human intelligence, they cannot fully capture the nuances of

human interactions as machines. Therefore, consumers must envisage service robots as human replacements if they can participate in human communication efficiently and effectively by utilizing Mobile Commerce (M-Commerce). Facilitating conditions significantly affected the willingness of consumers to use restaurant service robots.

Tarhini, Alalwan, Shammout, and Al-Badi (2019) suggest that M-Commerce requires mobile users to have up-to-date technology to work more efficiently and as a unique service. Accordingly, if users have the latest features these technologies must offer, they are more likely to adopt them. Facilitating conditions factors had a significant impact on the intention of customers to engage in M-commerce. Concerning UTAUT2 factors, facilitating conditions significantly impact the intention of customers to engage in m-commerce. Eliminating factors have also been a considerable variable in forecasting the intent of Omani clients for m-commerce use. Indeed, the compatibility and availability of resources and support requested are critical and have attracted considerable attention when innovative technologies like m-commerce were used.

Moreover, El-Said and Tall (2020) studied Facilitate Conditions and intentions for using SSKs. Facilitating conditions refer to "consumers' understanding of resources and support for behavior." This structure includes training and customer support and provides online tutorials to help customers reduce technology constraints. Facilitating Conditions have been detected to positively impact clients' social desire to use new technologies in different contexts, such as wireless internet services, e-government services, mobile banking, an online educational platform, and software shared hospitality and tourism school classrooms, and hotel and restaurant service robotics, etc. They assumed that customers' intention to use SSK would be affected positively by the presence of facilitating conditions, including staff support. In addition, facilitating conditions have been found to influence customers' intention to use SSKs strongly. Previous studies in this regard have produced conflicting results.

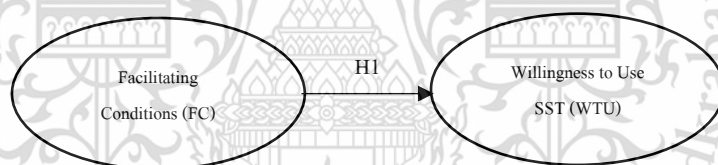
Hamza, Maidawa, and Muhammed (2019) studied, Facilitating conditions are the extent to which the individual believes that an organizational and technical infrastructure supports the system use. The system referred to in the adoption is SST in this study. The ease of use of the SST includes an excellent user interface, including ease of access, navigation, and searching for better use of the SST if proper guidance is offered. Other resources related to such use and prior knowledge that users must have, are also included in facilitating conditions for a study in Taiwan involving 363 respondents prior to using the SST system and concluded that facilitating conditions are determinants of technology adoption. The results for facilitating conditions show a strong

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relationship between the user's comfort and the mental intention to adopt SST. Most tertiary school students believe that infrastructure and other related conditions influence their intention to adopt the SST system. Similarly, this conclusion is consistent with that which established that one of the technology adoption determinants was the facilitating condition.

Patil et al. (2020) proposed that facilitation conditions positively and material impact consumers' intention to adopt mobile payment systems. The possible reason for this unimportant relationship is the nature of the interviewees (i.e., university students and alumni) from which the data were collected. This relationship is not surprising since they don't need potential resources and support to use mobile payments. Their study aims to collect data from various backgrounds, education, and financial status. Facilitating conditions emerged as significant direct positive behavioral intention predictors

In another research conducted by Alam et al. (2020), Customers who have used mHealth services also paid special attention to the facilitating conditions. However, Oliveira et al. (2016) found facilitating conditions are not significant predictors of the behavioral intention to adopt mobile payment.



**Figure 2.16** Relationship Model for FC and WTU SST

### 2.9.2 Price Value and Willingness to Use SST

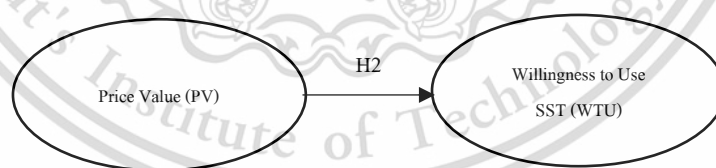
According to the research conducted by Tarhini et al. (2019), price value is characterized as the mental trade-off of customers' between the methodology's value and the financial cost of the agreement. The channel's price will affect the customers' selection mechanism on commercial channels. Consumers who use mobile trading often look for price details on the same commodity from multiple vendors for the right choice. Where the m-commerce firms can use the consumer for a high-tech service, this perceived value is more than the economic cost. The positive impact would affect the ability of the user to leverage portable trade creativity. Moreover, they all found that online channel adoption plays an important role in price value.

Moreover, Dhiman et al. (2020) proposed a The higher the price value, the more incentives would be used by the new invention. According to this theory, an analysis of the position of social media suggests that consumers will increase their tendency to use technology if the price value is favorable. This study has proved that the cost of operating music and video streaming platforms is a significant determinant of the consumer's use with a view to smartphone awareness.

Consequently, Alalwan et al. (2018) studied that financial costs are a critical consideration for affecting consumers' ability to embrace and approve new technologies, regardless of the environment in which the time and effort principle could be presented. Compared to others, the expected benefit from marketing literature is usually calculated by how the consumer cognitively compares how much they can pay, not services and efficiency. If the services a consumer obtains using a high-tech device outweigh the financial cost, price value can positively predict consumers' desire to use the technology.

Alalwan et al. (2017) studied online banking channels, and the relationship between the value of service and price was argued and addressed. For example, the role of perceived value was empirically proved to contribute to a customer's intention to use Internet banking. Likewise, monetary value is recognized as a critical influence on Internet banking adoption, particularly for potential adopters that are more likely to accept Internet banking for more than one year.

However, Oliveira et al. (2016) found that price value is not a significant predictor of mobile payment behavioral intent. It may also be concluded that new constructions of price value for UTAUT2 are not found relevant for mobile payment adoption.



**Figure 2.17** Relationship Model for PV and WTU SST

### 2.9.3 Social Influence and Willingness to Use SST

Oliveira et al. (2016) stated that social influence is to the extent that consumers feel that others (e.g., family and friends) believe that a certain technology should be used. It reflects the effect of environmental factors, such as users' friends, relatives, and superiors' opinions on their behavior, which may encourage users to take on mobile payment services when they are positive.

Social influence is important in explaining a user's behavioral intention to recommend mobile

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payment technology to others. The social influence of mobile payments and the intention to recommend this technology have significant direct and indirect effects.

In addition, Celik (2016) studied the UTAUT and stated that using new technology for individuals depends on four key determinants: performance expectancy, effort expectancy, social influence, and facilitating conditions. The social influence on behavior intention is moderated by sex, age, and experience to have a stronger effect on older women at the beginning of their shopping experience. We use social influence in online shopping channels when accounting for behavior intention.

Okumusa et al. (2018) studied social influence, which they defined as the extent to which a smartphone user believes that important people think they should use an intelligent app. This structure is similar to the subjective norm in the Theory of Planned Behavior (TPB), which says that the better the social influence of behavior, the more the intention of a person to carry it out (i.e., use the diet application)—intending to use smartphone food schemes when ordering food at restaurant locations. Social impact and conditions facilitate the user's acceptance of smartphone diet apps.

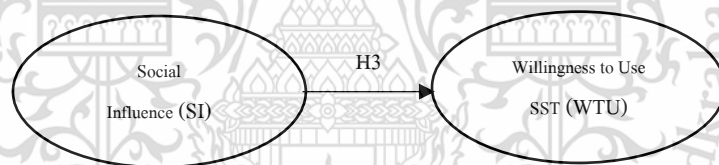
Moreover, El-Said and Tall (2020) proposed the Intention to use SSKs and social influence. Social influence was defined as the extent to which consumers see important others (e.g., family and friends) who believe that a particular technology should be used. The literature found an empirical justification for the significant impact of social influence on the intention of customers to use different types of technology. For example, a significant relationship exists between social influence and students' intention to use computer-supported collaborative classrooms. Another study found that social influence is one of the strong forecasters of the acceptance of customers to buy low-cost tickets online. Similarly, a positive and significant impact on customers' intention to use SSKs has been demonstrated. This finding has been supported by previous surveys and confirmed that the intention of customers to use new technology is influenced by people around them, including family members and friends.

Baabdullah et al. (2019) Given that Jordanian banks recently introduced mobile banking concerning the long-time use of telecommunications and internet banking, people will expect different perceptions and awareness of such applications. This leads to the expectation that the role of social influence will differ accordingly to the intentions of customers to use SST. The impact of social influence depends largely on how society encourages and discourages new ideas from being

adopted. Jordanian banking clients in the current study have voiced positive perceptions and ideas about the three types of SST examined.

Melián-González, Gutiérrez-Taño, and BulchandGidumal (2019) found that Social influence is a positive relationship between social influence and the use of chatbots. It should be commented on the effects of hedonism and social influence. Hedonism has a positive and important impact on the intentions of chatbot use.

In another research conducted by Jeon et al. (2020), social influence is defined by how users perceive other people important to them when using a new information system. Their analysis shows the positive impact on performance, effort expectancy, and social influence on consumer adoption intention. In addition, Dhiman et al. (2020) Likewise, results show that social influences have a significant and direct impact on the behavior of consumers in the use of smartphone fitness apps. And Patil et al. (2020) proposed. The core mediating variable of individual users to technology adoption was the behavioral intention with three precedents: attitude, social influence, and facilitating conditions. Social influence was a significant predictor of behavioral intentions; the effect between.



**Figure 2.18** Relationship Model for SI and WTU SST

#### 2.9.4 Perceived Usefulness and Willingness to Use SST

The main contribution of Kazancoglu and Yarimoglu (2018) is the measurement of the effects of different buildings on the intentions of Turkish customers to use self-check-outs to formulate marketing strategies and consider future research directions. Perceived Usefulness had a positive and significant impact on behavioral intention.

In addition, Oghuma et al. (2016) investigated whether the ECM already has perceived usefulness. It is the only use-related belief in the ECM. And other IS literature uses continuity. Two other beliefs (i.e., the perceived usefulness and the user interface) were proposed to be added that influenced the decision of users to continue to use mobile instant messaging (MIM). These two beliefs are cognitive absorption and are perceived as easy to use. The results confirmed the role of confirmation, perceived usefulness, and satisfaction with the intention of continuous use.

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Natarajan et al. (2017) found that Perceived usefulness has a positive effect on mobile shopping applications. The relationship between perceived utility and the intention to use mobile phones in the field of mobile commerce was empirically demonstrated.

Jumaan et al. (2020) studied that when users perceive mobile Internet technology to be useful, their satisfaction and intentions for continuity are expected to be high. It is supported that perceived usefulness has a significant effect on the intention of continuing. It has been found that usefulness has a significant influence on the sustainability intentions of mobile Internet users; mobile network operators should therefore consider the importance of the perceived value of their current customers (post-expectation). They should develop strategies to increase their perceived usefulness.

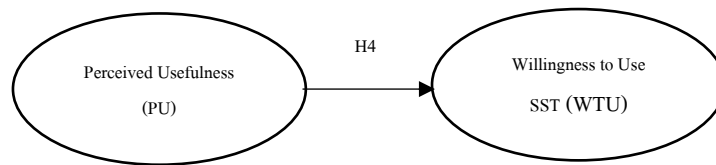
Furthermore, Rahi and Ghani (2019) studied Perceived usefulness that influenced both satisfaction and the intention to continue. The results reveal that perceived usefulness and satisfaction positively affect the user's continuation intention and the user's continuity intention influences word-of-mouth (WOM) behavior.

Moreover, Chiu et al. (2020) studied the perceived usefulness of applications, which ultimately resulted in their intention to continue to use fitness. Therefore, the study assumed that individuals could spend more time on a fitness and health app and ignore the quality of alternative applications if their initial expectation was met by the experience of using the fitness and health app. It was also found that pathways from perceived utility to satisfaction and intent were statistically significant.

Another research conducted by Yang and Geetha (2019) results showed that perceived usefulness had a positive influence on consumer intent and that this factor was among the most important and influential, showing a positive linear relationship between perceived usefulness and purpose. In addition, Ashraf et al. (2020) found that Perceived usefulness has a significant indirect impact on the intention of customers to continue using the Online Product Recommendation (OPR) through satisfaction. Moreover, Liebana-Cabanillas et al. (2020) found results that support users' intention to use mobile payment services that are perceived as usefulness, satisfaction, and perceived trust positively. Therefore, perceived utility has the most significant influence on the intention of users. Furthermore, Taufik and Hanafiah (2019) found that perceived usefulness significantly affects passenger adoption and SST behavior. And Hariguna, Hung, and Sukmana (2019) proposed that perceived usefulness is a key factor in influencing citizens' satisfaction and their use of e-government services.

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**Figure 2.19** Relationship Model for PU and WTU SST

### 2.9.5 Perceived Usefulness and Customer Satisfaction

According to the study conducted by Natarajan et al. (2017), Perceived usefulness for explaining behavioral intention is one of the key variables in TAM. It is defined as the degree to which someone believes that using a particular system would improve their performance at work. The relationship between perceived usefulness and satisfaction was investigated in mobile commerce for mobile banking adoption. Empirical findings demonstrate that perceived usefulness is one of the main predictors of technology use. Satisfaction with the application of mobile shopping depends on perceived usefulness.

Oghuma et al. (2016) studied that perceived usefulness and confirmation of previous use expectations lead to users' satisfaction. Confirmation also affects the perceived usefulness. The results have confirmed the role of confirmation, perceived usefulness, and satisfaction with the intention to continue use.

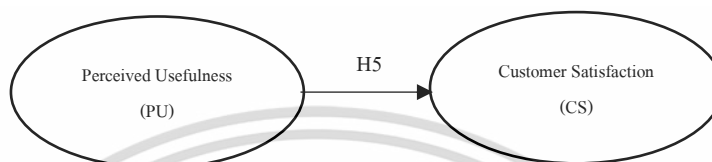
Ashraf et al. (2020) suggested that customer satisfaction and post-adoption views such as perceived usefulness and perceived decision quality were key determinants of the intention of customers to continue using OPR, even stronger than the impact of utility and satisfaction perceived. In addition to the direct impact on the satisfaction of perceived usefulness, Rahi and Ghani (2019) found that results showed that perceived usefulness and satisfaction positively influence the intention of the user to continue, and the intention of the user to continue positively influences the mouth-word behavior. The results show that confirmation of expectations had a positive and significant impact on perceived usefulness and satisfaction.

In addition, Chiu et al. (2020) studied ECM, a post-adoption model, to address the intention of people to use IT continuously, depending on the degree to which their expectations, perceived usefulness, and IT products/services are confirmed and satisfied. The ways from perceived usefulness to satisfaction and continuity were also statistically significant.

Moreover, Hsieh (2019) studied research that integrates the attitude of users from marketing to TAM and suggests that the ongoing intentional use of new technology can be valuably

predicted and facilitated through attitude. The perceived usefulness is positively linked to satisfaction and is substantially supported.

Furthermore, Hariguna et al. (2019) reevaluated that perceived usefulness by citizens is a dominant factor in influencing the satisfaction of citizens with e-government services and the use of citizens' intentions. Therefore, those findings can be utilized to strengthen the competitive advantage of service providers and understand the values of e-government users.



**Figure 2.20** Relationship Model for PU and Customer Satisfaction

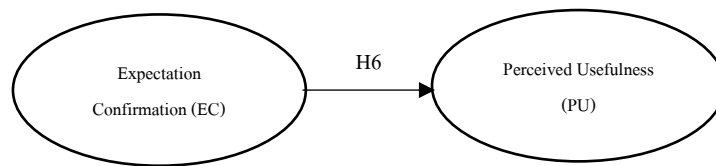
### 2.9.6 Expectation Confirmation and Perceived Usefulness

Oghuma et al. (2016) examined the effects of perceived usability, perceived security, and perceived service quality, and confirmed the intention of users to use mobile instant messaging. A confirmation has an important impact on perceived security and perceived usefulness.

According to ECM, Jumaan et al. (2020) analyzed individuals who experienced cognitive dissonance or psychological stress; their perceived usefulness and satisfaction levels should increase and vice versa if their pre-acceptance expectations are satisfactorily confirmed during their true use. In their study, it is anticipated that mobile internet users, whose expectations of pre-acceptance have been satisfied, will experience high levels of perceived usefulness and cognitive absorption, which will, in turn, strengthen their use of technology. The data also supports this, as confirmation has been found to influence perceived usefulness strongly. Rahi and Ghani (2019) found that Perceived usefulness has a positive impact on user continuity intentions of Internet banking. The results show that assurance of expectations had a positive and significant impact on perceived usefulness.

Another investigation by Shang and Wu (2017) found that perceived usefulness for both non-food m-shoppers and food m-shoppers was significantly influenced by confirmation. Moreover, Chiu et al. (2020) examined the relationship between expectation confirmation, perceived usefulness, satisfaction, size of the investment, alternative quality, commitment, and the

intention to continue. Expectation confirmation had positive and significant impacts on perceived usefulness.



**Figure 2.21** Relationship Model for Expectation Confirmation and PU

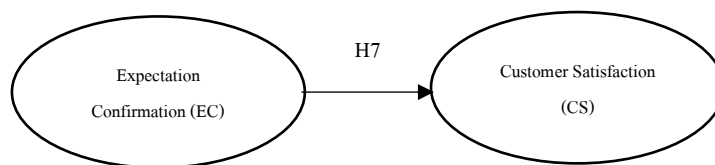
### 2.9.7 Expectation Confirmation and Customer Satisfaction

Oghuma et al. (2016) studied the ECM, which is based on three principles. First, the effects of any pre-acceptance variables are already recorded within the concepts of confirmation and satisfaction. If the experience in use corresponds to or exceeds the original expectations, confirmation is given to user satisfaction by fulfilling the anticipated benefits of IS use. On the other hand, if the actual user experience falls short of the original expectation, there will be dissatisfaction because the expectations are not met. The same should apply to the use of MIM. MIM users will compare their experience with their initial expectations. If their expectations are confirmed, the MIM will satisfy them. A confirmation has a significant impact on perceived security, perceived usefulness, perceived pleasure, user interface, and satisfaction.

Following these findings, Jumaan et al. (2020) proposed that confirmation will amplify mobile Internet users' perceived usefulness and satisfaction. Confirmation had a strong influence on perceived usefulness and satisfaction. Moreover, Rahi and Ghani (2019) studied ECT consisting of four main structures: confirmation of expectations, perceived usefulness, satisfaction, and intention for continuance. The results show that confirming expectations had a positive and significant impact on perceived usefulness and satisfaction. In addition, Shang and Wu (2017) proposed that confirmation influences satisfaction be described as a post-evaluation of users and is seen as a positive feeling (test) experience with the service (satisfaction). Confirmation influences satisfaction substantially.

Chiu et al. (2020) studied the ECM point of view and propose that the confirmation of expectations by people affects their satisfaction. Confirmation of expectations had positive and significant impacts on the perceived satisfaction and investment size. Wu and Wu (2019) found that confirmation had a significant indirect effect on performance expectation satisfaction.

Confirmation and post-adoption expectations have significantly influenced satisfaction; the two structures represent 71% of the satisfaction difference.



**Figure 2.22** Relationship Model for Expectation Confirmation and Customer Satisfaction

### 2.9.8 Customer Satisfaction and Willingness to Use SST

Wang (2012) examined the background and implications of consumer satisfaction with the retail application of SST. The results showed that consumer satisfaction was linked to strong behavioral intentions for using SST.

Iqbal et al. (2018) studied with the structural path analysis that the relationship between the SST service quality and customer behavioral intentions is partially mediated by customer satisfaction. Moreover, the results also show that the relationship between service quality and customer loyalty is partially mediated by customer satisfaction. In this study, mediation analysis was carried out to monitor the extent of influence of the independent variable (i.e., service quality) in the presence of a mediator (i.e., customer satisfaction) on the dependent variable (i.e., loyalty and composability).

Natarajan et al. (2017) found that all five satisfaction antecedents in their model had an indirect effect on construction intention. Their study results show that although the perceptible risk does not directly influence price sensitivity, it indirectly affects mobile shopping applications through satisfaction and intention.

Jumaan et al. (2020) study used the ECM to examine how individuals' continued use of mobile Internet services is influenced by cognitive absorption. Results of AMOS strongly support the fact that satisfaction has a strong influence on sustainability intention as drawn from IT continuance model specifications.

According to the research conducted by Ashraf et al. (2020), The results show that perceived quality decisions have the strongest impact on customer satisfaction and intention to continue the use of OPR; the reverse perception of decision-making has a significant impact on satisfaction, but not on the intent to continue the use of OPR. In support, Rahi and Ghani (2019) proposed that satisfaction demonstrated an important influence on the intention of the customer to

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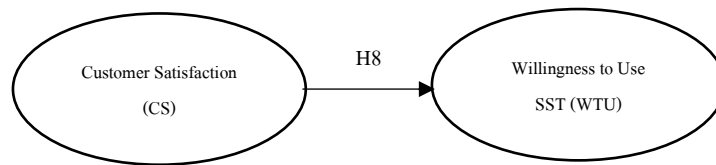
use internet banking. Moreover, Shang and Wu (2017) investigate and examine the factors that contribute to mobile consumers' intention to continue shopping for food and non-food items via smartphones and other mobile terminals. The result shows that satisfaction has a positive impact on continued intention. Furthermore, Chiu et al. (2020) aimed to explore the continued intention of consumers to use fitness and health apps by applying two theoretical models: the ECM and the Investment Model. Satisfaction had a positive and significant impact on intention and commitment to continuity.

From the analysis by Wu and Wu (2019), the intention of the library patrons to continue was well-predicted by performance expectations, followed by effort expectations, satisfaction, and facilitating conditions, thus encouraging, and each of the four post-adoption expectations showed a weak, indirect impact on continued intention through satisfaction.

Agnihotri, Yang, and Briggs (2019) aimed to fill the critical gap in sales literature by proposing a relationship-based model of customer willingness to pay more, including a salesperson's time perspective (i.e., long-term and short-term perspective), intra-organizational employee navigation, and customer satisfaction with the salesperson. The findings indicate that both long-term and short-term perspectives have positive effects on intra-organizational employee navigation and customer satisfaction, which, in turn, have a positive impact on customer willingness to pay more.

Lian (2018) interpreted that SST has gained popularity in many fields, but many countries' consumers still prefer their services. Why is that so? Why? This paper aims to understand potential reasons by integrating two perspectives: the marketing of personal properties and the model for the success of information systems (IS success model). The results show that satisfaction is the main determinant of the intention for continuity of use.

Siah and Fam (2018) restated that research identifies factors that influence the quality of self-checking technology and examines the relationships between quality of service, customer satisfaction, and purchasing intent in Malaysian supermarkets. The regression analysis result shows that customer satisfaction contributes significantly and forecasts 35% of the change in purchase intentions. The relationship between customer satisfaction and the intention to purchase is significant and strongly considered.



**Figure 2.23** Relationship Model for Customer Satisfaction and WTU SST

### 2.9.9 SST Service Quality and Customer Satisfaction

Iqbal et al. (2018) studied that service quality has been a subject of extensive inquiry for decades, now in the form of SST, which has profound implications for customer interaction with companies to produce positive service results such as customer satisfaction, loyalty, and comporment intentions. Many studies have revealed an important connection between customer satisfaction and service performance from the point of view of a customer technology interface. On internet retailing,

Oghuma et al. (2016) found that the results have shown that the perception of service quality and usability greatly influences user satisfaction and the intention to continue to use mobile instant messaging. Another important aspect of ECM's extension involves the impact on confirmation and satisfaction of perceived service quality.

Moreover, Lyua et al. (2019) found that the results show that perceived service quality significantly affects customer satisfaction, with self-service retail quality and experience value as important factors in the acceptance of self-service retail stores by the consumer. Efficient service quality and an improved service experience can bring greater satisfaction to consumers, which increases customer intent.

The research by Lian (2018) reveals that the four proposed variables (based on DeLone) impact the determinants of SST satisfaction. In other words, quality of information, quality of the system, and quality of service. The model demonstrates that information quality, quality of the system, and service quality affect user satisfaction and the purpose and the advantages of the IS success model.

Orel and Kara (2014) proposed Supermarket buyers worldwide meet and use self-service technology (SSTs) increasingly during their shopping processes. The SEM results showed that the link between self-check service quality and customer satisfaction is positive and statistically significant. SCS service quality is a secondary factor used to predict satisfaction and loyalty.

Palanisamy (2019) investigated the relationship between e-service quality and customer satisfaction, which is considered considerable. The majority of research studies show that the quality of service and customer satisfaction is independent but closely connected. An increase in one is likely to increase in another construct. Their study found that e-service quality, design quality, and self-efficacy affect mobile trading system satisfaction (MTS). The quality of design of MTS apps that satisfy the use of apps is an important exploration of the literature. The study also contributes to the compilation of MTS literature through the advantages and drawbacks of MTS and the description of MTS apps available on Google Play.

Amin (2016) examined the quality of internet banking services and their implications for the satisfaction and loyalty of e-clients. The findings show that the aspect of the internet banking framework value for internet banking services is a nice determinant of e-customer satisfaction and loyalty to e-customers. The results demonstrate that the quality of Internet banking services has a positive relation to e-customer satisfaction.

Ikhsan and Simarmata (2021) inferred from their analysis, how SST-SERVQUAL impacts customer satisfaction, behavioral purpose, and behavioral loyalty in the public service sector in Indonesia. This study examined the role of the reputation of a company as an SST mediator for customer satisfaction, behavioral intent, and behavioral loyalty. Based on the rapid development of self-service technology, scientists need to understand the overall perceptions of customers in their use of technology by linking them to company reputations (satisfaction, behavioral intentions, and loyalty).

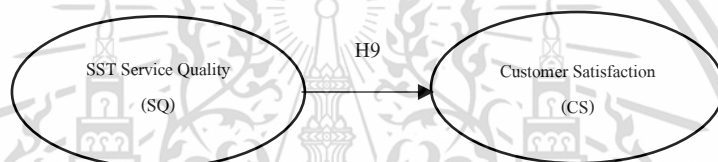
Chou and Lii (2020) found that interaction experiences, such as functional affordability and cognitive affordance, are positive for the quality and satisfaction of SST's service. Customers with an excellent assessment of the quality of SST services are more susceptible to being satisfied with SST and willing to recommend or choose the same service in the future. The results also suggest that perceived self-control moderates the relationship between SST service quality, cognitive affordance, and satisfaction with SST. The standardized estimate indicates that the quality of SST service has a significant positive effect on SST satisfaction.

Mango, Muceldili, and Erdil (2017) study included a questionnaire-based survey of bank customers in Turkey to determine the relationship between service quality and SST. For this study, a total of 165 online survey responses were used. The surveys were sent to Kuveyt Turk Participation Bank, the only bank to use XTM technology. The results indicate that SSTQAU positively affects customer satisfaction and customer loyalty; customer fulfillment affects customer

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loyalty, and customer satisfaction meditates on the relationship between SSTQAUL and customer loyalty.

Considine and Cormican (2017) probed the perception of SST by employees. To this end, four SSTQUAL quality scale dimensions (i.e. (a) functionality; (b) safety; (c) design and (d) customization) were investigated. Siah and Fam (2018) further determined the factors affecting the quality of self-checked services in Malaysian supermarkets and investigated links between service quality, customer satisfaction, and purchasing intent. The dimensions of service quality included speed, ease of use, reliability, leisure, and control, which were adapted from the model based on the attributes of Dabholkar. All the hypotheses expressed in the study were positive. This study offers practical insights into service quality dimensions for customer satisfaction and business performance management.



**Figure 2.24** Relationship Model for SST SQ and Customer Satisfaction

### 2.9.10 SST Service Quality and Willingness to Use SST

According to the research conducted by Iqbal et al. (2018), Service quality has been a subject of extensive inquiry for decades, now in the form of SST, which has profound implications for customer interaction with companies to produce positive service results such as customer satisfaction, loyalty, and commitment intentions. SST dimensions and their effect on customer satisfaction, loyalty, and intentions for behavior in the Pakistani service sector. The quality of SST's service has a positive and important relation to behavioral intentions.

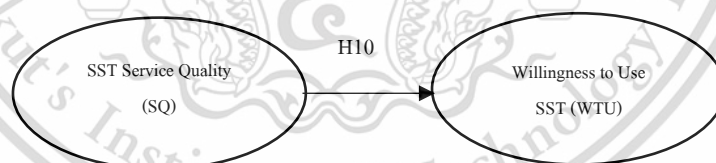
Although the majority of elderly people are increasing Lee and Lyu (2019), most research in behavior on technology adoption, such as the adoption of SST, tends to focus on younger consumers. To address this gap, this study examines the factors that motivate older consumers to adopt SST by applying the model of Gatignon and Robertson's diffusion process. Important determinants for the intention to use were service quality, perceived risk, and previous user experience. Quality of service and previous usage experience were both related positively to the

intention to use and support. As the quality of service of SST increases, the intention of using SST among older consumers increases

Ikhsan and Simarmata (2021) studied the impact of SST-SERVQUAL on behavioral intent. The data shows that SST- SERVQUAL complements its corporate reputation with customer satisfaction, behavioral intent, and behavioral loyalty. SST- SERVQUAL, corporate reputation, and customer satisfaction affect customer behavior positively and significantly.

Moreover, Joshi (2020) proposed Transport technology has changed the paradigm where customers are empowered to become part of service through SST and Auto-Rickshaw is no exception. The report assesses the quality of service dimensions of Ola and Uber Automobile Services offered by SSTQUAL in Nagpur, India, and their impact on customer satisfaction and conduct. The study used multiple regression steps by step to identify the significant dimensions of quality and their impact on customer satisfaction and behavioral intentions.

Hamza et al. (2019) examined the factors affecting the gender differences in SST in Nigerian students in an empirical way. Service quality will have a major influence on students' intention to adopt SST. The single model shows an important relationship to adoption that requires that the service quality work. The model's result shows that service quality has a significant relationship with adoption. The standardized Beta value coefficient means that service quality contributes 34.1% to its second-highest adoption. Therefore, the hypothesis that service quality will have a significant impact on students' plans to adopt SST is accepted.



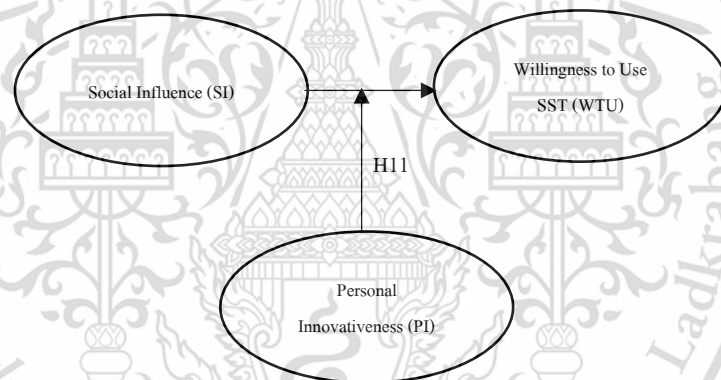
**Figure 2.25** Relationship Model for SST SQ and WTU SST

### 2.9.11 Personal Innovativeness, Social Influence, and Willingness to Use SST

The research conducted by Leicht, Chtourou, and Youssef (2018) analyzes the moderating effects of innovative consumerism on the relations among different antecedents of the adoption of self-employed vehicles and the intentions of buying autonomous cars (high versus low). Based on consumer innovation research and a unified technology acceptance and use theory (UTAUT) by Venkatesh et al. (2003), an empirical model was developed and tested using online (n=241) data

collected using structural equation modeling (SEM) and multi-group analysis. The results demonstrate that the results are positive for those who purchase autonomous cars, their performance expectations, their effort, and their social impact. Consumers' innovative nature moderates the relationships between structures, while the impact is stronger when consumer innovation is high and not low.

Persaud and Schillo (2017) proposed A survey of 988 Canadian participants based on the study to test the links between social identity, social influence, perceived value, and intent to buy within a multifunctional framework. Structural equation modeling was used to demonstrate the moderation effect of consumer innovation. The findings show that the two social aspects — social identity and social effect — affect the buying intention and partly mediate organic products' perceived value. In addition, these relations are moderated by personal characteristics, the 'consumer innovation.'



**Figure 2.26** Relationship Model linking SI, PI and WTU SST

After taking previous studies and relevant literature into consideration, the following hypotheses have been proposed for this research study:

**Table 2.18** Summary Hypothesis of This Thesis

	<b>Relationship</b>	<b>Researcher</b>
H1	Facilitating Conditions and Willingness to Use SST	Wu and Wu (2019), Lua et al. (2019), Tarhini et al. (2019), El-Said and Tall (2020), Hamza et al. (2019), Patil et al. (2020), Alam et al. (2020)
H2	Price Value and Willingness to Use SST	Tarhini et al. (2019), Dhiman et al. (2020), Alalwan et al. (2018), Alalwan et al. (2017)

	<b>Relationship</b>	<b>Researcher</b>
H3	Social Influence and Willingness to Use SST	Celik (2016),Oliveira et al. (2016),Okumusa et al. (2018),El-Said and Tall (2020),Jeon et al. (2020),Dhiman et al. (2020),Patil et al. (2020),Alam et al. (2020),Baabdullah et al. (2019),Melián-González et al. (2019)
H4	Perceived Usefulness and Willingness to Use SST	Kazancoglu and Yarimoglu (2018),Oghuma et al. (2016),Natarajan et al. (2017),Jumaan et al. (2020),Ashraf et al. (2020),Rahi and Ghani (2019),Chiu et al. (2020), Yang and Geetha (2019),Liebana-Cabanillas et al. (2020), Taufik and Hanafiah (2019),Hariguna et al. (2019)
H5	Perceived Usefulness and Customer Satisfaction	Natarajan et al. (2017),Oghuma et al. (2016),Ashraf et al. (2020),Rahi and Ghani (2019), Chiu et al. (2020),Hsieh (2019),Hariguna et al. (2019)
H6	Expectation Confirmation and Perceived Usefulness	Oghuma et al. (2016),Jumaan et al. (2020),Rahi and Ghani (2019),Shang and Wu (2017),Chiu et al. (2020)
H7	Expectation Confirmation and Customer Satisfaction	Oghuma et al. (2016),Jumaan et al. (2020),Rahi and Ghani (2019),Shang and Wu (2017),Chiu et al. (2020),Wu and Wu (2019)
H8	Customer Satisfaction and Willingness to Use SST	Wang (2012),Iqbal et al. (2018),Natarajan et al. (2017),Jumaan et al. (2020),Ashraf et al. (2020),Rahi and Ghani (2019),Shang and Wu (2017),Chiu et al. (2020),Wu and Wu (2019), Agnihotri et al. (2019),Lian (2018),Siah and Fam (2018)
H9	SST Service Quality and Customer Satisfaction	Iqbal et al. (2018),Oghuma et al. (2016),Lyua et al. (2019),Lian (2018),Orel and Kara (2014),Palanisamy (2019),Amin (2016), Ikhsan and Simarmata (2021), Chou and Lii (2020),Mango et al. (2017),Considine and Cormican (2017),Siah and Fam (2018)
H10	SST Service Quality and Willingness to Use SST	Iqbal et al. (2018),Lee and Lyu (2019), Ikhsan and Simarmata (2021),Joshi (2020),Hamza et al. (2019)

	<b>Relationship</b>	<b>Researcher</b>
H11	Personal Innovativeness and Social Influence	Persaud and Schillo (2017) ,Leicht et al. (2018)

## 2.10 Conceptual Framework

According to the literature review, research relevant concepts and theories and analyze the relationship between the variables related to the research objective. As a result, the conceptual framework was obtained, as shown in Figure 2.27.



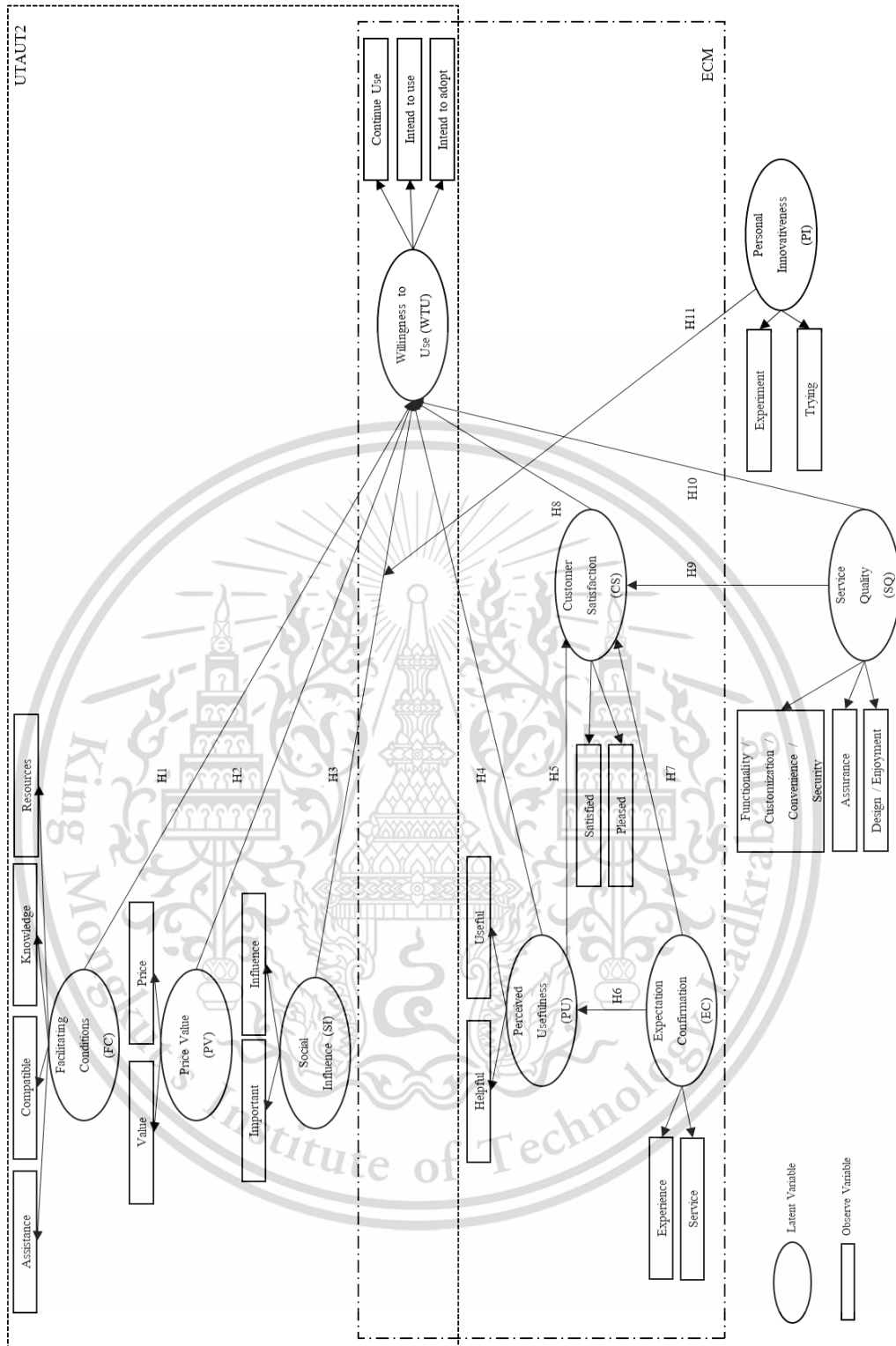


Figure 2.27 Conceptual Framework

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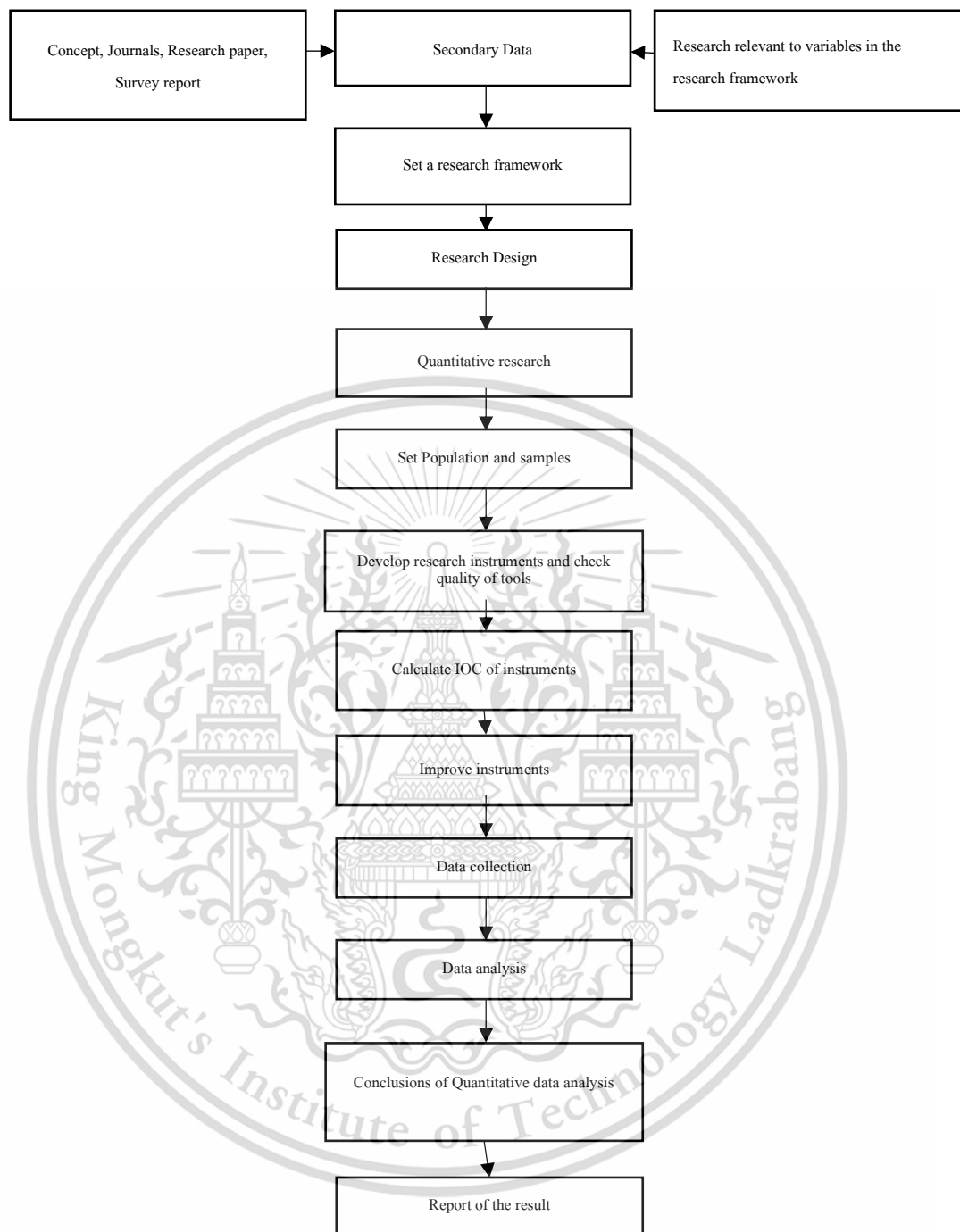
## CHAPTER 3

# RESEARCH METHODOLOGY

Omnichannel encompasses technology and self-service innovation in Thailand, such as the central Group, AR (Ikea, Artistry, Shopee), and others, like Amazon-Whole Foods, Amazon Go, and Amazon Go Grocery, etc. In this thesis, the conceptual framework for Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST Innovation for Omnichannel retail business in Thailand to use SST innovation is the focus. The factors influencing Omnichannel's willingness to use self-service technology innovations via structural equation modeling (SEM) and the questionnaire that proved the reliability and validity of Cronbach's alpha.

### **Quantitative research**

- 3.1 Population and samples
- 3.2 Sampling size
- 3.3 Sampling Method
- 3.4 Variables
- 3.5 Research instruments and scales
- 3.6 Quality of the instruments
- 3.7 Data collection
- 3.8 Data analysis
- 3.9 Statistical analysis
- 3.10 Ethical Consideration



**Figure 3.1** Research Procedure Quantitative Research

### 3.1 Population and samples

The research population consists of Thai people who used SST on e-commerce, Augmented Reality (AR), Virtual Reality (VR), Kiosks, etc., on Omnichannel (offline and online) for Retail Business. The specific population is unknown. However, the group of people with characteristics that fit the desired parameters for the study population is presented in Table 3.1. This material is reserved for educational use only, not allowed for commercial use.

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**Table 3.1** Thailand Information

Total Population	69.63 Million
Mobile Subscriptions	92.33 Million
Internet Users	48.00 Million
Active Social Media Users	48.00 Million
Active Mobile Social Users	47.59 Million

**Source:** Hootsuite (2019)

**Table 3.2** Omnichannel (Offline and Online) Companies in Thailand

Groceries	Fashion and Beauty	IT and Electronics	Books and Stationery	Home and Living
Tesco Lotus	Central	JIB	Naiin	HomePro
Tops	Department	Advice	Se-ed Book	Homework
Supermarket	Store	Banana IT	Centre	Boon Thavon
Big C	Super Sports	IT City	Officemate	
Makro Click	Watsons	PowerBuy	Kinokuniya	
	Robinsons			
	Tsuruha			

**Source:** Austrade (2018)

### 3.2 Sampling size

The latent variables in SEM generally correspond to hypothetical constructions or factors presumed to be explanatory variables reflecting a continuum not observed directly. The intelligence structure is an example (Kline, 2011). There is no single, definitive intelligence measure. Instead, researchers use various types of observations, such as verbal reasoning tasks or memory capacity, to assess multiple intelligence facets. Latent SEM variables can be phenomena of a wide range. SEM can all be described as latent variables in the structures of the attributes of people (e.g., intelligence, neuroticism), the units for higher-level analysis (e.g., groups, geographical areas).

The ideal sample ratio of size to parameters is 20:1. For instance, if total parameters of  $q = 10$  models require statistical estimates, the sample size should be ideal, at least  $20 \times 10$  or  $N = 200$ . This material is reserved for educational use only, not allowed for commercial use.

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200. The N:q ratio of 10:1 would be less ideal, with a minimum sample size of 10 to 10, or  $N = 100$  in the example given only for  $q = 10$ . The results' trust also decreases with the N:q ratio decreasing below 10:1 (e.g.,  $N = 50$ ,  $q = 10$  for the ratio of 5:1).

Erika J. Wolf, Kelly M. Harrington, Shaunna L. Clark, and Miller (2013) explained that to determine the required minimum sample size, it should be tested to increase or decrease the sample size by  $n = 10$  (or  $n = 20$  if it became clear that 10 increases were too good to produce significant differences between models). Kline (2011) and Jackson (2003) suggested that N:q values of 10:1 or even 20:1 appear to be appropriate in the context of confirmatory factor analysis (10 observations per 1 estimated parameter). While the authors may provide many recommendations about the actual ratio needed, it is clear that it is within the CSM knowledge base that the sample size should be taken into account in light of sample size 129 of the parameter estimate number.

This study's primary purpose is to seek support for N:q as an important way of thinking about the sample size. Previous research suggests that N:q should be considered along with other factors affecting the quality of CSM products, such as sample size, indicator reliability, and the number of measured variables by latent variable. Accordingly, this study included 22 variables observed, and the required at least samples included  $20 \times 22 = 440$  respondents.

### 3.3 Sampling Method





Therefore, Research summarizes sampling the steps as follows:

1. Quota random sampling using seven groups and the ratio in Table 3.3 was calculated from the proportion of entrepreneurs who sell products to different regions via e-commerce in Thailand (SEA Group and Bank of Thailand, 2019).
2. Using convenience sampling by collecting data on people who have previously purchased goods and services online, offline(store), and multi-channel with the co-operating person for 460 respondents as shown in Table 3.3, and Table 3.4 shows public Facebook groups associated with shopping online and offline, after that divide the sample size for data collection into each group.

**Table 3.3** Population and Sampling





Group no.	Region	Ratio	Sampling
1	Northern region	15%	71
2	Southern region	14%	66
3	Northeastern region	14%	66
4	Western region	15%	67
5	Eastern region	15%	67
6	Central region	15%	67
7	Bangkok	12%	56
Total		100%	460

**Table 3.4** Number of Members in Public Facebook Groups Associated with Ashopping Online and Offline

Group Name	Number of members
รีวิวจริง ไม่จกตา (Review Jing Mai Jok Ta)	139,556
แต่งบ้านกันเถอะ     (Tang ban gun ter)	288,961
ของดีกิน ไปเหอะ (Khong Dee Gin Pai Her)	708,578
ป้ายยา Shopee/Lazada ตรงปก (Pai Ya Shopee/Lazada Tong Pok)	288,879

**Source :** as of 17 July 2022

After that, equally divide the sample size for data collection into each group as follows:

รีวิวจริง ไม่จกตา (Review Jing Mai Jok Ta)	115 sets
แต่งบ้านกันเถอะ     (Tang ban gun ter)	115 sets
ของดีกิน ไปเหอะ (Khong Dee Gin Pai Her)	115 sets
ป้ายยา Shopee/Lazada ตรงปก (Pai Ya Shopee/Lazada Tong Pok)	115 sets

### 3.4 Variables

The variables in this study have 8 Latent Variables, 1 Moderator Variables, and 22 observed variables.

#### 3.4.1 Latent Variables and observed variables:

1. Price Value
  - a. Price
  - b. Value
2. Facilitating Conditions
  - a. Resources
  - b. Knowledge
  - c. Compatible
  - d. Assistance
3. Social Influence
  - a. Influence
  - b. Important
4. Perceived Usefulness
  - a. Useful
  - b. Helpful
5. Expectation Confirmation
  - a. Experience
  - b. Service
6. SST Service Quality
  - a. Functionality / Customization / Convenience / Security
  - b. Assurance
  - c. Design / Enjoyment
7. Customer Satisfaction
  - a. Satisfied
  - b. Pleased
8. Willingness to Use SST
  - d. Continue Use

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- e. Intend to use
- f. Intend to adopt

#### 1.4.2.3 Moderator Variables and observed variables:

1. Personal Innovativeness
  - a. Experiment
  - b. Trying

### 3.5 Research instruments and scales

- 1) The questionnaire is established as a research tool to demonstrate and detect variables related to willingness to use Omnichannel Self-Service Technologies innovation in retail businesses in Thailand.
- 2) Develop and prepare research questionnaire structures. Collect data from relevant theories, literature, concepts, and research.
- 3) Study the theories, literature, concepts, and research relevant to the recognition of interactions between latent internal, external, and observed variables in the development of the questionnaire structure.
- 4) Preparation and development of questionnaires on conformity, check the confidence of the IOC, the coherence between research questions, the researchers' specific goals, and the research issues between 0.5-1. When the value is below 0.5, the problems should be examined according to the objectives to be measured.
- 5) Perform a request update based on the instructions.
- 6) Take expert and professional suggestions for the revised questionnaire. Test 30 samples prior to launching the final questionnaires. Exact and identical verification of each question between subject and question.
- 7) Measure that the consistency and reliability of the 30 questionnaires are more significant than 0.6 for Cronbach's alpha test.
- 8) The final questionnaire to be used for the study has been updated to reinforce the questionnaires in case of a leak.

For the research framework, the questionnaires are formulated based on Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST Innovation on Omnichannel for Retail Business in Thailand. In addition, the questionnaires are based on related theories, literary texts, principles, and researchers. The surveyed participants will be provided with the completed version of the questionnaire, divided into four parts:

Part 1: The participants have personal details such as name, gender, age, status, time of purchase, the channel of shopping, and the type of item being bought. The nominal scale and ratio scale are used.

Part 2: Questions about the basic knowledge of Self-Service Technologies Innovation on Omnichannel.

Part 3: Questions about the latent research variables

#### **Price Value**

- Price
- Value

The example of the questionnaire aspect about “**Price Value.**”

Instruction: Please choose the most match in your opinion by filling / into five levels of the scale.

1	Using self-service technology is a good value for money.	Strongly disagree	1	2	3	4	5	Strongly agree
2	Using self-service technology provides a good value for properly pricing various products.	Strongly disagree	1	2	3	4	5	Strongly agree
3	Compared to traditional cashiers, self-service technology requires less effort	Strongly disagree	1	2	3	4	5	Strongly agree

#### **Facilitating Conditions**

- Resources
- Knowledge
- Compatible
- Assistance

The example of the questionnaires about “**Facilitating Conditions**”

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Instruction: Please choose the most match in your opinion by filling / into five levels of the scale.

1	I have the resources necessary to use self-service technology.	Strongly disagree	1	2	3	4	5	Strongly agree
2	I have the knowledge necessary to use self-service technology.	Strongly disagree	1	2	3	4	5	Strongly agree
3	Self-service technology is compatible with other technologies I use.	Strongly disagree	1	2	3	4	5	Strongly agree

### Social Influence

- Influence
- Important

The example of the questionnaires about “**Social Influence**”

Instruction: Please choose the most match in your opinion by filling / into five levels of the scale.

1	Listening to the media influences the use of Self-service technology.	Strongly disagree	1	2	3	4	5	Strongly agree
2	I think the use of self-service technology plays a role in my purchasing of goods and services.	Strongly disagree	1	2	3	4	5	Strongly agree

### Perceived Usefulness

- Useful
- Helpful

The example of the questionnaires about “**Perceived Usefulness**”

Instruction: Please choose the most match in your opinion by filling / into five levels of the scale.

1	Using Self-service technology helps me to accomplish things more quickly	Strongly disagree	1	2	3	4	5	Strongly agree
2	Using Self-service technology helps me to perform many things more conveniently	Strongly disagree	1	2	3	4	5	Strongly agree
3	Work become easier and effective because of SST.	Strongly disagree	1	2	3	4	5	Strongly agree

### Expectation Confirmation

- Experience
- Service

The example of the questionnaires about “**Expectation Confirmation**”

Instruction: Please choose the most match in your opinion by filling / into five levels of the scale.

1	My experience with self-service technology was better than what I expected	Strongly disagree	1	2	3	4	5	Strongly agree
2	It Confirmed my expectations toward self-service technology	Strongly disagree	1	2	3	4	5	Strongly agree
3	The use of self-service technology can meet my needs in a variety of situations.	Strongly disagree	1	2	3	4	5	Strongly agree

### Personal Innovativeness

- Experiment
- Trying

The example of the questionnaires about “**Personal Innovativeness**”

Instruction: Please choose the most match in your opinion by filling / into five levels of the scale.

1	I like to experiment with using self-service technology	Strongly disagree	1	2	3	4	5	Strongly agree
2	In general, I am not hesitant to try out new self-service technology.	Strongly disagree	1	2	3	4	5	Strongly agree

### Customer Satisfaction

- Satisfied
- Pleased

The example of the questionnaires about “**Customer Satisfaction**”

Instruction: Please choose the most match in your opinion by filling / into five levels of the scale.

1	I am very satisfied with self-service technology.	Strongly disagree	1	2	3	4	5	Strongly agree
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2	I am very contented with using self-service technology.	Strongly disagree	1	2	3	4	5	Strongly agree
3	I am very pleased with using self-service technology.	Strongly disagree	1	2	3	4	5	Strongly agree

### SST Service Quality

- Functionality / Customization Convenience / Security
- Design / Enjoyment
- Assurance

The example of the questionnaire about “SST Service Quality”

Instruction: Please choose the most that matches your opinion by filling into five levels of the scale.

1	I can get my service done with the self-service technology in a short time.	Strongly disagree	1	2	3	4	5	Strongly agree
2	Self-service technology services company is a certified company.	Strongly disagree	1	2	3	4	5	Strongly agree
3	The layout of the self-service technology is esthetically appealing.	Strongly disagree	1	2	3	4	5	Strongly agree

### Willingness to Use SST

- Continuous Use
- Intention to use
- Intention to adopt

The example of the questionnaires about “Willingness to Use SST”

Instruction: Please choose the most match in your opinion by filling / into five levels of the scale.

1	I will continue using this self-service technology for shopping in the future.	Strongly disagree	1	2	3	4	5	Strongly agree
2	During the next six (6) months, I intend to use Self-service technology innovation	Strongly disagree	1	2	3	4	5	Strongly agree

3	I will adopt self-service technology in the future.	Strongly disagree	1	2	3	4	5	Strongly agree
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**Table 3.5** Questionnaire Structure

Variable	Total Question	Question No.	Form / Scale
Part 1: Personal data of the respondents	6	1-6	Nominal and Ratio scale
Part 2: Questions about the basic knowledge of Self-Service Technologies Innovation on Omnichannel	2	7-8	Ratio and Interval scale
Part 3: Questions about the latent research variables	43	9-52	
<b>Price Value</b>			
Price	1	9	
Value	2	10-11	
<b>Facilitating Conditions</b>			
Resources	2	12-13	
Knowledge	2	14-15	
Compatible	2	16-17	
Assistance	3	18-20	
<b>Social Influence</b>			
Influence	1	21	
Important	1	22	
<b>Perceived Usefulness</b>			
Useful	2	23-24	
Helpful	1	25	
<b>Expectation Confirmation</b>			
Experience	2	26-27	
Service	1	28	

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Variable	Total Question	Question No.	Form / Scale
<b>Personal Innovativeness</b>			
Experiment	1	29	
Trying	1	30	
<b>Customer Satisfaction</b>			
Satisfied	2	31-32	
Pleased	2	33-34	
<b>SST Service Quality</b>			
Functionality / Customization / Convenience / Security	9	35-43	
Assurance	2	44-45	
Design / Enjoyment	3	46-48	
<b>Willingness to Use SST</b>			
Continue Use	1	49	
Intend to use	1	50	
Intend to adopt	1	51-52	
Part 4: Suggestions of respondents	-	-	

As of questionnaire set is instructed for quantitative research that based on the different sources and is developed with the conceptual framework and literature review is accepted and validated studying as shown in Table 3.6

**Table 3.6** Development of Scale and Research Questions

Latent variable	Observed variable	Prototype of research questions	Number of questions
Price Value	<ul style="list-style-type: none"> <li>○ Price</li> <li>○ Value</li> </ul>	Dhiman et al. (2020), Alalwan et al. (2018), Alalwan et al. (2017), El-Said and Tall (2020)	3

Latent variable	Observed variable	Prototype of research questions	Number of questions
Facilitating Conditions	<input type="radio"/> Resources <input type="radio"/> Knowledge <input type="radio"/> Compatible <input type="radio"/> Assistance	Wu and Wu (2019), Lua et al. (2019), El-Said and Tall (2020), Patil et al. (2020), Alam et al. (2020)	9
Social Influence	<input type="radio"/> Influence <input type="radio"/> Important	Celik (2016), Oliveira et al. (2016), Okumusa et al. (2018), El-Said and Tall (2020), Jeon et al. (2020), Dhiman et al. (2020), Patil et al. (2020), Alam et al. (2020), Baabdullah et al. (2019)	2
Perceived Usefulness	<input type="radio"/> Useful <input type="radio"/> Helpful	Oghuma et al. (2016), Natarajan et al. (2017), Jumaan et al. (2020), Ashraf et al. (2020), Rahi and Ghani (2019), Chiu et al. (2020), Liebana-Cabanillas et al. (2020), Taufik and Hanafiah (2019)	3
Expectation Confirmation	<input type="radio"/> Experience <input type="radio"/> Service	Oghuma et al. (2016), Jumaan et al. (2020), Rahi and Ghani (2019), Shang and Wu (2017), Chiu et al. (2020), Wu and Wu (2019)	3
Personal Innovativeness	<input type="radio"/> Experiment <input type="radio"/> Trying	Natarajan et al. (2017), Dhiman et al. (2020), Taghreed Abu Salim et al. (2020), Patil et al. (2020)	2
Customer Satisfaction	<input type="radio"/> Satisfied <input type="radio"/> Pleased	Orel and Kara (2014), Lyua et al. (2019), Hong and Slevitch (2018), Wu and Wu (2019), Chiu et al. (2020), Shang and Wu (2017), Rahi and Ghani (2019), Ashraf et al. (2020), Jumaan et al. (2020), Iqbal et al. (2018)	4

Latent variable	Observed variable	Prototype of research questions	Number of questions
SST Service Quality	<ul style="list-style-type: none"> <li>○ Functionality</li> <li>/</li> <li>Customization</li> <li>/ Convenience</li> <li>/ Security</li> <li>○ Assurance</li> <li>○ Design /</li> <li>Enjoyment</li> </ul>	Iqbal et al. (2018), Oghuma et al. (2016), Lian (2018), Orel and Kara (2014)	14
Willingness to Use SST	<ul style="list-style-type: none"> <li>○ Continue Use</li> <li>○ Intend to use</li> <li>○ Intend to adopt</li> </ul>	Wang (2012), Iqbal et al. (2018), Natarajan et al. (2017), Jumaan et al. (2020), Ashraf et al. (2020), Shang and Wu (2017), Hong and Slevitch (2018), Lian (2018), Lee and Lyu (2019), Rahi and Abd.Ghani (2019), Rahi et al. (2019)	3

This analysis is based on a 5-point (Likert type scale) scale. It is followed by researchers who will develop questions by closing the gap between research and new issues with relevant literature. In the study, the researchers used the following five-point scale criteria in

**Table 3.7** 5-Point Scoring Criteria

Point	Evaluation Criteria
5	Very high level
4	High level
3	Medium level
2	Low level
1	Very low level

The 5-point rating levels are interpreted based on the calculation of the compliance class interval and classification principle. Consequently, the distance of each interval is used in the assessment criteria for the variables, as shown in Table 3.8.

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**Table 3.8** Evaluation Criteria for Likert Scale Questions

Score Interval (Mean)	Evaluation Criteria
4.20-5.00	Very high level
3.40-4.19	High level
2.60-3.39	Medium level
1.80-2.59	Low level
1.00-1.79	Very low level

**Source:** Çelik and Oral (2016)

### 3.6 Quality of the instruments

Five Self-Service Technologies and Omnichannel experts checked the quality of the questionnaires in this research. The instruments for the IOC have been determined for each question and attribute.

Formula to calculate the value (R. C. Turner & Carlson, 2003)

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

Where

*IOC*: All the experts' and specialists' points are summarized.

*N*: Number of specialists and experts

1: The questions have been measured for objectives.

0: Not confident in the questions have been measured for objectives.

-1: The questions have not been measured for objectives.

The value of the IOC ranges from -1 to +1. A good question should, therefore, be concluded at 1. Every question has an IOC under 0.50 and should be revised or removed.

1: The experts agree that the questions are in accordance with the content.

0: The experts are not confident that the questions are in accordance with the content.

-1: The experts agree that the questions are not in accordance with the content.

The IOC standards criterion as follows

a. The validity factor of questions with IOC values between 0.5 and 1.00.

b. Questions with an IOC value of less than 0.5 must be changed and cannot be included.

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Cronbach's alpha coefficient has been used to measure reliability estimates. The constructs and subscales are higher than the minimum desirable of 0.60, and these findings thus exceed Kline (2011) indicated that the reliability is considered excellent when it is  $>0.9$ , adequate if  $>0.8$ , and acceptable if  $>0.5$ .

### 3.7 Data collection

This section is about quantitative data collection. There are two data collections; primary data and secondary data. They are presented as follows:

#### Primary data

- a. Provide letters of cooperation and allow the approved person to gather details and accept them through the Ph.D. Program in Industrial Business Administration, KMITL. The submitted letter asks 520 respondents to collect user details for this study.
- b. This study aims to distribute questionnaires to 520 respondents before collecting the data.
- c. Compile the 520 questionnaires, and then analyze the data process.

#### Secondary data

- d. The data collection consists of concepts, literature, principles, and studies from various sources, e.g., books, papers, documents, the Internet, government-and private-sector statistical evidence, and reporting, often using the evidence for interpretation and review.

### 3.8 Data Analysis

This section is about quantitative data analysis. The researchers must consider the core data for the analysis agreement as to the completed questionnaires. For statistical tests, the meaning level and acceptable error are 0.05. Procedure and analytical statistics as below:

1. The statistical analysis of sample distribution uses descriptive statistics, i.e., percentage, mean, and basic analysis of the model. This study consisted of 23 variables to recognize the structural equation model's distribution and variation. Descriptive research statistics included mean, SD, skewness, kurtosis, and AMOS.

2. The analysis of the relationships between the variables, AMOS, and Pearson's other correlation coefficient is the main program. The structural equation model factors are fundamental data. The criteria for the correlation coefficient are shown in Table 3.9.

**Table 3.9** 5-Point Scoring Criteria

Correlation coefficient (r)	The relationship level
$r > 0.8$	Very high
$0.6 < r < 0.8$	Quite high
$0.4 < r < 0.6$	Moderate
$0.2 < r < 0.4$	Quite low
$r < 0.2$	low

**Source:** Taweerat (1997)

3. KMO is considered appropriate for testing compatibility between empirical data and the conceptual framework for data suitability measurement.

4. The conceptual framework has been examined using the AMOS, and also the theories, concepts, and examination of the literature concerned have been obtained.

### 3.9 Statistical analysis

In this study, the researcher uses the Structural Equation Model (SEM), which several researchers commonly use with nominal, ordinal, interval, and ratio scaled variables (Hair, Sarstedt, Ringle, & Mena, 2012). In particular, they appreciate the ability of SEM to evaluate latent variables at the observational level (outer or model) or the theoretical test relations between latent variables (inner or structural model). The most popular statistical programs in the SEM inspection are AMOS, PLS-graph, LISREL, etc. The AMOS Version 21 program is used to analyze data in this research to;

1. Study the relationship between latent variables by theoretical testing.
2. Analysis of latent variables related to indicators or empirical variables.

In examining the measurement quality, the AMOS program using Confirmatory Factor Analysis (CFA) increases the opportunity to analyze the variance and covariance to check the harmony, the precision, or the consistency of the gage construction. The technique aims to test the

hypothesis for evaluating latent variables at the observer level or the theoretical testing relations between latent variables (Hair et al., 2012).

In this study, the investigator uses techniques to analyze the variable of all variables by examining the overall picture given by the equation to confirm whether or not indicators or empirical variables are being introduced to create theoretical variables, as well as the relevant statistics to assess consistency between the conceptual framework and the empirical data, as shown in Table 3.10.

**Table 3.10** Statistics for Evaluating the Consistency of the Conceptual Framework with Empirical Data

Statistic	Symbol	Objective	Statistics for the conceptual framework with empirical data
Relative Chi-square	$X^2 / df$	To show the conceptual framework, the empirical data is consistent	$X^2 / df < 2.00$
Goodness of Fit Index	GFI	Measure the harmonious harmony level between 0-1,00	$\geq 0.90$
Adjusted Goodness of Fit Index	AGFI	Measure the harmonious harmony level between 0-1.00	$\geq 0.90$
Root Mean Square Error of Approximation	RMSEA	To inform the tolerances of the conceptual framework, the root form of the average error square between 0 and 100 is estimated.	$< 0.05$

**Source:** Schumacker and Lomax (2010)

### 3.10 Ethical Consideration

The analysis only used data to compile and find the answer. There is no communication with others about personal questions or personal data. Participants are prevented, and their dignity

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is respected in all areas. Finally, all participants agreed to participate in this study, and the study was certified by Ethics in Human Research as Appendix C, and the researcher passed the training and exam, as shown in Appendix B.



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## **CHAPTER 4**

### **RESEARCH RESULTS**

The research was designed to use a triangulation model that included the UTAUT2 and the ECM Models as part of its approach. The objective is to develop a model of customer willingness to use SST for retail business in Thailand and to examine the direct effect, indirect effect, and combined influence relationship among Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST.

The study adopted a quantitative survey research design for online and offline shoppers in Thailand. Primary data was collected from May to August 2021, using a questionnaire from a sample size of 520. The questionnaire was divided into two sections; the first section collected data on the demographics of the study population, such as age, gender, education, shopping frequency, and preferred channel.

The constructs were developed from prior literature and discussed in the conceptual framework. The data was collected using Google Forms. The survey link was distributed using seven groups as the proportion of entrepreneurs who sell products to different regions via e-commerce in Thailand. Respondents to the survey were mainly residents of Bangkok, Central, Western, Eastern, Northeast, South, and North, where large populations are already familiar with the dynamics of online shopping and e-commerce.

The reliability and validity of constructs and observed variables were investigated in this research. 460 responses were received from the sample size of 520 which were considered valid and graded on a five-point Likert scale ranging from 1 ('strongly disagree') to 5 ('strongly agree') after sorting the completed copies of the questionnaire. In addition, the study used empirical data to develop 11 hypotheses, nine constructs, one moderating factor, and 22 observed variables.

#### **4.1 Socio-demographic information**

The characteristics of the study sample's data show the socio-demographic information of the 460 respondents.

**Table 4.1** Characteristic of the Study Sample.

		<b>Frequency</b>	<b>Percent</b>	
Gender	Male	141	30.7	
	Female	319	69.3	
Age	< 21	20	4.3	
	21 – 30	303	65.9	
	31 – 40	72	15.7	
	41 – 50	25	5.4	
	51 – 60	39	8.5	
	>60	1	0.2	
Education	Undergraduate	53	11.5	
	Bachelor's degree	294	63.9	
	Postgraduate degree	113	24.6	
Occupation	Government officer	74	16.1	
	Personal business	11	2.4	
	Student	51	11.1	
	Company Employee	177	38.5	
	State Enterprise Employee	23	5.0	
	Unemployment/ Retirement	29	6.3	
	Freelance	95	20.7	
	Income per month	< 35,001 baht	302	65.7
		35,001 – 70,000 baht	129	28.0
		70,000 – 105,000 baht	19	4.1
>105,000 baht		10	2.2	
Region	Bangkok	217	47.2	
	Central region	77	16.7	
	Western region	3	0.7	

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		Frequency	Percent
	Eastern region	16	3.5
	Northeastern region	25	5.4
	Southern region	26	5.7
	Northern region	96	20.9
Frequency of shopping	1-3 days per week	121	26.3
	4-6 days per week	73	15.9
	Every day	266	57.8
Chanel	Online	129	28
	In-Store	79	17.2
	Online and In Store	252	54.8

The demographic information revealed that females were dominant over the male gender. The sample consisted of 319 (69.3%) female respondents and 141 (30.7%) male respondents.

The age range of 21–30 was the most represented with 303 (65.9%) of the study population, while those below 21 were the least represented with 20 (4.3%), 31–40 years old for 72 (15.7%) respondents, 41–50 years old for 25 (5.4%) respondents, 51–60 years old for 39 (8.5%) respondents, and more than 60 years old for 1 (0.2%) respondent.

Those with a bachelor's degree education were more represented with 294 (63.9%), while those who are undergraduates constitute the minor educational qualification level with 53 (11.5%), and postgraduate for 113 (24.6%) respondents.

The occupation of "company employee" was the most represented with 177 (38.5%) of the study population, followed by "freelance" for 95 (20.7%) respondents, "government officer" for 74 (16.1%) respondents, "student" for 51 (11.1%) respondents, "unemployment/retirement" for 29 (6.3%) respondents, "state enterprise employee" for 23 (5.0%) respondents, and "personal business" for 11 (2.4%) respondents.

Income per month, the most of respondents earned less than 35,001 baht for 302 (65.7%), followed by 35,001 – 70,000 baht for 129 (28.0%) respondents, 70,000 – 105,000 baht for 19 (4.1%) respondents, and more than 105,000 baht for 10 (2.2%) respondents.

In the region, most of the respondents Bangkok had 217 (47.2%) respondents, followed by the Northern region with 96 (20.9%) respondents, the Central region with 77 (16.7%) respondents, This material is reserved for educational use only, not allowed for commercial use.

the Southern region with 26 (5.7%) respondents, the Northeastern region with 25 (5.4%) respondents, the Eastern region with 16 (3.5%) respondents, and the Western region with 3 (0.7%) respondents.

In terms of frequency of shopping, those who shopped every other day were the dominant group with 266 (57.8%), while those whose shopping frequency was 4-6 per week were the least with 73 (15.9%), and 1-3 days per week for 121 (26.3%) respondents.

When analyzing the channel employed by the shoppers, those who used a combination of both online and in-store channels were dominant with 252 (54.8%), and those relying on the in-store channel were least represented with 79 (17.2%), Online for 129 (28%) respondents.

#### 4.2 Opinion Level of the User

The nine variables in the research framework are described in the following section. There are six independent variables: (1) Facilitating Conditions, (2) Price Value, (3) Social Influence, (4) Expectation Confirmation, (5) Service Quality, and (6) Personal Innovativeness, as well as three dependent variables: Perceived Usefulness, Customer Satisfaction, and Willingness to Use. All observed variables are measured using a 5-point Likert scale, with the mean value indicated as follows:

Mean value between 1.00 -1.80 is “Strongly Disagree”

Mean value between 1.81 -2.60 is “Disagree”

Mean value between 2.61 -3.40 is “Neutral”

Mean value between 3.41 -4.20 is “Agree”

Mean value between 4.21 -5.00 is “Strongly Agree”

The descriptive analysis of these variables is then presented as follows:

##### 4.2.1 Price Value

There are two observed variables included in these latent variables, which are price and value. Table 4.2 displays the descriptive analysis, mean, and standard deviation of price value. The analysis result is based on data from 460 respondents.

**Table 4.2** The Mean and Standard Deviation of Price Value

Price Value	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Price</b>						<b>4.189</b>	<b>0.7239</b>	<b>Agree</b>
1. Using self-service technology is a good value for the money.	0 0	4 0.9	73 15.9	215 46.7	168 36.5	4.189	0.7239	Agree
<b>Value</b>						<b>4.104</b>	<b>0.6667</b>	<b>Agree</b>
2. Using self-service technology provides a good value for properly pricing various products.	1 0.2	9 2	69 15	233 50.7	148 32.2	4.126	0.7449	Agree
3. Compared to traditional cashiers, self-service technology requires less effort	0 0	13 2.8	87 18.9	209 45.4	151 32.8	4.083	0.7905	Agree
<b>Overall</b>						<b>4.133</b>	<b>0.7540</b>	<b>Agree</b>

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In terms of price, it indicated that prices were in the range of “Using self-service technology is a good value for the money.” (mean of 4.189). Overall, the respondent group's average price is at the agree level (mean of 4.189).

In terms of value, it indicated that value was in the item “Using self-service technology provides a good value for properly pricing various products.” (mean of 4.126) and the item “Compared to traditional cashiers, self-service technology requires less effort” (mean of 4.083). Overall, the respondent group of values is at the Agree level (mean of 4.104 ).

The overall mean price value is 4.133, and the standard deviation is 0.7540, which can be interpreted as the user's willingness to use SST.

#### 4.2.2 Facilitating Conditions

There are four observed variables included in the latent variables, which are Resources, Knowledge, Compatible, and Assistance. Table 4.3 displays the descriptive analysis, mean, and standard deviation of Facilitating Conditions. The analysis result is based on data from 460 respondents.

**Table 4.3** The Mean and Standard Deviation of Facilitating Conditions

Facilitating Conditions	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Resources</b>						<b>4.368</b>	<b>0.6082</b>	<b>Strongly Agree</b>
I have the resources necessary to use self-service technology.	0 0	1 0.2	40 8.7	209 45.4	210 45.7	4.365	0.6478	Strongly Agree
I have a resource/device ready to use the	0 0	0 0	43 9.3	203 44.1	214 46.5	4.372	0.6492	Strongly Agree

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Facilitating Conditions	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency							
Percentage								
self-service technology.								
<b>Knowledge</b>						<b>4.310</b>	<b>0.5998</b>	<b>Strongly Agree</b>
I have the knowledge necessary to use self-service technology.	0 0	4 0.9	39 8.5	230 50.0	187 40.7	4.304	0.6591	Strongly Agree
I did not spend much time learning how to use self-service technology.	0 0	4 0.9	48 10.4	207 45.0	201 43.7	4.315	0.6912	Strongly Agree
<b>Compatible</b>						<b>4.271</b>	<b>0.6114</b>	<b>Strongly Agree</b>
Self-service technology is compatible with other technologies I use.	0 0	2 0.4	45 9.8	213 46.3	200 43.5	4.328	0.6657	Strongly Agree
The self-service technology is similar to other technologies I use	0 0	4 0.9	55 12.0	240 52.2	161 35.0	4.213	0.6782	Strongly Agree

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Facilitating Conditions	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Assistance</b>						<b>4.144</b>	<b>0.6068</b>	<b>Agree</b>
I can get help from others when I have difficulties using self-service technology.	1 0.2	4 0.9	55 12.0	229 49.8	171 37.2	4.228	0.7033	Strongly Agree
Guidance will be available to me in the use of self-service technology.	1 0.2	4 0.9	83 18.0	229 49.8	143 31.1	4.107	0.7318	Agree
It is possible to get help from an employee in dealing with self-service technology.	2 0.4	7 1.5	76 16.5	234 50.9	141 30.7	4.098	0.7506	Agree
<b>Overall</b>						<b>4.259</b>	<b>0.6933</b>	<b>Strongly Agree</b>

In terms of Resources, it indicated that Resources were in the item of “I have the resources necessary to use self-service technology.” (mean of 4.365) and the item of “I have a resource/device ready to use the self-service technology.” (mean of 4.372). Overall, the respondent group of Resources is at the Strongly Agree level (mean of 4.368 ).

In terms of Knowledge, it indicated that Knowledge was in the item “I have the knowledge necessary to use self-service technology.” (mean of 4.304) and the item “I did not spend much time

learning how to use self-service technology.” (mean of 4.315). Overall, the respondent group of Knowledge is at the Strongly Agree level (mean of 4.310).

In terms of Compatible, it indicated that Compatible was in the item “Self-service technology is compatible with other technologies I use.” (mean of 4.328), and the item “The self-service technology is similar to other technologies I use” (mean of 4.213). Overall, the respondent group of Compatible is at the Strongly Agree level (mean of 4.271).

In terms of Assistance, it indicated that Assistance was in the item of “I can get help from others when I have difficulties using self-service technology.” (mean of 4.228), and the item of “Guidance will be available to me in the use of self-service technology.” (mean of 4.107), and the item of “It is possible to get help from an employee in dealing with self-service technology.” (mean of 4.098), Overall, the respondent group of Assistance is at the Agree level (mean of 4.144).

The overall mean Facilitating Conditions is 4.259, and the standard deviation is 0.6933, which can be interpreted as the user’s willingness to use SST.

#### 4.2.3 Social Influence

There are two observed variables included in this latent variable, which are Influence and Important. Table 4.4 displays the descriptive analysis, the mean, and the standard deviation of price value. The analysis result is based on data from 460 respondents.

**Table 4.4** The Mean and Standard Deviation of Social Influence

Social Influence	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency							
	Percentage							
<b>Influence</b>						<b>4.267</b>	<b>0.6988</b>	<b>Strongly Agree</b>
Listening to the media influences the use of Self-	0	3	58	212	187	4.267	0.6988	Strongly Agree
	0	0.7	12.6	46.1	40.7			

Social Influence	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency							
Percentage								
service technology.								
<b>Important</b>						<b>4.263</b>	<b>0.6879</b>	<b>Strongly Agree</b>
I think the use of self-service technology plays a role in my purchasing of goods and services.	1 0.2	2 0.4	52 11.3	225 48.9	180 39.1	4.263	0.6879	Strongly Agree
<b>Overall</b>						<b>4.265</b>	<b>0.6925</b>	<b>Strongly Agree</b>

In terms of Influence, it indicated that Influence was in the item “Listening to the media influences the use of Self-service technology.” (mean of 4.267). Overall, the respondent group of Influence is at the Strongly Agree level (mean of 4.267).

In terms of Important, it indicated that Important were in the item “Listening to the media influences the use of Self-service technology.” (mean of 4.263). Overall, the respondent group of Important is at the Strongly Agree level (mean of 4.263).

The overall mean Social Influence is 4.265, and the standard deviation is 0.6925, which can be interpreted as the user’s willingness to use SST.

#### 4.2.4 Perceived Usefulness

There are two observed variables included in this latent variable, which are Useful and Helpful. Table 4.5 displays the descriptive analysis, the mean and standard deviation of Perceived Usefulness. The analysis result is based on data from 460 respondents.

**Table 4.5** The Mean and Standard Deviation of Perceived Usefulness

Perceived Usefulness	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Useful</b>						<b>4.443</b>	<b>0.56308</b>	<b>Strongly Agree</b>
Using Self-service technology helps me to accomplish things more quickly	0 0	1 0.2	26 5.7	196 42.6	237 51.5	4.454	0.6122	Strongly Agree
Using Self-service technology helps me to perform many things more conveniently	0 0	1 0.2	35 7.6	188 40.9	236 51.3	4.433	0.6415	Strongly Agree
<b>Helpful</b>						<b>4.378</b>	<b>0.6265</b>	<b>Strongly Agree</b>
Work becomes easier after using self-	0 0	1 0.2	33 7.2	217 47.2	209 45.4	4.378	0.6265	Strongly Agree

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**Table 4.6** The Mean and Standard Deviation of Expectation Confirmation

Expectation Confirmation	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Experience</b>						<b>4.252</b>	<b>0.58717</b>	<b>Strongly Agree</b>
My experience with self-service technology was better than what I expected	0 0	0 0	59 12.8	236 51.3	165 35.9	4.230	0.6594	Strongly Agree
Overall, most of my expectations toward self-service technology were confirmed.	0 0	1 0.2	50 10.9	231 50.2	178 38.7	4.274	0.6559	Strongly Agree
<b>Service</b>						<b>4.307</b>	<b>0.6293</b>	<b>Strongly Agree</b>
The use of self-service technology can meet my needs in a variety of situations.	0 0	1 0.2	39 8.5	238 51.7	182 39.6	4.307	0.6293	Strongly Agree
<b>Overall</b>						<b>4.270</b>	<b>0.6484</b>	<b>Strongly Agree</b>

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In terms of Experience, it indicated that Experience was in the item of “My experience with self-service technology was better than what I expected.” (mean of 4.230) and the item of “Overall, most of my expectations toward self-service technology were confirmed.” (mean of 4.274). Overall, the respondent group's Experience is at the Strongly Agree level (mean of 4.252).

In terms of Service, it indicated that Service was in the item of “The use of self-service technology can meet my needs in a variety of situations.” (mean of 4.307). Overall, the respondent group's Service is at the Strongly Agree level (mean of 4.307).

The overall mean Expectation Confirmation is 4.270, and the standard deviation is 0.6484, which can be interpreted as the user's willingness to use SST.

#### 4.2.6 Personal Innovativeness

There are two observed variables included in the latent variables are Experiment and Trying. Table 4.7 displays the descriptive analysis, mean, and standard deviation of Personal Innovativeness. The analysis result is based on data from 460 respondents.

**Table 4.7** The Mean and Standard Deviation of Personal Innovativeness

Personal Innovativeness	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Experiment</b>						<b>4.298</b>	<b>0.6702</b>	<b>Strongly Agree</b>
I like to experiment with using self-service technology	0	1	52	216	191	4.298	0.6702	Strongly Agree
	0	0.2	11.3	47.0	41.5			
<b>Trying</b>						<b>4.230</b>	<b>0.7010</b>	<b>Strongly Agree</b>
In general, I am not hesitant to	0	2	66	216	176	4.230	0.7010	Strongly Agree

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Personal Innovativeness	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency							
Percentage								
try out new self-service technology.	0	0.4	14.3	47.0	38.3			
<b>Overall</b>						<b>4.264</b>	<b>0.6859</b>	<b>Strongly Agree</b>

In consideration of "Experiment", it indicated that Experiment was in the item of "I like to experiment with using self-service technology" (mean of 4.298). Overall, the respondent group of the Experiment is at the Strongly Agree level (mean of 4.298).

In terms of Trying, it indicated that Trying was in the item of "In general, I am not hesitant to try out new self-service technology. " (mean of 4.230). Overall, the respondent group of Trying is at the Strongly Agree level (mean of 4.230).

The overall mean Personal Innovativeness is 4.264, and the standard deviation is 0.6859, which can be interpreted as the user's willingness to use SST.

#### 4.2.7 Customer Satisfaction

There are two observed variables included in the latent variables are Satisfied and Pleased. Table 4.8 displays the descriptive analysis, the mean and standard deviation of Customer Satisfaction. The analysis result is based on data from 460 respondents.

**Table 4.8** The Mean and Standard Deviation of Customer Satisfaction

Customer Satisfaction	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Satisfied</b>						<b>4.296</b>	<b>0.57601</b>	<b>Strongly Agree</b>
I am very satisfied with self-service technology.	0 0	1 0.2	40 8.7	244 53.0	175 38.0	4.289	0.6272	Strongly Agree
I am very contented with using self-service technology.	0 0	0 0	41 8.9	239 52.0	180 39.1	4.302	0.6245	Strongly Agree
<b>Pleased</b>						<b>4.304</b>	<b>0.58465</b>	<b>Strongly Agree</b>
I am very pleased with using self-service technology.	0 0	0 0	32 7.0	235 51.1	193 42.0	4.350	0.6062	Strongly Agree
I am extremely pleased with the quality of service provided by the self-service technology.	0 0	1 0.2	53 11.5	232 50.4	174 37.8	4.259	0.6605	Strongly Agree

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Customer Satisfaction	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency							
	Percentage							
<b>Overall</b>						<b>4.300</b>	<b>0.6300</b>	<b>Strongly Agree</b>

In terms of Satisfied, it indicated that Satisfied was in the item of “I am very satisfied with self-service technology.” (mean of 4.289) and the item of “I am very contented with using self-service technology.” (mean of 4.302). Overall, the respondent group Satisfied is at the Strongly Agree level (mean of 4.296).

In terms of Pleased, it indicated that Pleased was in the item of “I am very pleased with using self-service technology.” (mean of 4.350) and the item of “I am extremely pleased with the quality of service provided by the self-service technology.” (mean of 4.259). Overall, the respondent group of Pleased is at the Strongly Agree level (mean of 4.304).

The overall mean Customer Satisfaction is 4.264, and the standard deviation is 0.6859, which can be interpreted as the user’s willingness to use SST.

#### 4.2.8 SST Service Quality

There are three observed variables included in the latent variable, they are Functionality/Customization/Convenience/Security, Assurance, and Design/Enjoyment. Table 4.9 displays the descriptive analysis, mean, and standard deviation of SST Service Quality. The analysis result is based on data from 460 respondents.

**Table 4.9** The Mean and Standard Deviation of SST Service Quality

SST Service Quality	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Functionality / Customization / Convenience / Security</b>						<b>4.187</b>	<b>0.5366</b>	<b>Agree</b>
I can get my service done with the self-service technology in a short time.	0 0	2 0.4	42 9.1	229 49.8	187 40.7	4.307	0.6498	Strongly Agree
The service process of the self-service technology is clear.	0 0	1 0.2	54 11.7	223 48.5	182 39.6	4.274	0.6691	Strongly Agree
Each service item/function of the self-service technology is error-free	0 0	5 1.1	87 18.9	224 48.7	144 31.3	4.102	0.7324	Agree
The self-service technology understands my specific needs	1 0.2	4 0.9	76 16.5	241 52.4	138 30.0	4.111	0.7130	Agree
The firm's self-service technology has features that are personalized for me.	0 0	2 0.4	78 17.0	241 52.4	139 30.2	4.124	0.6891	Agree

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SST Service Quality	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency							
Percentage								
The self-service technology has operating hours convenient to customers.	0 0	0 0	55 12.0	252 54.8	153 33.3	4.213	0.6385	Strongly Agree
It is easy and convenient to reach the self-service technology.	0 0	2 0.4	37 8.0	233 50.7	188 40.9	4.320	0.6366	Strongly Agree
I feel safe in my transactions with the self-service technology.	0 0	7 1.5	84 18.3	235 51.1	134 29.1	4.078	0.7279	Agree
A clear privacy policy is stated when I use the self-service technology.	0 0	8 1.7	64 13.9	235 51.1	153 33.3	4.159	0.7192	Agree
<b>Assurance</b>						<b>4.232</b>	<b>0.6015</b>	<b>Strongly Agree</b>
The firm providing self-service technology is well-known.	0 0	1 0.2	61 13.3	240 52.2	158 34.3	4.207	0.6657	Agree

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SST Service Quality	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency							
Percentage								
Self-service technology services company is a certified company.	0	0	53	236	171	4.257	0.6497	Strongly Agree
	0	0	11.5	51.3	37.2			
<b>Design / Enjoyment</b>						<b>4.258</b>	<b>0.5709</b>	<b>Strongly Agree</b>
The layout of the self-service technology is esthetically appealing.	0	3	48	239	170	4.252	0.6613	Strongly Agree
	0	0.7	10.4	52.0	37.0			
The self-service technology appears to use up-to-date technology.	0	2	42	246	170	4.270	0.6376	Strongly Agree
	0	0.4	9.1	53.5	37.0			
The operation of the self-service technology is interesting.	0	0	51	242	167	4.252	0.6413	Strongly Agree
	0	0	11.1	52.6	36.3			
<b>Overall</b>						<b>4.208</b>	<b>0.6785</b>	<b>Agree</b>

In terms of Functionality/Customization/Convenience/Security, it indicated that Pleas was in the item of “I can get my service done with the self-service technology in a short time.” This material is reserved for educational use only, not allowed for commercial use.

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(mean of 4.307), the item of “The service process of the self-service technology is clear.” (mean of 4.274), the item of “Each service item/function of the self-service technology is error-free” (mean of 4.102), the item of “The self-service technology understands my specific needs” (mean of 4.111), the item of “The firm’s self-service technology has features that are personalized for me.” (mean of 4.124), the item of “The self-service technology has operating hours convenient to customers.” (mean of 4.213), the item of “It is easy and convenient to reach the self-service technology.” (mean of 4.320), the item of “I feel safe in my transactions with the self-service technology.” (mean of 4.078), and the item of “A clear privacy policy is stated when I use the self-service technology” (mean of 4.159). Overall, the respondent group of Functionality/Customization/Convenience/Security is at the Agree level (mean of 4.187).

In terms of Assurance, it indicated that Assurance was in the item of “The firm providing self-service technology is well-known.” (mean of 4.207) and the item of “Self-service technology services company is a certified company.” (mean of 4.257). Overall, the respondent group of Assurance is at the Strongly Agree level (mean of 4.232).

In terms of Design / Enjoyment, it indicated that Design / Enjoyment was in the item “The layout of the self-service technology is esthetically appealing.” (mean of 4.252), and the item “The self-service technology appears to use up-to-date technology.” (mean of 4.270), and the item of “The operation of the self-service technology is interesting.” (mean of 4.252). Overall, the respondent group of Design / Enjoyment is at the Strongly Agree level (mean of 4.258).

The overall mean SST Service Quality is 4.208, and the standard deviation is 0.6785, which can be interpreted as the user’s willingness to use SST.

#### **4.2.9 Willingness to Use SST**

There are three observed variables included in this latent variable, they are Continuous Use, Intention to use, and Intention to adopt. Table 4.10 displays the descriptive analysis, the mean and standard deviation of Willingness to Use SST. The analysis result is based on data from 460 respondents.

**Table 4.10** The Mean and Standard Deviation of Willingness to Use SST

Willingness to Use SST	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency Percentage							
<b>Continue Use</b>						<b>4.287</b>	<b>0.65699</b>	<b>Strongly Agree</b>
I will continue using this self-service technology for shopping in the future.	0 0	0 0	52 11.3	224 48.7	184 40.0	4.287	0.6570	Strongly Agree
<b>Intend to use</b>						<b>4.300</b>	<b>0.68695</b>	<b>Strongly Agree</b>
During the next six (6) months, I intend to use Self-service technology innovation	1 0.2	1 0.2	51 11.1	213 46.3	194 42.2	4.300	0.6869	Strongly Agree
<b>Intend to adopt</b>						<b>4.317</b>	<b>0.60618</b>	<b>Strongly Agree</b>
I predict I will use self-service technology in the future such as AR,VR,MR, Just walk out (Amazon go), etc.	0 0	0 0	43 9.3	217 47.2	200 43.5	4.341	0.6424	Strongly Agree

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Willingness to Use SST	Level of Opinion					Mean	S.D.	Level
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
	Frequency							
Percentage								
I need to adopt self-service technology in the future such as AR,VR,MR, Just walk out (Amazon go), etc.	0	1	52	218	189	4.293	0.6689	Strongly Agree
	0	0.2	11.3	47.4	41.1			
<b>Overall</b>						<b>4.305</b>	<b>0.6636</b>	<b>Strongly Agree</b>

In terms of Continuous Use, it indicated that Continuous Use was in the item of “I will continue using this self-service technology for shopping in the future.” (mean of 4.287). Overall, the respondent group for Continue Use is at the Strongly Agree level (mean of 4.287).

In terms of Intention to use, it indicated that Intend to use was in the item of “During the next six (6) months, I intend to use Self-service technology innovation” (mean of 4.300). Overall, the respondent group of Intention to use is at the Strongly Agree level (mean of 4.300).

In terms of Intention to adopt, it indicated that Intention to adopt was in the item of “I predict I will use self-service technology in the future.” (mean of 4.341), the item of “I need to adopt self-service technology in the future.” (mean of 4.293). Overall, the respondent group of Intend to adopt is at the Strongly Agree level (mean of 4.317).

The overall mean Willingness to Use SST is 4.305, and the standard deviation is 0.6636, which can be interpreted as the user’s willingness to use SST.

### 4.3 Data analysis

The statistical analysis of sample distribution was done using descriptive statistics (i.e., percentage, mean, and basic analysis of the model). This consisted of latent variables and observed

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variables (31 variables total) to recognize the structural equation model's distribution and variation. Descriptive research statistics included SD, average, variation coefficient, AMOS, kurtosis and skewness. The researchers must consider the core data for the analysis agreement as to the completed questionnaires. For statistical tests, the meaning level and acceptable error ( $\alpha$ ) are 0.05. The procedure and analytical statistics as stated below.

#### 4.3.1 Basic Statistical Values of Facilitating Conditions

Model 1: Facilitating Conditions contains nine questions and four observed variables: (1) Resources, which contains two questions, a mean of 4.368, a standard deviation of 0.6082 with a moderate level of skewness and a left-skew curve, (2) Knowledge, which contains two questions, has a mean of 4.310, a standard deviation of 0.5998 with a moderate level of skewness and a left-skew curve, (3) Compatible, which contains two questions, a mean of 4.271, a standard deviation of 0.611 with a low level of skewness, and a left-skew curve, (4) Assistance, which contains three questions, a mean of 4.144, a standard deviation of 0.6068 with a low level of skewness, and a left-skew curve. The 4 sub-variables have kurtosis values of -0.505, -0.317, -0.367, and -0.344, respectively. The 4 variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.11.

**Table 4.11** Facilitating Conditions Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Facilitating Conditions	Resources	4.368	0.6082	-0.550	-0.505
	Knowledge	4.310	0.5998	-0.527	-0.317
	Compatible	4.271	0.6114	-0.427	-0.367
	Assistance	4.144	0.6068	-0.309	-0.344

#### 4.3.2 Basic Statistical Values of Price Value

Model 2: Price Value contains three questions and two observed variables: (1) Price, which contains one question, a mean of 4.189, a standard deviation of 0.7239 with a low level of skewness and a left-skew curve, (2) Value, which contains two questions, a mean of 4.1043, a standard

deviation of 0.66665 with a low level of skewness, and a left-skew curve. The two sub-variables have kurtosis values of -0.522, and -0.031, respectively. The two variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.12.

**Table 4.12** Price Value Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Price Value	Price	4.189	0.7239	-0.442	-0.522
	Value	4.104	0.6667	-0.448	-0.031

#### 4.3.3 Basic Statistical Values of Social Influence

Model 3: Social Influence Value contains two questions and two observed variables. (1) Influence, which contains one question, a mean of 4.267, a standard deviation is 0.6988 with a moderate level of skewness, and a left-skew curve, (2) Important, which contains one question, a mean of 4.263, a standard deviation of 0.6879 with a moderate level of skewness, and a left-skew curve. The two sub-variables have kurtosis values of -0.391, and 0.454, respectively. The two variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.13.

**Table 4.13** Social Influence Value Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Social Influence	Influence	4.267	0.6988	-0.536	-0.391
	Important	4.263	0.6879	-0.637	0.454

#### 4.3.4 Basic Statistical Values of Perceived Usefulness

Model 4: Perceived Usefulness Value contains three questions and two observed variables: (1) Useful, which contains two questions, a mean of 4.4435, a standard deviation of 0.56308 with a moderate level of skewness and a left-skew curve, (2) Helpful, which contains one question, a mean of 4.378, a standard deviation of 0.6265 with a moderate level of skewness, and a left-skew curve. This material is reserved for educational use only, not allowed for commercial use.

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curve. The two sub-variables have kurtosis values of 0.143, and -0.345, respectively. The two variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.14.

**Table 4.14** Perceived Usefulness Value Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Perceived Usefulness	Useful	4.4435	0.56308	-0.741	0.143
	Helpful	4.3783	0.62654	-0.546	-0.345

#### 4.3.5 Basic Statistical Values of Expectation Confirmation

Model 5: Expectation Confirmation contains three questions and two observed variables: (1) Useful, which contains two questions, a mean of 4.2522, a standard deviation of 0.58717 with a low level of skewness, and a left-skew curve, (2) Service, which contains one question, a mean of 4.307, a standard deviation of 0.6293 with a low level of skewness, and a left-skew curve. The two sub-variables have kurtosis values of -0.391, and -0.400, respectively. The two variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.15.

**Table 4.15** Expectation Confirmation Value Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Expectation Confirmation	Experience	4.2522	0.58717	-0.404	-0.391
	Service	4.3065	0.6293	-0.399	-0.400

#### 4.3.6 Basic Statistical Values of Customer Satisfaction

Model 6: Customer Satisfaction contains two questions and two observed variables: (1) Pleased, which contains two questions, a mean of 4.3043, a standard deviation of 0.58465 with a low level of skewness, and a left-skew curve, (2) Satisfied, which contains two questions, a mean of 4.2957, a standard deviation of 0.57601 with a low level of skewness, and a left-skew curve. The

two sub-variables have kurtosis values of -0.453, and -0.377, respectively. The two variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.16.

**Table 4.16** Customer Satisfaction Value Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Customer Satisfaction	Pleased	4.3043	0.58465	-0.399	-0.453
	Satisfied	4.2957	0.57601	-0.383	-0.377

#### 4.3.7 Basic Statistical Values of Service Quality

Model 7: Service Quality contains 14 questions and three observed variables: (1) Functionality/Customization/Convenience / Security, which contains nine questions, a mean of 4.187, a standard deviation of 0.5366 with a low level of skewness, and a left-skew curve, (2) Assurance, which contains two questions, a mean of 4.232, a standard deviation of 0.6015 with a low level of skewness, and a left-skew curve, (3) Assurance, which contains three questions, a mean of 4.258, a standard deviation of 0.5709 with a low level of skewness, and a left-skew curve. The three sub-variables have kurtosis values of -0.248, -0.548, and -0.294, respectively. The three variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.17.

**Table 4.17** Service Quality Value Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Service Quality	Functionality/Customization /Convenience / Security	4.187	0.5366	-0.317	-0.248
	Assurance	4.232	0.6015	-0.309	-0.548
	Design / Enjoyment	4.258	0.5709	-0.353	-0.294

#### 4.3.8 Basic Statistical Values of Personal Innovativeness

Model 8: Personal Innovativeness contains two questions and two observed variables: (1) Experiment, which contains one question, a mean of 4.298, a standard deviation of 0.6702 with a low level of skewness, and a left-skew curve, (2) Trying, which contains one question, a mean of 4.230, a standard deviation of 0.7010 with a low level of skewness, and a left-skew curve. The two sub-variables have kurtosis values of -0.575, and -0.615, respectively. The two variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.18.

**Table 4.18** Personal Innovativeness Value Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Personal Innovativeness	Experiment	4.298	0.6702	-0.475	-0.575
	Trying	4.230	0.7010	-0.429	-0.615

#### 4.3.9 Basic Statistical Values of Willingness to Use SST

Model 9: Willingness to Use SST contains four questions, and three observed variables: (1) Continuous Use, which contains one question, a mean of 4.287, a standard deviation of 0.6570 with a low level of skewness, and a left-skew curve, (2) Intention to use, which contains one question, a mean of 4.300 and a standard deviation of 0.6869 with a moderate level of skewness and a left-skew curve. The three sub-variables have kurtosis values of -0.748, 0.356, and -0.582, respectively. The three variables were platykurtic, indicating that this set of data had less than the normal distribution, as illustrated in Table 4.19.

**Table 4.19** Willingness to Use SST Value Statistical Values

Latent Variables	Observed Variables	Mean	SD	Skewness	Kurtosis
Willingness to Use SST	Continue Use	4.2870	0.65699	-0.381	-0.748
	Intend to use	4.3000	0.68695	-0.671	0.356
	Intend to adopt	4.3174	0.60618	-0.443	-0.582

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#### 4.4 Correlation Coefficient

The analysis of the relationships between the variables, AMOS, and Pearson's other correlation coefficient is the main program. The structural equation model factors are fundamental data. The correlation coefficient was used to measure the strength of the relationship between the relative motions of two variables. The criteria for the correlation coefficient are shown in Table 4.20, and the results are presented in Table 4.21.

**Table 4.20** 5-Point Scoring Criteria

Correlation coefficient I	The relationship level
$r > 0.8$	Very high
$0.6 < r < 0.8$	Quite high
$0.4 < r < 0.6$	Moderate
$0.2 < r < 0.4$	Quite low
$r < 0.2$	low

Source: Taweerat (1997)

**Table 4.21** The Result of Correlation Coefficient

		Correlations							
	FC	PV	SI	PU	EC	CS	SQ	WTU	PI
FC	1								
PV	.612**	1							
SI	.598**	.498**	1						
PU	.650**	.522**	.602**	1					
EC	.655**	.537**	.574**	.667**	1				
CS	.603**	.522**	.548**	.672**	.702**	1			
SQ	.675**	.557**	.568**	.643**	.686**	.738**	1		
WTU	.628**	.481**	.530**	.636**	.660**	.682**	.732**	1	
PI	.583**	.423**	.507**	.572**	.635**	.689**	.637**	.618**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### 4.5 The Kaiser-Meyer-Olkin (KMO)

The Kaiser-Meyer-Olkin (KMO) is considered for testing compatibility between empirical data and the conceptual framework for data suitability measurement. Based on data validation using KMO statistics and determining whether the correlation matrix is an identity matrix or a variable matrix,

Table 4.22 displays the results of Bartlett's Test of Sphericity. When the statistical value of Bartlett's Test of Sphericity was considered from the table, it was discovered that Chi-Square = 2813.941, indicating that the correlation matrix between the variables was different. From the statistically significant identity matrix ( $P < .001$ ), corresponding to the KMO analysis, the value approaches 1 (0.947), there is a strong correlation in this dataset and it is suitable for further analysis of the composition.

**Table 4.22** KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	Bartlett's Test of Sphericity		
	Approx. Chi-Square	df	Sig.
0.947	2813.941	36	0.000

#### 4.6 Confirmatory Factor Analysis (CFA)

In examining the measurement quality, the AMOS program using Confirmatory Factor Analysis (CFA) increases the opportunity to analyze the variance and covariance to check the harmony, the precision, or the consistency of the gage construction. The technique aims to test the hypothesis for evaluating latent variables at the observer level or the theoretical testing relations between latent variables (Hair et al., 2012).

##### 4.6.1 Confirmatory Factor Analysis (CFA): Facilitating Conditions variable

For the results of the assumed validity analysis for Model 1: Facilitating Conditions with CFA on four variables: Resources, Knowledge, Compatible, and Assistance. The analysis results in Figure 4.1 found that the structure was consistent with the empirical data. Considering the Chi-Square was 4.458, df was equal to two because it was a saturated model. GFI was 0.995. In terms of the factor loading, the factor weight was statistically significant at the 0.05 level. Therefore,

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Knowledge had the highest factor weight value at 0.88, followed by Compatible, Resources, and Assistance with factor weight values of 0.87, 0.82, and 0.76, respectively.

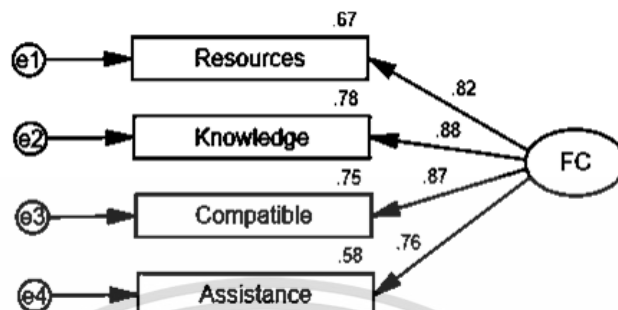


Figure 4.1 CFA of Facilitating Conditions Variable

#### 4.6.2 Confirmatory Factor Analysis (CFA): Price Value variable

For the results of the assumed validity analysis for Model 2: Price Value with CFA on two variables: Price and Value. The analysis results in Figure 4.2 found that the structure was consistent with the empirical data. Considering the Chi-Square was 6.528, df was equal to four because it was a saturated model, GFI was 0.994. In terms of the factor loading, the factor weight was statistically significant at the 0.05 level. Therefore, the Value had the highest factor weight value at 0.85, followed by Price with factor weight values at 0.77.

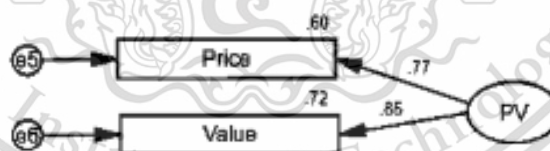


Figure 4.2 CFA of Price Value Variable

#### 4.6.3 Confirmatory Factor Analysis (CFA): Social Influence variable

For the results of the assumed validity analysis for Model 3: Social Influence with CFA on two variables: Influence and Important. The analysis results in Figure 4.3 found that the structure was consistent with the empirical data. Considering the Chi-Square was 9.757, df was equal to four because it was a saturated model. GFI was 0.991. In terms of the factor loading, the factor weight

was statistically significant at the 0.05 level. Therefore, the Important had the highest factor weight value at 0.73, followed by Influence with factor weight values at 0.71.

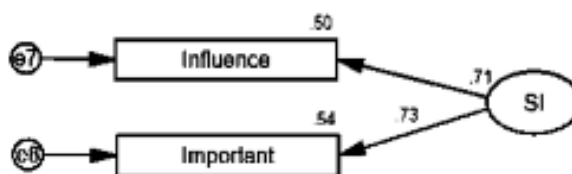


Figure 4.3 CFA of Social Influence Variable

#### 4.6.4 Confirmatory Factor Analysis (CFA): Expectation Confirmation variable

For the results of the assumed validity analysis for Model 4: Expectation Confirmation with CFA on two variables: Experience and Service. The analysis results in Figure 4.4 found that the structure was consistent with the empirical data. Considering the Chi-Square was 1.098, df was equal to one because it was a saturated model. GFI was 0.999. In terms of the factor loading, the factor weight was statistically significant at the 0.05 level. Therefore, Experience had the highest factor weight value at 0.86, followed by Service with factor weight values at 0.80.

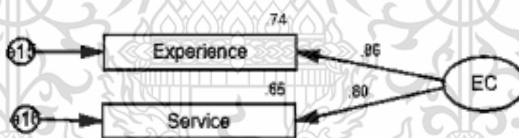
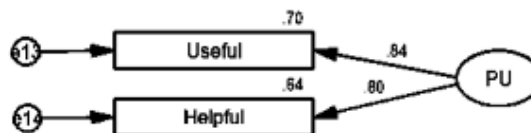


Figure 4.4 CFA of Expectation Confirmation Variable

#### 4.6.5 Confirmatory Factor Analysis (CFA): Perceived Usefulness variable

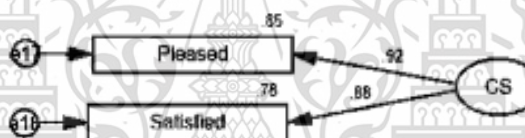
For the results of the assumed validity analysis for Model 5: Perceived Usefulness with CFA on two variables: Useful and Helpful. The analysis results in Figure 4.5 found that the structure was consistent with the empirical data. Considering the Chi-Square was 8.801, df was equal to four because it was a saturated model. GFI was 0.992. In terms of the factor loading, the factor weight was statistically significant at the 0.05 level. Therefore, Useful had the highest factor weight value at 0.84, followed by Helpful with factor weight values at 0.80.



**Figure 4.5** CFA of Perceived Usefulness Variable

#### 4.6.6 Confirmatory Factor Analysis (CFA): Customer Satisfaction variable

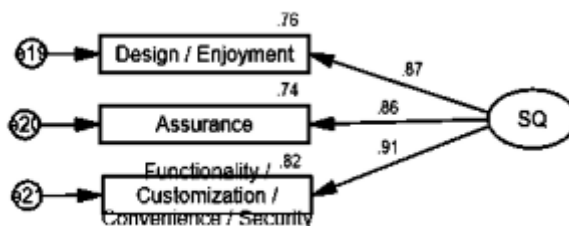
For the results of the assumed validity analysis for Model 6: Customer Satisfaction with CFA on two variables: Pleased and Satisfied. The analysis results in Figure 4.6 found that the structure was consistent with the empirical data. Considering the Chi-Square was 6.937, df was equal to four because it was a saturated model. GFI was 0.994. In terms of the factor loading, the factor weight was statistically significant at the 0.05 level. Therefore, Pleased had the highest factor weight value at 0.92, followed by Satisfied with factor weight values at 0.88.



**Figure 4.6** CFA of Customer Satisfaction Variable

#### 4.6.7 Confirmatory Factor Analysis (CFA): Service Quality variable

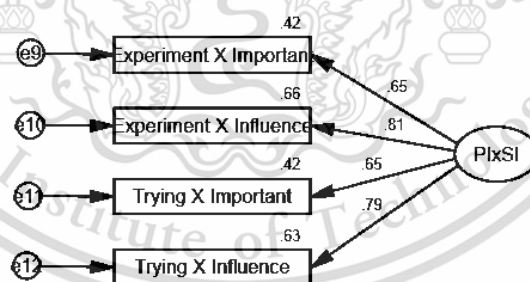
For the results of the assumed validity analysis for Model 7: Service Quality with CFA on three variables: Design / Enjoyment, Assurance, and Functionality / Customization / Convenience / Security. The analysis results in Figure 4.7 found that the structure was consistent with the empirical data. Considering the Chi-Square was 24.458, df was equal to eight because it was a saturated model. GFI was 0.983. In terms of the factor loading, the factor weight was statistically significant at the 0.05 level. Therefore, Functionality / Customization / Convenience / Security had the highest factor weight value at 0.91, followed by Design / Enjoyment, Assurance with factor weight values at 0.87 and 0.86, respectively.



**Figure 4.7** CFA of Customer Satisfaction Variable

#### 4.6.8 Confirmatory Factor Analysis (CFA): Personal Innovativeness x Social Influence variable

For the results of the assumed validity analysis for Model 8: Personal Innovativeness x Social Influence with CFA on four variables: Experiment X Important, Experiment X Influence, Trying X Important, and Trying X Influence. The analysis results in Figure 4.8 found that the structure was consistent with the empirical data. Considering the Chi-Square was 61.887, df was equal to two because it was a saturated model. GFI was 0.947. In terms of the factor loading, the factor weight was statistically significant at the 0.05 level. Therefore, Experiment X Influence had the highest factor weight value at 0.81, followed by Trying X Influence, Experiment X Important, Trying X Important with factor weight values of 0.79, 0.65, and 0.65, respectively.



**Figure 4.8** CFA of Personal Innovativeness x Social Influence

#### 4.6.9 Confirmatory Factor Analysis (CFA): Willingness to Use SST variable

For the results of the assumed validity analysis for Model 9: Willingness to Use SST with CFA on three variables: Continuous Use, Intention to use, and Intention to adopt. The analysis results in Figure 4.9 found that the structure was consistent with the empirical data. Considering the Chi-Square was 24.458, df was equal to eight because it was a saturated model. GFI was 0.983. This material is reserved for educational use only, not allowed for commercial use.

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In terms of the factor loading, the factor weight was statistically significant at the 0.05 level. Therefore, the Intention to use had the highest factor weight value at 0.81, followed by Continuous Use, and Intention to adopt with factor weight values of 0.80 and 0.78, respectively.

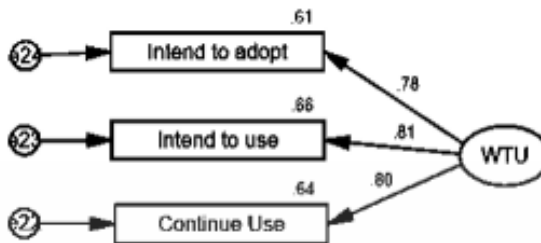


Figure 4.9 CFA of Willingness to Use SST Variable

According to this study, the CFA has nine dimensions: Price Value (PV), Facilitating Conditions (FC), Social Influence (SI), Perceived Usefulness (PU), Expectation Confirmation (EC), Personal Innovativeness (PI), SST Service Quality (SQ), Customer Satisfaction (CS), and Willingness to Use SST (WTU). As shown in Figure 4.10, the nine dimensions represented nine latent variables in the initial model. This indicates that the initial model does not fit the empirical data well. As a result, the modification indices provided by AMOS were used as a guideline for model improvement.

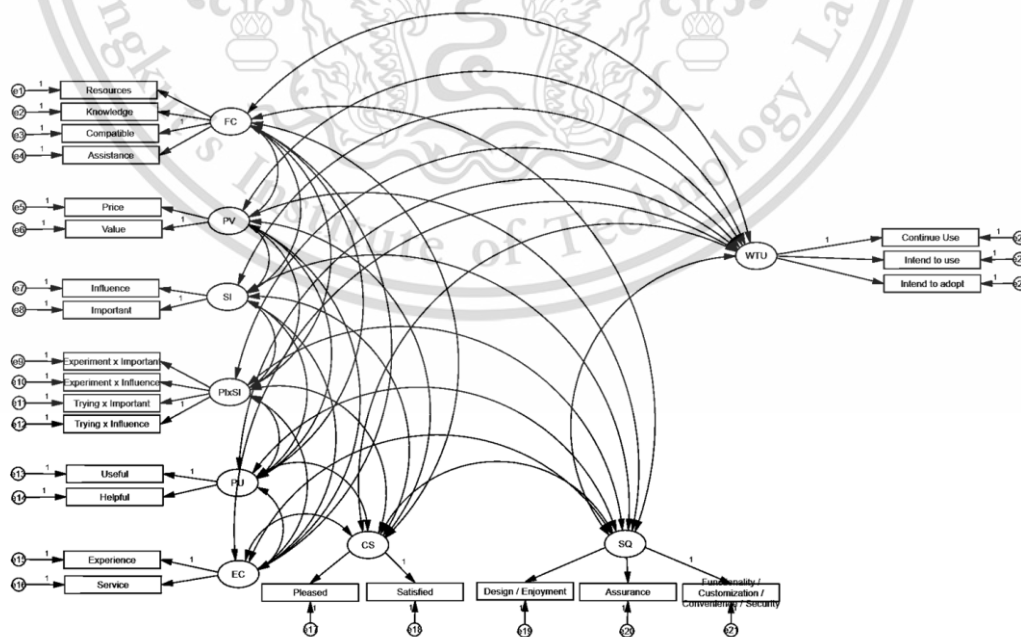


Figure 4.10 Measurement Model of Factors Involving Willingness to Use SST

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Indices	Threshold	Statistic values	
		Before	After
CFI	$\geq 0.90$	0.963	0.973
RMR	$< 0.08$	0.019	0.019
RMSEA	$\leq 0.05$	0.053	0.045
<b>Conclusion</b>		<b>Model does not Fit</b>	<b>Model Fit</b>

Table 4.24 CFA Factor Loading

Variables		Factor Loading			t	R Squared
Latent Variables	Observed Variables	Estimate	S.E.	BETA		
FC	Resources	.903	.044	.794	20.572	.631
	Knowledge	.949	.041	.846	22.950	.715
	Compatible	1.000		.875		.765
	Assistance	.901	.043	.794	20.972	.630
PV	Price	1.068	.068	.805	15.689	.648
	Value	1.000		.818		.670
SI	Influence	.926	.070	.688	13.134	.474
	Important	1.000		.755		.570
PI	Experiment X	.907	.043	.618	20.972	.382
	Important					
	Experiment X	1.319	.096	.922	13.768	.850
	Influence					
	Trying X	1.140	.093	.798	12.289	.637
	Important					
PU	Trying X	1.000		.714		.510
	Influence					
PU	Useful	1.000		.846		.716
	Helpful	1.035		.787		.619

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Variables		Factor Loading			t	R Squared
Latent Variables	Observed Variables	Estimate	S.E.	BETA		
EC	Experience	1.000	.055	.876	18.706	.767
	Service	.967	.049	.790	19.808	.625
CS	Satisfied	1.000		.888		.788
	Pleased	1.051	.038	.919	27.412	.845
SQ	Functionality / Customization / Convenience / Security	1.000		.933		.871
	Assurance	1.004	.039	.836	25.467	.699
	Design / Enjoyment	.964	.037	.846	26.141	.716
WTU	Continue Use	1.000		.758		.574
	Intend to use	1.077	.058	.780	18.625	.609
	Intend to adopt	.971	.059	.797	16.586	.636

#### 4.7 The Structural Equation Model of Nine (9) Dimensions

The Willingness to use Self-service technology innovation on Omnichannel for retail business in Thailand model has been conducted to study a causal relationship which effecting the Willingness to use by focusing on a causal relationship between FC including Resources, Knowledge, Compatible, and Assistance, PV including Price and Value, SI including Influence and Important, PI including Experiment and Trying, PU including Useful and Helpful, EC including Experience and Service, CS including Satisfied and Pleased, SQ including Functionality / Customization / Convenience / Security, Assurance, and Design / Enjoyment, and WTU including Continuous Use, Intention to use and Intention to adopt. This model uses AMOS Model analysis to test the assumption model with empirical data by the Structural Equation Model Analysis (SEM) for testing models that the researcher has integrated and has the following details:





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The observed variables used to build this model included 24 variables with a moderate positive correlation ( $r < 0.80$ ) that could not generate multicollinearity. Therefore, discharging the observed variables from the AMOS Model Analysis is unnecessary (Leahy, 2001).

The hypothesis was tested using Structural Equation Modeling (SEM). The proposed model's causal relationships are represented by a series of structural equations in the SEM approach, which are then tested simultaneously to determine how well the model represents the data. This study used Amos version 26.

**Table 4.25** The symbol Used for Structural Equation Model

	= Latent Variable
	= Observed Variable
	= Casual Relationship
	= Non Causal Relationship

**Table 4.26** The abbreviation of Variables Used for Statistical Analysis

Kind of Variables	Abbreviation	Meaning
Latent Variable	FC	Facilitating Conditions
Observed Variable	Resources	Resources
Observed Variable	Knowledge	Knowledge
Observed Variable	Compatible	Compatible
Observed Variable	Assistance	Assistance
Latent Variable	PV	Price Value
Observed Variable	Price	Price
Observed Variable	Value	Value
Latent Variable	SI	Social Influence
Observed Variable	Influence	Influence

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<b>Kind of Variables</b>	<b>Abbreviation</b>	<b>Meaning</b>
Observed Variable	Important	Important
Latent Variable	PI	Personal Innovativeness
Observed Variable	Experiment X Important	Personal Innovativeness (Experiment) Moderating variable Social Influence (Important)
Observed Variable	Experiment X Influence	Personal Innovativeness (Experiment) Moderating variable Social Influence (Influence)
Observed Variable	Trying X Important	Personal Innovativeness (Trying) Moderating variable Social Influence (Important)
Observed Variable	Trying X Influence	Personal Innovativeness (Trying) Moderating variable Social Influence (Influence)
Latent Variable	PU	Perceived Usefulness
Observed Variable	Useful	Useful
Observed Variable	Helpful	Helpful
Latent Variable	EC	Expectation Confirmation
Observed Variable	Experience	Experience
Observed Variable	Service	Service
Latent Variable	CS	Customer Satisfaction
Observed Variable	Satisfied	Satisfied
Observed Variable	Pleased	Pleased
Latent Variable	SQ	Service Quality
Observed Variable	Functionality / Customization / Convenience / Security	Functionality / Customization / Convenience / Security

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Kind of Variables	Abbreviation	Meaning
Observed Variable	Assurance	Assurance
Observed Variable	Design / Enjoyment	Design / Enjoyment
Latent Variable	WTU	Willingness to Use
Observed Variable	Continue Use	Continue Use
Observed Variable	Intend to use	Intend to use
Observed Variable	Intend to adopt	Intend to adopt

In the research model, the required threshold of the CFA fitness indices should be as follows: RMSEA < 0.05; GFI/NFI/CFI/TLI/ > 0.9 (satisfactory fit) and < 0.8 (acceptable fit); X<sup>2</sup>/df < 0.5. The results of CFA using Structural Equation Model (SEM) analysis found that the model according to the hypotheses did not match the empirical data, as determined by the fit index, which was as follows: The value difference without statistical significance (TLI = 0.756, GFI = 0.702, AGFI = 0.629, CFI = 0.787, RMSEA = 0.120, RMR = 0.139, X<sup>2</sup>/df = 7.621 ) as shown in Table 4.27 under the “Before” column.

Therefore, the model Willingness to Use has second-order latent variables that were used to adjust the findings and are presented in Table 4.27 under the “After” column. The obtained results as shown in Table 4.27, which illustrates the overall fit indexes of the model. It also shows good results for the Tucker-Lewis Index (TLI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Root Mean Square of Error of Approximation (RMSEA), Root Mean Residual (RMR) and X<sup>2</sup>/df. As a result of the findings, the model has reached an acceptable level and can be used to explain the set of hypotheses.

In addition, Table 4.27 also highlights the results of the reliability and validity measurements and the results of the model. The adjusted model of the presented results is presented in Table 4.28 and shows the hypotheses were all accepted. In addition, Figure 4.13 is used to represent the empirical model

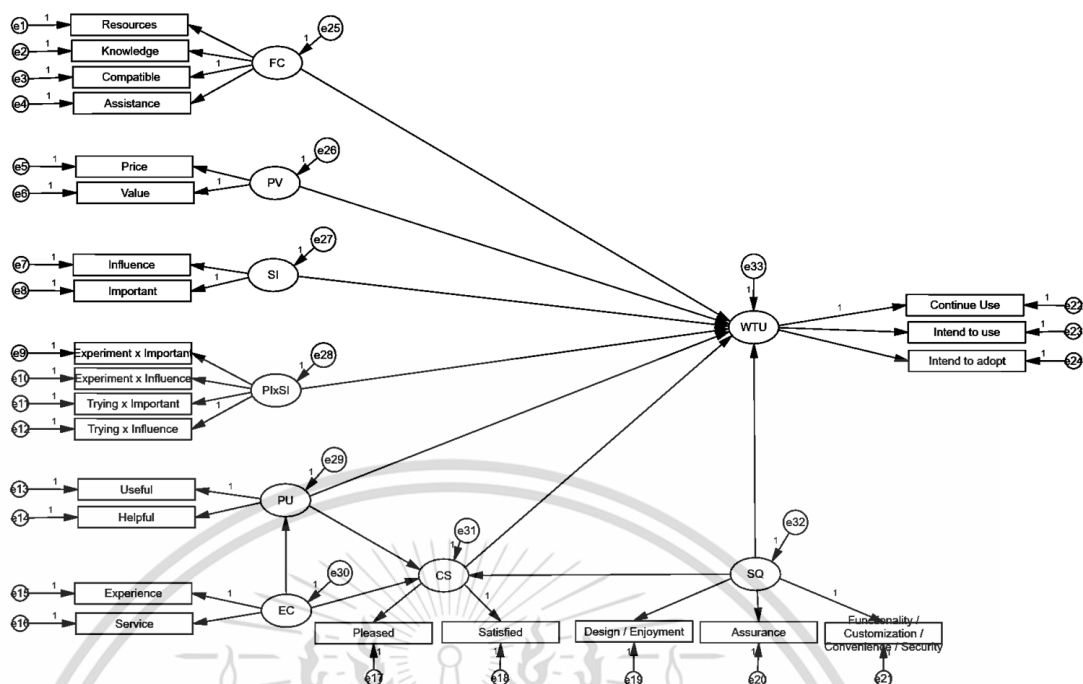


Figure 4.12 Model Framework Developed for SEM

Table 4.27 Goodness of Fit.

Indices	Threshold	Before	After
TLI	$\geq 0.90$	0.756	0.963
GFI	$\geq 0.90$	0.702	0.944
AGFI	$\geq 0.90$	0.629	0.908
CFI	$\geq 0.90$	0.787	0.976
RMSEA	$\leq 0.05$	0.120	0.046
RMR	$< 0.08$	0.139	0.068
$X^2/df$	$\leq 2.0$	7.621	1.992
<b>Conclusion</b>		<b>Model does not Fit</b>	<b>Model Fit</b>

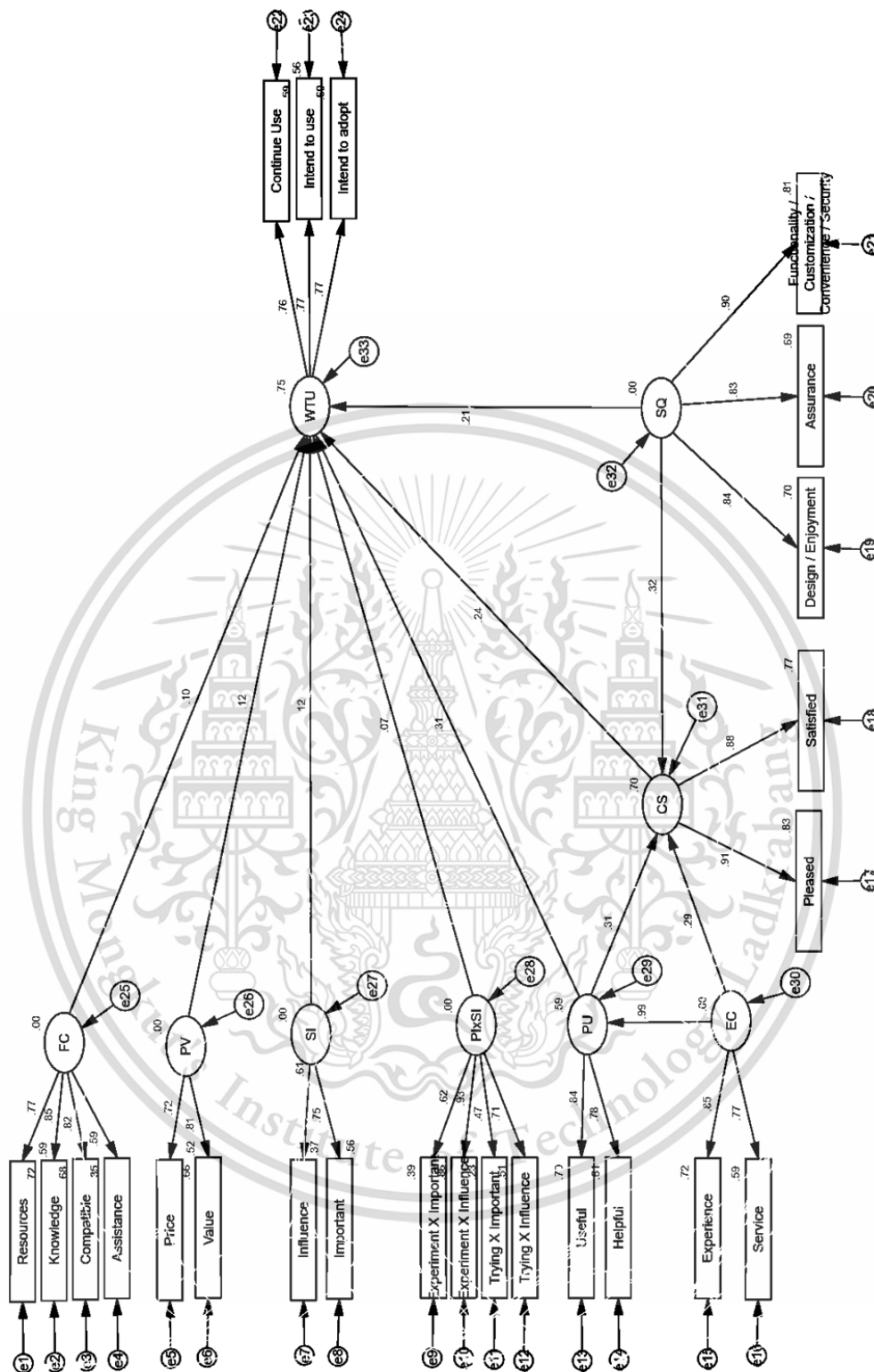


Figure 4.13 Empirical Model.

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**Table 4.28** Relative Influence of Items (Regression Weights) (N=460) Results After Model Adjustment.

Hypotheses	Estimate	S.E.	C.R. (t-value)	P-value	Hypothesis testing results
H1: FC → WTU	.105	.040	2.606	.009**	Accepted
H2: PV → WTU	.112	.055	2.027	.043*	Accepted
H3: SI → WTU	.117	.056	2.074	.038*	Accepted
H4: PU → WTU	.332	.083	3.980	***	Accepted
H5: PU → CS	.335	.084	3.981	***	Accepted
H6: EC → PU	.982	.065	15.098	***	Accepted
H7: EC → CS	.314	.083	3.766	***	Accepted
H8: CS → WTU	.235	.077	3.050	.002**	Accepted
H9: SQ → CS	.357	.060	5.946	***	Accepted
H10: SQ → WTU	.233	.095	2.436	.015*	Accepted
H11: PI X SI → WTU	.048	.024	1.994	.046*	Accepted

Note. \* $p < 0.05$ , \*\* $p < 0.01$  and \*\*\* $p < 0.001$ .

From Table 4.28, the interpretation of the hypothesis testing results on variables in this research is explained as follows:

#### 4.7.1 Hypothesis1 (H1): Facilitating Conditions have a positive influence on Willingness to Use SST

The hypothesis testing result showed that Facilitating Conditions have a positive influence on Willingness to Use SST, with a causal relationship value of 0.105. Therefore, this study demonstrates that a higher level of Facilitation Conditions would result in a higher willingness to use SST. This hypothesis is accepted based on the results, which show that Facilitating Conditions have a positive influence on the Willingness to Use SST.

#### 4.7.2 Hypothesis2 (H2): Price Value have a positive influence on Willingness to Use SST

The hypothesis testing results showed that Price Value has a positive influence on Willingness to Use SST, with the causal relationship value at 0.112. Therefore, this study demonstrates that a higher level of Price Value would result in a higher willingness to use SST.

This hypothesis is accepted based on the results, which show Price Value has a positive influence on the Willingness to Use SST.

#### **4.7.3 Hypothesis3 (H3): Social Influence have a positive influence on Willingness to Use SST**

The hypothesis testing results showed that Social Influence has a positive influence on Willingness to Use SST, with the causal relationship value at 0.117. Therefore, this study demonstrates that a higher level of Social Influence would result in a higher willingness to use SST. This hypothesis is accepted based on the results, which show Social Influence has a positive influence on the Willingness to Use SST.

#### **4.7.4 Hypothesis4 (H4): Perceived Usefulness have a positive influence on Willingness to Use SST**

The hypothesis testing results showed that Perceived Usefulness has a positive influence on Willingness to Use SST, with the causal relationship value at 0.332. Therefore, this study demonstrates that a higher level of Perceived Usefulness would result in a higher willingness to use SST. This hypothesis is accepted based on the results, which show Perceived Usefulness has a positive influence on Willingness to Use SST.

#### **4.7.5 Hypothesis5 (H5): Perceived Usefulness have a positive influence on Customer Satisfaction**

The hypothesis testing results showed that Perceived Usefulness has a positive influence on Customer Satisfaction, with the causal relationship value at 0.335. Therefore, this study demonstrates that a higher level of Perceived Usefulness would result in higher Customer Satisfaction. This hypothesis is accepted based on the results, which show Perceived Usefulness has a positive influence on Customer Satisfaction.

#### **4.7.6 Hypothesis6 (H6): Expectation Confirmation have a positive influence on Perceived Usefulness**

The hypothesis testing results showed that Expectation Confirmation has a positive influence on Perceived Usefulness, with the causal relationship value at 0.982. Therefore, this study demonstrates that a higher level of Expectation Confirmation would result in a higher Perceived Usefulness. This hypothesis is accepted based on the results, which show Expectation Confirmation has a positive influence on Perceived Usefulness.

#### **4.7.7 Hypothesis7 (H7): Expectation Confirmation have a positive influence on Customer Satisfaction**

The hypothesis testing results showed that Expectation Confirmation has a positive influence on Customer Satisfaction, with the causal relationship value at 0.314. Therefore, this study demonstrates that a higher level of Expectation Confirmation would result in a higher Customer Satisfaction. This hypothesis is accepted based on the results, which show Expectation Confirmation has a positive influence on Customer Satisfaction.

#### **4.7.8 Hypothesis8 (H8): Customer Satisfaction have a positive influence on Willingness to Use SST**

The hypothesis testing results showed that Customer Satisfaction has a positive influence on Willingness to Use SST, with the causal relationship value at 0.235. Therefore, this study demonstrates that a higher level of Customer Satisfaction would result in a higher Willingness to Use SST. This hypothesis is accepted based on the results, which show Customer Satisfaction has a positive influence on Willingness to Use SST.

#### **4.7.9 Hypothesis9 (H9): SST Service Quality have a positive influence on Customer Satisfaction**

The hypothesis testing results showed that SST Service Quality has a positive influence on Customer Satisfaction, with the causal relationship value at 0.357. Therefore, this study demonstrates that a higher level of SST Service Quality would result in higher Customer Satisfaction. This hypothesis is accepted based on the results, which show SST Service Quality has a positive influence on Customer Satisfaction.

#### **4.7.10 Hypothesis10 (H10): SST Service Quality have a positive influence on Willingness to Use SST**

The hypothesis testing results showed that SST Service Quality has a positive influence on Willingness to Use SST, with the causal relationship value at 0.233. Therefore, this study demonstrates that a higher level of SST Service Quality would result in a higher Willingness to Use SST. This hypothesis is accepted based on the results, which show SST Service Quality has a positive influence on Willingness to Use SST.

#### 4.7.11 Hypothesis11 (H11): Personal Innovativeness moderate the relationship between Social Influence and Willingness to Use SST

The hypothesis testing results showed that Personal Innovativeness moderates the relationship between Social Influence and Willingness to Use SST, with the causal relationship value at 0.048. Therefore, this study demonstrates that a higher level of Personal Innovativeness would result in a higher moderate relationship between Social Influence and Willingness to Use SST. This hypothesis is accepted based on the results, which show Personal Innovativeness moderates the relationship between Social Influence and Willingness to Use SST.

#### 4.7.12 Direct effects and Indirect effects

The content of direct effects and indirect effects of variables on the model of the Willingness to Use SST in the large appliance is summarized as follows. Table 4.29 shows the extent to which variables have a direct, indirect, and total influence on the acceptance model of Willingness to Use SST and shows the total influence following; FC = .105, PV = .112, SI = .117, CS = .235, PI moderating SI and WTU = .048 are direct influence, EC = .477 is indirect influence, PU = .411 and SQ = .317 are direct and indirect influences, as well as all variable positive effects on Willingness to Use SST.

**Table 4.29** Summary of Direct Influence and Indirect Influence and Total Influence on Willingness to Use SST.

Variable	Direct influence	Indirect influence through other variables	Total influence
FC	0.105		0.105
PV	0.112		0.112
SI	0.117		0.117
PU	0.332	$(0.335 \times 0.235) = 0.079$	0.411
CS	0.235		0.235
SQ	0.233	$(0.357 \times 0.235) = 0.084$	0.317
EC		$(0.982 \times 0.332) + (0.982 \times 0.335 \times 0.235) + (0.314 \times 0.235) = 0.477$	0.477
PI moderating SI and WTU	0.048		0.048

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## CHAPTER 5

# CONCLUSIONS AND DISCUSSIONS

The objective of this study was to develop a model of customer willingness to use SST for retail businesses in Thailand, as well as to investigate the direct effect, indirect effect, and combined influence relationship between Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness of SST, Expectation Confirmation of SST, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST. Several statistical tests, including descriptive, correlation analysis, data reliability and validity analysis, Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM). This chapter includes a discussion of the findings, a summary of the findings, implications, and research recommendations based on the findings of the previous chapters. This result has three levels of statistical significance: very highly significant, highly significant, and statistically significant.

### 5.1 Conclusions

The objective of this study is to empirically investigate the factor of Customer Willingness to Use Self-service Technology Innovation on Omnichannel for Retail Business in Thailand, as well as the factors that encourage customer willingness to use SST, using UTAUT2, ECM, Personal Innovativeness, and SST Service Quality. In addition, this study explored the factor that encourages the willingness of the customer to use SST by using the direct effect, indirect effect, and combined influence relationship among Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST. The conclusions of the findings of this research are presented in this section based on the result and the discussion section. Firstly, the study concluded that the model applied in this study accepted all the requirements, including the reliability, validity, and model fitness thresholds, which suggests that the reported results can be believed. Secondly, this study focused on investigating the effects of various observed variables on customer willingness to use SST for retail business in Thailand. The study concluded that six variables (facilitating conditions, price value, social influence, perceived usefulness, customer satisfaction, and service quality) significantly influence willingness to use SST Innovation on omnichannel,

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expectation confirmation significantly influences perceived usefulness and customer satisfaction, perceived usefulness and service quality significantly influence customer satisfaction, and Personal Innovative moderating social influence and willingness to use SST Innovation on omnichannel. This study is acceptable on Willingness to Use SST Innovation on omnichannel and is supported by literature reviews. These findings include UTAUT2 (facilitating conditions, price value, social influence), ECM (Perceived Usefulness, Expectation Confirmation, Customer Satisfaction), Service Quality, and Personal Innovativeness.

## 5.2 Discussions

The discussion of this research conclusion is organized according to the research questions and hypotheses, with references to other research findings to see whether the findings agree. This section addressed the objective by investigating research into the elements that influence customer willingness to use SST for retail business in Thailand. The section was discussed in answer to the research question “What is the factor Customer Willingness to use Self-service technology innovation on Omnichannel for Retail business in Thailand?” and “How do encourage the willingness of the customer to use SST?”.

The demographic information revealed that females were dominant over the male gender. The sample consisted of 319 (69.3%) female respondents. The age range of 21-30 was the most represented, with 303 (65.9%) of the study population. Those with a bachelor’s degree education were more represented with 294 (63.9%). The occupation of Company Employee was the most represented with 177 (38.5%) of the study population. The income per month, the most of respondents earned less than 35,001 baht for 302 (65.7%). In the region, most respondents were from Bangkok with 217 (47.2%). In terms of shopping frequency, those who shopped every other day were the dominant group, with 266 (57.8%). When analyzing the channel employed by the shoppers, those who used a combination of both online and in-store channels were dominant with 252 (54.8%).

The nine variables in the research framework are described in the following section. There are six independent variables: (1) Facilitating Conditions, (2) Price Value, (3) Social Influence, (4) Expectation Confirmation, (5) Service Quality, and (6) Personal Innovativeness, as well as three

dependent variables: Perceived Usefulness, Customer Satisfaction, and Willingness to Use. There have Opinion Level of The User as follows:

Price Value have two observed variables included in this latent variable. In terms of Price and Value, the respondent group of price and value are at the Agree level at the mean of 4.189 and 4.105. The overall mean price value is 4.133, and the standard deviation is 0.7540, which can be interpreted as the user's willingness to use SST.

Facilitating Conditions have four observed variables included in this latent variable. In terms of Resources, Knowledge, and Compatible, the respondent group of Resources, Knowledge, and Compatible are at the Strongly Agree level at the mean of 4.368, 4.310, and 4.271. And in term of Assistance, the respondent group of Assistance is at the Agree level (mean of 4.144). The overall mean Facilitating Conditions is 4.259, and the standard deviation is 0.6933, which can be interpreted as the user's willingness to use SST.

Social Influence have two observed variables included in this latent variable. In terms of Influence and Important, the respondent group of Influence and Important are at the Strongly Agree level with means of 4.267 and 4.263. The overall mean Social Influence is 4.265, and the standard deviation is 0.6925, which can be interpreted as the user's willingness to use SST.

Perceived Usefulness have two observed variables included in this latent variable. In terms of Useful and Helpful, the respondent group of Useful and Helpful are at the Strongly Agree level at the mean of 4.443 and 4.378. The overall mean Perceived Usefulness is 4.422, and the standard deviation is 0.6270, which can be interpreted as the user's willingness to use SST.

Expectation Confirmation have two observed variables included in this latent variable. In terms of Experience and Service, the respondent group of Experience and Service are at the Strongly Agree level at the mean of 4.252 and 4.307. The overall mean Expectation Confirmation is 4.270, and the standard deviation is 0.6484, which can be interpreted as the user's willingness to use SST.

Personal Innovativeness have two observed variables included in this latent variable. In terms of Experiment and Trying, the respondent group of Experiment and Trying are at the Strongly Agree level at the mean of 4.298 and 4.230. The overall mean Personal Innovativeness is 4.264, and the standard deviation is 0.6859, which can be interpreted as the user's willingness to use SST.

Customer Satisfaction have two observed variables included in this latent variable. In terms of Satisfied and Pleased, the respondent group of Satisfied and Pleased are at the Strongly Agree

level at the mean of 4.296 and 4.304. The overall mean Customer Satisfaction is 4.264, and the standard deviation is 0.6859, which can be interpreted as the user's willingness to use SST.

SST Service Quality have three observed variables included in this latent variable. In term of Functionality / Customization / Convenience / Security, the respondent group of Functionality / Customization / Convenience / Security is at the Agree level at mean of 4.187. In terms of Assurance and Design / Enjoyment, the respondent group of Assurance and Design / Enjoyment are at the Strongly Agree level at the mean of 4.232 and 4.258. The overall mean SST Service Quality is 4.208, and the standard deviation is 0.6785, which can be interpreted as the user's willingness to use SST.

Willingness to Use SST have three observed variables included in this latent variable. In terms of Continue Use, Intend to use, and, Intend to adopt, the respondent group of Continue Use, Intend to use, and, Intend to adopt are at the Strongly Agree level at the mean of 4.287,4.300, and 4.317. The overall mean Willingness to Use SST is 4.305, and the standard deviation is 0.6636, which can be interpreted as the user's willingness to use SST.

This result have three levels of statistical significance: very highly significant, highly significant, and statistically significant (TLI =0.963, GFI = 0.944, AGFI = 0.908, CFI = 0.976, RMSEA = 0.046, RMR = 0.068, X2/df = 1.992)

Firstly, the significance levels for H4, H5, H6, H7, and H9 are very high. Perceived usefulness relates to SST which assists customers in doing things more efficiently and effectively and doing various tasks more readily, which has an impact on Willingness to Use and Customer Satisfaction. The customer experience using emerging technology was superior to what customers expected. Furthermore, the service level or function delivered by emerging technology was superior to what customers had expected. Therefore, Customers' expected experiences lead to Expectation Confirmation in the customer experience, which has an impact on perceived usefulness and customer satisfaction. Moreover, the service process of the firm's SST is clear, easy to use, and dependable in terms of Functionality, Customization, Convenience, Security, and layout that is aesthetically pleasing, and the firm has a good reputation, which influences Customer satisfaction in terms of Service Quality.

Secondly, the levels of H1 and H8 are both significantly significant. The resources required, the knowledge required, and the guidance provided for using SST compatible with other technologies while Facilitating Conditions influence the willingness to use technology. Finally,

ensuring that the customer is satisfied and pleased with emerging technology demonstrates how customer satisfaction influences Willingness to Use.

Thirdly, H2, H3, H10, and H11 have statistically significant levels. SST provides good value for money spent at a reasonable price and worth using or paying for, with the Price Value affecting the Willingness to Use. Customers use SST to make purchases affected by influencers, demonstrating how social influence affects Willingness to Use. Functionality, customization, convenience, security, assurance, design, and enjoyment are all aspects of service quality that influence willingness to use. Moreover, Personal Innovativeness is associated with customers who enjoy experimenting and are often among the first to explore new ways of purchasing via SST, representing a moderate between Social Influence and Willingness to Use.

Overall, these findings imply all hypotheses answer how the Willingness to Use SST on Omni-channel. It has an impact on the person who is interested in innovation if they have watched and listened to influencers and are then willing to use SST. Therefore, personal Innovativeness is important in trying new ways of purchasing via SST. Moreover, SST is compatible with other technologies that require resources, knowledge, and guidance, and Perceived Usefulness aids consumers in doing tasks more efficiently and effectively.

FC, PV, SI, CS, PI moderating SI, and WTU are direct influence, EC is indirect influence, PU and SQ are direct and indirect influence, and all variable positive effects on Willingness to Use SST.

The following summarizes the content of direct and indirect effects of variables on the model of Willingness to Use SST in Large Appliance. variables have a direct, indirect, and total influence on the acceptance model of Willingness to Use SST and shows the total influence as follows: FC = .105, PV = .112, SI = .117, CS = .235, PI moderating SI and WTU = .048 are direct influence, EC = .477 is indirect influence, PU = .411 and SQ = .317 are direct and indirect influence, as well as all variable positive effects on Willingness to Use SST.

### **5.2.1 Influence of Facilitating Conditions on Willingness to Use**

Facilitating Conditions have a positive effect on Willingness to Use with a correlation coefficient of 0.105 and  $p < 0.01$ . Therefore, H1 is accepted. According to facilitating conditions, these are "consumers' understanding of resources and support for behavior" (El-Said & Tall, 2020). This material is reserved for educational use only, not allowed for commercial use.

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Facilitating conditions, including the availability of resources and assistance, to encourage the use of technology. Their design proposes technological or organizational elements intended to minimize barriers to consumer use (Lua et al., 2019). For example, mobile users must have the most up-to-date technology to operate more efficiently and as a specific service. Therefore, if users have access to the most up-to-date capabilities that these technologies must offer, they are more likely to adopt them (Tarhini et al., 2019). Facilitating conditions are the extent to which a person believes that an organizational and technical infrastructure supports the system they wish to use. Infrastructure and other conditions impact their decision to adopt the SST system (Hamza et al., 2019; Wu & Wu, 2019). Facilitation conditions have a significant and positive effect on consumers' intentions to adopt (Patil et al., 2020). Customers who have used SST also paid special attention to the facilitating conditions (Alam et al., 2020).

Facilitating Conditions have four observed variables including Resources, Knowledge, Compatible, and Assistance. As the result of this study, the most responses are "Resources" at the Strongly Agree level with a mean of 4.368. Resources refer to the resources required for the use of the SST. There are two questions: (1) I have the resources necessary to use self-service technology (mean 4.365), (2) I have a resource/device ready to use the self-service technology (mean 4.372). The important influence of Willingness to use is resource/device ready to use self-service technology, and this result is supported by several researchers, including Wu and Wu (2019), Patil et al. (2020), El-Said and Tall (2020), Alam et al. (2020). Therefore, Resources act as an observed variable of Facilitating Conditions that have a high influence on Willingness to use.

In summary, this study found that Facilitating Conditions that have a positive direct effect on the Willingness to Use as previously literature review.

### **5.2.2 Influence of Price Value on Willingness to Use**

Price Value has a positive effect on Willingness to Use with a correlation coefficient of 0.112 and  $p < 0.05$ . Therefore, H2 is accepted as the 'customers' mental trade-offs between the methodological gain and the deal's financial expense. This is consistent with the previous research as follows: Price value is the mental trade-off that customers make between the value of the methodology and the financial cost of the agreement. The price of the channel will impact how customers select commercial channels. Consumers who use mobile trading frequently compare price information from multiple vendors for the same product to make the best choice (Tarhini et al., 2019). The more incentives that would be utilized by the new invention, the more significant the price value would be. An analysis of the position of social media suggests, according to this theory, that consumers' propensity to utilize technology will increase if the price-to-value ratio is

favorable (Dhiman et al., 2020). Monetary value is recognized as a critical influence on SST adoption (Alalwan et al., 2017). Regardless of the context in which the time and effort principle could be presented, financial costs have a significant impact on consumers' willingness to adopt and approve new technologies (Alalwan et al., 2018).

Price Value has two observed variables including Price and Value. The most common response is "Price" at the Agree level with a mean of 4.189. Price refers to a good value for reasonably priced money and worth using or paying by SST. The question is whether using self-service technology is a good value for the money. The important influence of the Willingness to use is that customers use self-service technology that is cost-effective and reasonably priced in buying products and services, and this result is supported by several researchers, including Alalwan et al. (2017), Alalwan et al. (2018), and Dhiman et al. (2020). Therefore, Price as an observed variable of Price Value has a high influence on Willingness to use.

In summary, this study found that Price Value has a positive effect on Willingness to Use as previously literature review.

### **5.2.3 Influence of Social influence on Willingness to Use**

Social influence has a positive effect on Willingness to Use with a correlation coefficient of 0.117 and  $p < 0.05$ . Therefore, H3 is accepted. This is consistent with the previous research as follows: The term "social influence" refers to the extent to which consumers see significant others (such as family and friends) who believe that a specific technology should be used and believe that new technology should be used. It reflects the effect of environmental factors, such as user friends, and relatives (El-Said & Tall, 2020; Jeon et al., 2020; Oliveira et al., 2016). Several researchers suggested that users' families, friends, colleagues, and other social circles have a strong influence on their behavior and intentions to use the application. When compared to other sources of information, the referral group is perceived to be more reliable, and their positive opinions and recommendations can motivate people to adopt new technology. As a result, marketers should focus on spreading positive word of mouth by providing pleasant experiences to existing users and encouraging them to recommend it to their social groups (Dhiman et al., 2020). The support for this relationship indicates that consumers' intentions to adopt SST are influenced by the beliefs of referent others. For example, demonstrated users of SST are sensitive to social influence and consider the expectations of their friends when using a technology (Alam et al., 2020; Patil et al., 2020). When taking into account a person's behavior intention, social influence can be defined as the extent to which a smartphone user believes that important people believe they should use the

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intelligent app and use the online shopping channel (Celik, 2016; Okumusa et al., 2018). There is a positive correlation between social influence and the usage of chatbots. It would need to be commented on how the effects of hedonism and social influence work together (Melián-González et al., 2019). This predicts that the role of social influence will vary in accordance with the SST usage intentions of customers. The impact of social influence largely depends on how society encourages and discourages the adoption of new ideas (Baabdullah et al., 2019). Therefore, this study found that consumers believe others (e.g., family and friends) think that technology should be used for specific purposes. This reflects the effects of environmental factors like friends, family, and superiors.

Social Influence has two observed variables including Influence and Important. The most response is “Influence” at the Strongly Agree level with a mean of 4.267. Influence refers to people who influence customers, which means I am influenced to use SST. The question is whether listening to the media influences the use of self-service technology. The important influence of Willingness to use that the adoption of self-service technology can be influenced by listening to the media, and this result is supported by several researchers, including Okumusa et al. (2018), Baabdullah et al. (2019), El-Said and Tall (2020), Okumusa et al. (2018), Baabdullah et al. (2019), El-Said and Tall (2020). Therefore, Influence is an observed variable of Social Influence that has a high influence on Willingness to use.

In summary, this study found that Social influence has a positive effect on Willingness to Use as previously literature review.

#### **5.2.4 Influence of Perceived Usefulness on Willingness to Use**

Perceived Usefulness has a positive effect on Willingness to Use, with a correlation coefficient of 0.332 and  $p < 0.001$ . Therefore, H4 is accepted. This is consistent with the previous research as follows: Mobile shopping applications are influenced positively by the awareness of convenience. In the field of mobile commerce, the empirical relationship between perceived utility and intent to use mobile phones was developed (Natarajan et al., 2017). Users perceive mobile Internet technology to be useful, so it is predicted that their satisfaction and continuation intentions will be high. There is evidence that perceived usefulness has a significant effect on the intention to continue (Jumaan et al., 2020). Measuring the effects of different on customers' intentions to use self-checkouts to formulate marketing strategies and determine future research directions (Kazancoglu & Yarimoglu, 2018). Perceived usefulness and satisfaction have a positive effect on

the user's continuation intention, and the user's continuation intention influences word-of-mouth (WOM) behavior (Rahi & Ghani, 2019). Other IS publications employ continuity. Two additional beliefs (i.e., the perceived usefulness and the user interface) that influenced the decision of users to continue using SST were proposed (Oghuma et al., 2016). The pathways between perceived utility, satisfaction and intent were also statistically significant (Chiu et al., 2020). Perceived usefulness has a significant impact on the intention of customers to continue using (Ashraf et al., 2020; Hariguna et al., 2019; Liebana-Cabanillas et al., 2020; Taufik & Hanafiah, 2019; Yang & Geetha, 2019). Therefore, this study found that people believe it would increase their work performance by using a particular system. The empirical findings show that the expected is a significant indicator of technology use.

Perceived Usefulness has two observed variables including Useful and Helpful. The most common response is "Useful" at the Strongly Agree level with a mean of 4.443. Useful refer to SST helps customers to perform many things more conveniently. There are two questions: (1) Using Self-service technology helps me to accomplish things more quickly (mean 4.454), and (2) Using Self-service technology helps me to perform many things more conveniently (mean 4.433). The important influence of Willingness to use is that because of self-service technology, customers can get more done in less time, and this result is supported by several researchers, including Oghuma et al. (2016), Jumaan et al. (2020), Ashraf et al. (2020), Chiu et al. (2020), Natarajan et al. (2017), Liebana-Cabanillas et al. (2020), Taufik and Hanafiah (2019). Therefore, Useful is an observed variable of Perceived Usefulness that has a high influence on Willingness to use.

In summary, this study found that Perceived Usefulness has a positive effect on Willingness to Use as previously literature review.

### **5.2.5 Influence of Perceived Usefulness on Customer Satisfaction**

Perceived Usefulness has a positive effect on Customer Satisfaction with a correlation coefficient of 0.335 and  $p < 0.001$ . Therefore, H5 is accepted. This is consistent with the previous research as follows: Perceived usefulness for explaining behavioral intention is one of TAM's key variables. It is defined as the extent to which a person believes that a particular system would improve his or her work performance (Natarajan et al., 2017). ECM, a post-adoption model, addresses the intention of individuals to continuously use IT based on the extent to which their expectations, perceived usefulness, and IT products/services are confirmed and satisfied (Chiu et al., 2020). Customer satisfaction and post-adoption perspectives such as perceived usefulness and

perceived decision quality were important predictors of customers' intent to continue using (Ashraf et al., 2020). perceived usefulness and confirmation of previous use expectations lead to users' satisfaction (Oghuma et al., 2016). perceived usefulness and satisfaction positively impact the user's intention to continue, and the user's intention to continue positively impacts the user's mouth word behavior (Hariguna et al., 2019; Rahi & Ghani, 2019). It integrates user attitude from marketing to TAM and suggests that attitude can be used to predict and facilitate the continued intentional use of new technology (Hsieh, 2019). Therefore, this study found that Perceived Usefulness has an effect on Customer Satisfaction.

Perceived Usefulness has two observed variables including Useful and Helpful. The most common response is "Useful" at the Strongly Agree level with a mean of 4.443. Useful refers to how SST helps customers to perform many things more conveniently. There are two questions: (1) Using Self-service technology helps me to accomplish things more quickly (mean 4.454), and (2) Using Self-service technology helps me to perform many things more conveniently (mean 4.433). The important influence on Customer Satisfaction is that Self-service technology enables customers to accomplish more in less time, thus saving their time and increasing satisfaction. This result is supported by several researchers, including Oghuma et al. (2016), Ashraf et al. (2020), Chiu et al. (2020), Natarajan et al. (2017). Therefore, Useful is an observed variable of Perceived Usefulness that has a high influence on Customer Satisfaction.

In summary, this study found that Perceived Usefulness has a positive effect on Customer Satisfaction as previously literature review.

### **5.2.6 Influence of Expectation Confirmation on Perceived Usefulness**

Expectation Confirmation has a positive effect on Perceived Usefulness with a correlation coefficient of 0.982 and  $p < 0.001$ . Therefore, H6 is accepted, which supports as following: Perceived usefulness has a positive impact on user continuity intentions (Chiu et al., 2020; Rahi & Abd.Ghani, 2019; Shang & Wu, 2017). If the pre-acceptance expectations are satisfactorily confirmed during the actual use of the product, then the perceived usefulness and satisfaction levels of the product will increase (Jumaan et al., 2020). the effects of perceived usefulness, perceived security, perceived service quality, and confirmed the intention of users to use (Oghuma et al., 2016).

Expectation Confirmation has two observed variables including Experience and Service. The most common response is “Service” at the Strongly Agree level with a mean of 4.307. Service refers to the service level or function provided by SST better than customers expected. The question is the use of self-service technology can meet my needs in a variety of situations. The important influence of Perceived Usefulness is that in a variety of functions, self-service technology can fulfill customer needs and customer expectations, and this result is supported by several researchers, including Oghuma et al. (2016), Jumaan et al. (2020), Chiu et al. (2020). Therefore, Service is an observed variable of Expectation Confirmation that has a high influence on Perceived Usefulness.

In summary, this study found that Expectation Confirmation has a positive effect on Perceived Usefulness as previously literature review.

### **5.2.7 Influence of Expectation Confirmation on Customer Satisfaction**

Expectation Confirmation has a positive effect on Customer Satisfaction with a correlation coefficient of 0.314 and  $p < 0.001$ . Therefore, H7 is accepted. This is supported as follows: ECM's point of view proposes that the confirmation of expectations by individuals impacts their satisfaction (Chiu et al., 2020). Confirmation influence satisfaction has been described as a "post-user evaluation" and is viewed as a positive feeling initial (test) experience with the service (satisfaction) (Shang & Wu, 2017). Confirming expectations had a positive and significant impact on perceived usefulness and satisfaction (Jumaan et al., 2020; Rahi & Ghani, 2019; Wu & Wu, 2019). The same should be true for usage. Users will evaluate their experience versus their initial anticipations. If their anticipations are met, they will be satisfied (Oghuma et al., 2016). Therefore, this study found that the actual user experience matches the original requirements or exceeds them; customer satisfaction is verified.

Expectation Confirmation has two observed variables including Experience and Service. The most common response is “Service” at the Strongly Agree level with a mean of 4.307. Service refers to the service level or function provided by SST better than customers expected. The question is the use of self-service technology can meet my needs in a variety of situations. The important influence on Customer Satisfaction is that Self-service technology can serve customers and make satisfaction from a variety of functions SST, and this result is supported by several researchers, including Oghuma et al. (2016), Wu and Wu (2019), Jumaan et al. (2020), Chiu et al. (2020). Therefore, Service is an observed variable of Expectation Confirmation that has a high influence on Customer Satisfaction.

In summary, this study found that Expectation Confirmation has a positive effect on Customer Satisfaction as previously literature review.

### **5.2.8 Influence of Customer satisfaction on Willingness to Use**

Customer satisfaction has a positive effect on Willingness to Use with a correlation coefficient of 0.235 and  $p < 0.01$ . Therefore, H8 is accepted as considered an adequate reciprocation, and satisfaction can be reached if a customer is sure that its demands from service are fulfilled. This is consistent with the previous research as follows: Shang and Wu (2017), Natarajan et al. (2017), Siah and Fam (2018), Wu and Wu (2019), Jumaan et al. (2020), Ashraf et al. (2020), found Satisfaction has a positive impact on continued intention. Applying two theoretical models, the ECM and the Investment Model, to the continued intent of consumers to use the app reveals the ECM and the Investment Model. Positive and significant effects of satisfaction on intention and commitment to continuity were observed (Chiu et al., 2020). SST has gained popularity in a variety of fields, and consumers in many nations continue to favor their services (Lian, 2018). The historical context and repercussions of consumer contentment with the retail application of SST. The outcome demonstrated that consumer satisfaction was associated with sturdy behavioral intentions to utilize SST (Wang, 2012). Customer satisfaction mediates a portion of the relationship between the quality of SST service and customer behavior intentions (Iqbal et al., 2018). Long-term and short-term perspectives have positive effects on customer satisfaction, which have positive effects on customer willingness to pay more (Agnihotri et al., 2019).

Customer Satisfaction has two observed variables including Satisfied and Pleased. The most common response is “Pleased” at the Strongly Agree level with a mean of 4.304. Pleased refers to customer satisfaction with using self-service technology. There are two questions: (1) I am very pleased with using self-service technology (mean 4.350), and (2) I am extremely pleased with the quality of service provided by the self-service technology (mean 4.259). The important influence of Willingness to Use is that customers very pleased with using self-service technology, and this result is supported by several researchers, including Shang and Wu (2017), Wu and Wu (2019), Jumaan et al. (2020), Chiu et al. (2020), Ashraf et al. (2020). Therefore, Pleased is an observed variable of Customer satisfaction that have a high influence on Willingness to Use.

In summary, this study found that Customer Satisfaction has a positive effect on Willingness to use as previously literature review.

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### 5.2.9 Influence of Service Quality on Customer Satisfaction

Service Quality has a positive effect on Customer Satisfaction and Willingness to Use. Firstly, service quality positively affects customer satisfaction with a correlation coefficient of 0.357 and  $p < 0.001$ . Therefore, H9 is accepted. This is consistent with the previous research as follows: Amin (2016), Oghuma et al. (2016), Mango et al. (2017), and Considine and Cormican (2017) supported that Service Quality positively affects customer satisfaction and customer loyalty; customer satisfaction meditates on the relationship between service quality. Service quality has been the focus of a lot of research for decades. This research has led to the development of SST, which has important implications for how customers interact with companies to produce good service results like customer satisfaction, loyalty, and behavior intentions (Iqbal et al., 2018). the factors that affect the quality of self-checkout services in supermarkets by scrutinizing the links between service quality, customer satisfaction, and buying intent. Some of the dimensions of service quality were speed, ease of use, reliability, leisure, and control (Siah & Fam, 2018). More and more shoppers in supermarkets around the world are meeting and using SST. The SEM results showed that there is a positive and statistically significant link between the quality of self-check service and how happy customers are with it (Orel & Kara, 2014). Service quality, design quality, and self-efficacy all have an impact on satisfaction. The design quality of apps that satisfy app usage (Palanisamy, 2019), the importance of a company image as an SST facilitator of customer satisfaction, behavioral intent, and behavioral loyalty Given the rapid development of self-service technology, scientists must understand customers' overall perceptions of technology use by linking them to company reputations (satisfaction, behavioral intentions, and loyalty) (Ikhsan & Simarmata, 2021). Interaction experiences such as functional affordability and cognitive affordance are beneficial to the quality and satisfaction of SST's service. Customers who have a high opinion of the quality of SST services are more likely to be satisfied with SST and to recommend or choose the same service in the future (Chou & Lii, 2020).

SST Service Quality has three observed variables, including Functionality/Customization/Convenience/Security, Assurance, and Design/Enjoyment. The most common response is "Design/Enjoyment" at the Agree level with a mean of 4.258. Design/Enjoyment refers to the layout of the SST that is esthetically appealing. There are three questions: (1) The layout of the self-service technology is esthetically appealing (mean 4.252), (2) the self-service technology appears to use up-to-date technology (mean 4.270), (3) The operation

of the self-service technology is interesting (mean 4.252). The important influence on Customer Satisfaction is that there is an indication that self-service technology is developed with new technology that is esthetically appealing, and this result is supported by several researchers, including Iqbal et al. (2018). Therefore, Design/Enjoyment is an observed variable of Service Quality that has a high influence on Customer Satisfaction.

In summary, this study found that Service Quality has a positive effect on Customer Satisfaction as previously literature review.

### **5.2.10 Influence of Service Quality on Willingness to Use**

Service Quality has a positive effect on Willingness to Use with a correlation coefficient of 0.233 and  $p < 0.05$ . Therefore, H10 is accepted. This is consistent with the previous research as follows: Most behavioral research on technology adoption, such as SST adoption, focuses on younger consumers and the factors that motivate older consumers to adopt SST (Lee & Lyu, 2019). Service quality enhances its corporate reputation through customer satisfaction, behavioral intent, and behavior now in the form of SST, which has profound implications for customer interaction with companies to produce positive service results such as customer satisfaction, loyalty, and customer intention to adopt SST loyalty (Hamza et al., 2019; Ikhsan & Simarmata, 2021; Iqbal et al., 2018; Joshi, 2020). Therefore, Service Quality has been used to describe the quality of self-service technology. SQ was tested using a scale replication process and several samples from around the company and consumer behaviors. In multiple settings, efficiency and validity tests have been tracked.

SST Service Quality has three observed variables, including Functionality / Customization / Convenience / Security, Assurance, and Design / Enjoyment. The most common response is “Design / Enjoyment” at the Agree level with a mean of 4.258. Design / Enjoyment refers to the layout of the SST that is esthetically appealing. There are three questions: (1) The layout of the self-service technology is esthetically appealing (mean 4.252), (2) The self-service technology appears to use up-to-date technology (mean 4.270), (3) The operation of the self-service technology is interesting (mean 4.252). The important influence of Willingness to Use that there are shows that self-service technology is being developed with new technology that is visually appealing, and this result is supported by several researchers, including Iqbal et al. (2018). Therefore, Design / Enjoyment is an observed variable of Service Quality that has a high influence on Willingness to Use.

Therefore, this study found that Service Quality has a positive effect on Willingness to Use as previously literature review.

### **5.2.11 Moderator of Personal Innovativeness on Social Influence and Willingness to Use**

Personal Innovativeness has moderate Social Influence and Willingness to Use with a correlation coefficient of 0.048 and  $p < 0.05$ . Therefore, H11 is accepted as an individual's ability to try out some new IT. This is consistent with the previous research as follows: The two social factors of social identity and social effect influence purchasing intent partially mediate perceived value. In addition, individual characteristics, or "consumer innovation," moderate these associations (Persaud & Schillo, 2017). The analyses supports the moderating effects of innovative consumerism on the relationships between the adoption and purchase intentions of different customers (Leicht et al., 2018).

Personal Innovativeness has two observed variables, including Experiment and Trying. The most common response is "Experiment" at the Strongly Agree level, with a mean of 4.298. Experiment refers to customers who like to experiment using SST. The question is I like to experiment with using self-service technology. The important influence of Willingness to use is that customers like to experiment with using self-service technology, and this result is supported by several researchers, including Natarajan et al. (2017), Patil et al. (2020). Therefore, Experiment is an observed variable of Personal Innovativeness that has a high influence on moderate Social Influence and Willingness to Use.

In summary, this study found that Personal Innovativeness has moderate Social Influence and Willingness to Use as previously literature review.

### **5.3 Implications**

This research, combining the concepts of the Unified Theory of Acceptance and Use of Technology (UTAUT2), Expectation-Confirmation Model (ECM), Service Quality, and Personal Innovativeness would allow for an enhanced understanding of Willingness to Use SST. There are two types of implications: theoretical and practical.

The objective of the theoretical implication is to develop a model of customer willingness to use SST for retail business in Thailand and to examine the direct effect, indirect effect, and

combined influence of relationships among Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST.

The objective is practical in that it portrays the willingness to use SST from a customer perspective of academic practice in the retail business. It enhances and develops the willingness to use SST for the Thailand model from the customer perspective for further academic and professional development in the retail industry. This proves that factors of direct effect, indirect effect, and combined influence of variables on the willingness to use SST in the retail business for Thailand get the benefit of entrepreneurs in establishing strategic planning the best approach for improving the revenue and number of customers on Omnichannel in the view of consumers.

The findings indicated that all the hypotheses were supported and that the variables had both direct and indirect effects on the acceptance model.

### 5.3.1 Theoretical Implication

Overall, the model and findings of this study are significant contributions to the theoretical understanding of the factors that influence willingness. This research combines this concept with the Unified Theory of Acceptance and Use of Technology (UTAUT2) which studies behavior driven by the intention to show behavior by factors influencing the intention to show behavior and can be applied to the study of consumer technology use, Expectation-Confirmation Model (ECM) that explains the relationship of factors affecting the willingness to continue using, Service Quality, and Personal Innovativeness would allow for a more complete understanding of the Willingness to Use SST.

Firstly, develop a model of customer willingness to Use SST for retail business in Thailand to enhance and develop the willingness to use SST for the Thailand model from the customer perspective for further academic and professional development in the retail business and get the willingness to use SST from a customer perspective for academic practice in the retail business. This study is acceptable on Willingness to Use SST on Omnichannel and is supported by literature reviews. These findings include UTAUT2 (facilitating conditions, price value, social influence), ECM (Perceived Usefulness, Expectation Confirmation, Customer Satisfaction), Service Quality, and Personal Innovativeness. This study used empirical data to develop 11 hypotheses, nine

constructs, and one moderating factor using SEM. The model Willingness to Use has second-order latent variables in the research model. As a result of the findings, the model has reached an acceptable level and can be used to explain the set of hypotheses. And The findings of observed variables are as follows:

Facilitating Conditions have observed variables including Resource, Knowledge, Compatible, and Assistance. According to the review of the relevant literature, these observed variables have been accepted and validated by research by Wu and Wu (2019), Lua et al. (2019), El-Said and Tall (2020), Patil et al. (2020), Alam et al. (2020). The findings of this study were that the structure was consistent with the empirical data.

Price Value has observed variables, including Price and Value. According to the review of the relevant literature, these observed variables have been accepted and validated by research by Alalwan et al. (2017), Alalwan et al. (2018), Dhiman et al. (2020), El-Said and Tall (2020). Therefore, the findings of this study were that the structure was consistent with the empirical data.

Social Influence has observed variables, including Influence and Important. According to the review of the relevant literature, these observed variables have been accepted and validated by research by Celik (2016), Oliveira et al. (2016), Okumusa et al. (2018), Baabdullah et al. (2019), El-Said and Tall (2020), Jeon et al. (2020), Dhiman et al. (2020), Patil et al. (2020), Alam et al. (2020). Therefore, the findings of this study were that the structure was consistent with the empirical data.

Expectation Confirmation has observed variables, including Experience and Service. According to the review of the relevant literature, these observed variables have been accepted and validated by research by Oghuma et al. (2016), Shang and Wu (2017), Rahi and Ghani (2019), Wu and Wu (2019), Jumaan et al. (2020), Chiu et al. (2020). Therefore, the findings of this study were that the structure was consistent with the empirical data.

Perceived Usefulness has observed variables including Useful and Helpful. According to the review of the relevant literature, these observed variables have been accepted and validated by research by Rahi and Ghani (2019), Taufik and Hanafiah (2019), Jumaan et al. (2020), Ashraf et al. (2020), Chiu et al. (2020), Liebana-Cabanillas et al. (2020). Therefore, the findings of this study were that the structure was consistent with the empirical data.

Customer Satisfaction has observed variables including Satisfied and Pleased. According to the review of the relevant literature, these observed variables have been accepted and validated by research by Orel and Kara (2014), Shang and Wu (2017), Iqbal et al. (2018), Hong and Slevitch (2018), Lyua et al. (2019), Wu and Wu (2019), Chiu et al. (2020), Rahi and Ghani (2019), Ashraf et al. (2020), Jumaan et al. (2020). Therefore, the findings of this study were that the structure was consistent with the empirical data.

Service Quality has observed variables including Functionality / Customization / Convenience / Security, Assurance, and Design/Enjoyment. According to the review of the relevant literature, these observed variables have been accepted and validated by research by Orel and Kara (2014), Oghuma et al. (2016), Iqbal et al. (2018), Lian (2018). Therefore, the findings of this study were that the structure was consistent with the empirical data.

Personal Innovativeness has observed variables including Experiment and Trying. According to the review of the relevant literature, these observed variables have been accepted and validated by research Natarajan et al. (2017), Dhiman et al. (2020), Taghreed Abu Salim et al. (2020), Patil et al. (2020). Therefore, the findings of this study were that the structure was consistent with the empirical data.

Willingness to Use SST has observed variables including Continue Use, Intention to Use, and Intention to Adopt. According to the review of the relevant literature, these observed variables have been accepted and validated by research by Wang (2012), Natarajan et al. (2017), Shang and Wu (2017), Iqbal et al. (2018), Hong and Slevitch (2018), Lian (2018), Lee and Lyu (2019), Rahi and Abd.Ghani (2019), Rahi et al. (2019), Jumaan et al. (2020), Ashraf et al. (2020). Therefore, the findings of this study were that the structure was consistent with the empirical data.

Secondly, examine the direct effect, indirect effect, and combined influence relationship among Price Value, Facilitating Conditions, Social Influence, Perceived Usefulness, Expectation Confirmation, Personal Innovativeness, SST Service Quality, Customer Satisfaction, and Willingness to Use SST for proof factors direct effect, indirect effect, and combined influence of variables on the willingness to use SST in the retail business for Thailand. Moreover, the result has three levels of significance: very highly significant, highly significant, and statistically significant.

FC, PV, SI, CS, PI moderating SI and WTU are direct influence, EC is indirect influence, PU and SQ are direct and indirect influence, and all variable positive effects on Willingness to Use SST.

In addition, this research also discovered that an individual's level of personal innovativeness served as a moderator of the relationship between social influence and willingness to use SST. Personal innovativeness refers to a person's capacity to experiment with new forms of information technology.

Finally, based on the structural equation model results, this study demonstrates that a model of customer willingness to use SST for retail business in Thailand is widely accepted and has a direct and indirect influence.

### 5.3.2 Practical Implication

The objective is to provide a practical benefit to entrepreneurs by assisting them in formulating strategic planning and the most effective way to increase revenue and the number of customers using Omnichannel from the perspective of consumers.

Various SST such as kiosks at shops, online applications on smartphones, e-commerce, etc., have been developed from technological innovations such as AI, Blockchain, 5G technology, Smart Applications, IoT, Robotics, AR, VR, MR, etc. These will make things easier for customers and provide a better service. For example, customers can shop via omnichannel anytime, anywhere, such as IKEA, Shopee, Artistry, NIKE, Vket Mall-Virtual Market in Japan, BingoBox in China, Amazon Go, Amazon Go Grocery, etc

The Design SST should consider Perceived Usefulness refers to SST that helps customers do things better and effectively and perform many things more conveniently, affecting Willingness to Use and Customer satisfaction. Moreover, the service process of the firm's SST is clear, easy to use, and reliable in terms of Functionality, Customization, Convenience, Security, layout esthetically appealing, and a good firm reputation, which is Service Quality, affects Customer satisfaction.

Customers' willingness to use and satisfaction increase when SST helps them get things done more efficiently, quickly, easily, clear, easy-to-use, and trustworthy service procedures influence customer satisfaction, which is the foundation of a good company's reputation.

Show how to use and represent convenient and easy to use, the resources required, knowledge necessary, and guidance for applying SST compatible with other technologies while Facilitating Conditions that affect the Willingness to Use. This leads to the point of making the customer satisfied and pleased with using SST, which shows how customer satisfaction affects the Willingness to Use.

In addition, Facilitating Conditions affect a user's Willingness to Use SST by providing the necessary resources, expertise, and assistance for them to be used. Customers' Willingness to Use SST increases when they are pleased with them, and increases awareness of the benefits of using SST at statistically significant levels. SST provides good value for reasonably priced money and is worth using or paying for, which Price Value affects Willingness to Use. Customers use SST for purchases influenced by influencers, thus, showing how social influence affects Willingness to Use. Service Quality refers to Functionality, Customization, Convenience, Security, Assurance, Design, and Enjoyment, which affect Willingness to Use. Moreover, Personal Innovativeness relates to customers who enjoy experimenting and are often among the first to try new ways of purchasing via SST that moderate between Social Influence and Willingness to Use. Furthermore, technological advances provide consumers excellent value for their money, making them more willing to use or pay for them. When it comes time to purchase, customers are affected by influencers and employ new technologies that positively impact their willingness to use. Functionality, Customization, Convenience, Security, Assurance, Design, and Enjoyment are aspects of service quality that affect customers' willingness to use a service. As a result, customers with a high level of Personal Innovativeness tend to be early adopters of developing technologies, such as social influence and willingness to use.

Overall, these findings imply all hypotheses answer how the Willingness to Use SST Innovation on Omnichannel. The person interested in innovativeness is affected if they have watched and listened to influencers, then are willing to use SST. Therefore, personal Innovativeness is important in trying new ways of purchasing via SST. Moreover, SST is compatible with other technologies that require resources, knowledge, and guidance, and Perceived Usefulness aids consumers in doing tasks more efficiently and effectively.

Considering strategic planning that suggests entrepreneurs analyze SWOT (strengths, weaknesses, opportunities, and threats) regarding SST provided to customers, followed by defining

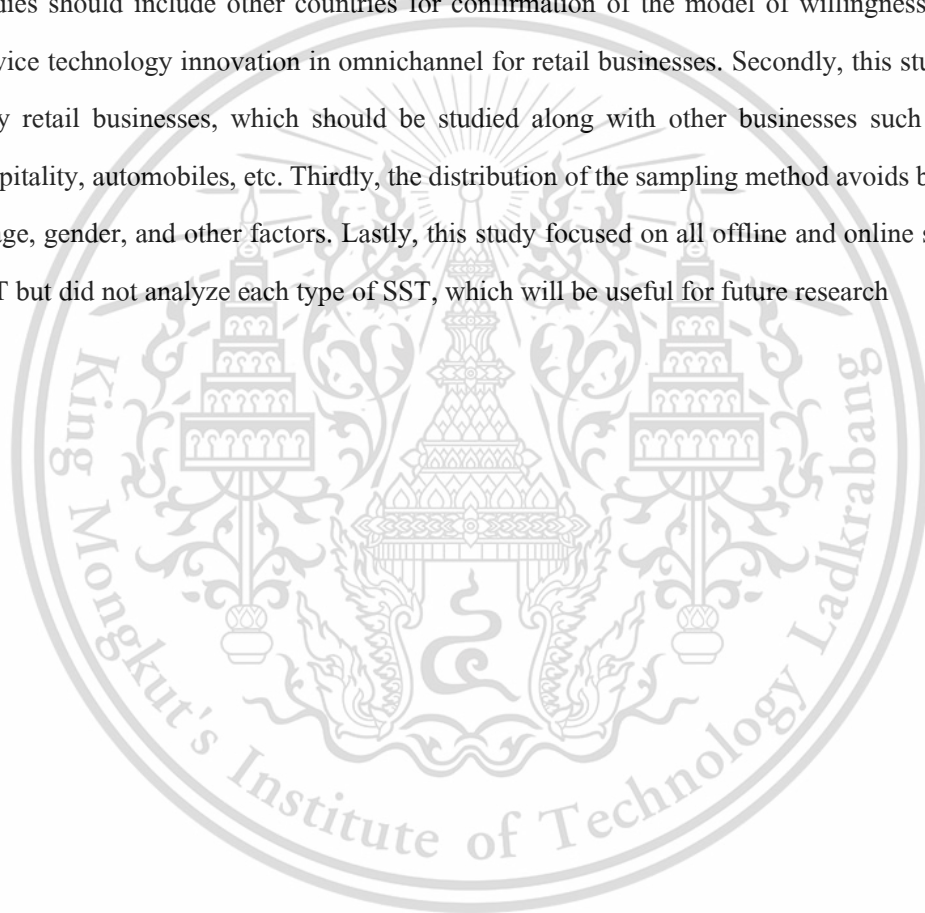
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Vision, Mission, Strategic Issue, Goal, KPI, Target, and Initiative to meet consumer expectations to the willingness to use SST and action by applying the findings of this study.

#### **5.4 Limitations and Recommendations of the Research**

The limitations of the study of an integrated model consisting of the UTAUT2 and ECM to explore customer willingness to use self-service technology innovation on omnichannel for retail business in Thailand are considered in four points. Firstly, this study explored only Thailand. Future studies should include other countries for confirmation of the model of willingness to use self-service technology innovation in omnichannel for retail businesses. Secondly, this study explored only retail businesses, which should be studied along with other businesses such as banking, hospitality, automobiles, etc. Thirdly, the distribution of the sampling method avoids biases related to age, gender, and other factors. Lastly, this study focused on all offline and online shopping via SST but did not analyze each type of SST, which will be useful for future research



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# APPENDIX A

## THESIS APPROVAL LETTER



ประกาศคณะกรรมการธุรกิจ

สถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง

ที่ 009 / 2564

เรื่อง ผลการพิจารณาหัวข้อและเค้าโครงดุษฎีนิพนธ์

คณะกรรมการธุรกิจ สถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง โดยความเห็นชอบของ คณะกรรมการพิจารณาหัวข้อและเค้าโครงดุษฎีนิพนธ์ ขอประกาศรายชื่อหัวข้อและเค้าโครงดุษฎีนิพนธ์ หลักสูตรปริญญาตรี สาขาวิชาบริหารธุรกิจอุตสาหกรรม (นานาชาติ) ซึ่งได้รับอนุมัติเมื่อวันที่ 19 มกราคม พ.ศ. 2564 ให้ดำเนินการดังนี้

นางสาวสุนิสา จันทร์สว่าง รหัสประจำตัว 61611096 ให้ทำดุษฎีนิพนธ์เรื่อง "WILLINGNESS TO USE SELF-SERVICE TECHNOLOGIES INNOVATION ON OMNICHANNEL FOR RETAIL BUSINESS IN THAILAND"

โดยมี ผู้ช่วยศาสตราจารย์ ดร.สิงหะ ฉวีสุข เป็นอาจารย์ที่ปรึกษาดุษฎีนิพนธ์ และ

รองศาสตราจารย์ ดร.วอนชนก ไชยสุนทร เป็นอาจารย์ที่ปรึกษาดุษฎีนิพนธ์ร่วม

ทั้งนี้ ให้นักศึกษาค้นคว้าและเขียนดุษฎีนิพนธ์ โดยปรึกษากับอาจารย์ที่ปรึกษาดุษฎีนิพนธ์ ให้เสร็จสิ้น ภายในเวลาที่กำหนด ในระเบียบสถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง

ประกาศ ณ วันที่ 17 มีนาคม พ.ศ. 2564

(ผู้ช่วยศาสตราจารย์ ดร.สุตาพร สาวม่วง)

คณบดีคณะกรรมการธุรกิจ

# APPENDIX B

## ETHICS IN HUMAN RESEARCH



### Certificate of Completion

National Research Council of Thailand (NRCT) and Forum for Ethical Review Committee in Thailand (FERCIT)

Certify that

**Sunisa Junsawang**

Has completed the ON-LINE RESEARCH ETHICS TRAINING  
Course หลักสูตรหลักจริยธรรมการวิจัยในมนุษย์ สำหรับนักศึกษา/นักวิจัย

Date approved  
(06/07/2563)

Date expired  
(06/07/2566)

*S. Songsivilai*

(Professor Dr.Sirirug Songsivilai)  
Secretary-General  
National Research Council of Thailand

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# APPENDIX C

## KRIS APPROVAL LETTER



No. 049  
EC-KMITL\_64\_049

The Research Ethics Committee of  
King Mongkut's Institute of Technology Ladkrabang  
1, Chalongkrung Rd., Lat Krabang, Lat Krabang, Bangkok Thailand 10520  
Tel. 02-3298000

### Certificate of Exemption

The Research Ethics Committee of King Mongkut's Institute of Technology Ladkrabang has exempted the following study which is to be carried out in compliance with the International guidelines for human research protection as Declaration of Helsinki, The Belmont Report, CIOMS Guideline, International Conference on Harmonization in Good Clinical Practice (ICH-GCP) and 45CFR 46.101(b)

Study title : WILLINGNESS TO USE SELF SERVICE TECHNOLOGIES INNOVATION ON OMNICHANNEL FOR RETAIL BUSINESS IN THAILAND  
Study code : EC-KMITL\_64\_049  
Principal Investigator : Miss. Sunisa Jirawong  
Co-Investigator : Asst. Prof. Dr. Singha Chaveesuk / Asst. Prof. Dr. Wornchanok Chaiyasoonthorn  
Study center : KMITL BUSINESS SCHOOL  
Document reviewed : 1. Submission form version 2. date 1 April, 2021  
2. Full protocol/proposal version 3. date 5 May, 2021  
3. Participant information sheet 4. date 14 May, 2021  
4. Informed consent form version 2. date 14 May, 2021  
5. Data record form version 2. data 14 May, 2021  
6. Curriculum Vitae

Signature Pastraporn Thipayasothorn  
( Assoc. Prof. Dr. Pastraporn Thipayasothorn.)  
Chair of the Human Ethics Committee

King Mongkut's Institute of Technology Ladkrabang, 2020

Date of Exemption : 14 May, 2021

**Note** No continuing review required

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# APPENDIX D

## Questionnaire

Willingness to Use Self Service Technologies Innovation on Omnichannel for Retail Business in  
Thailand

This questionnaire is a part of the research of the Doctor of Philosophy (Industrial Business Administration <International Program>), KMITL Business School, King Mongkut's Institute of Technology Ladkrabang. All data collected from this questionnaire would be compiled and processed as a statistical report, regardless of the specific name of the agency or individual, using data from other sets of the questionnaire.

There are 4 parts in the questionnaire

Part 1: Personal Data of Respondent

Part 2: Questions about the basic knowledge of Self-Service Technologies Innovation on Omnichannel

Part 3: Questions about Willingness to Use Self-Service Technologies Innovation in Omnichannel for Retail Business in Thailand

Part 4: Suggestions of respondents

ส่วนที่ 1: ข้อมูลส่วนบุคคลของผู้ตอบ (Part 1: Personal Data of Respondent)

1. เพศ (Gender)

ชาย (Male)

หญิง (Female)

2. อายุ (Age)

ต่ำกว่า 21 ปี (Under 21 years old)

ระหว่าง 21 – 30 ปี (21 – 30 years old)

ระหว่าง 31 – 40 ปี (31 – 40 years old)

ระหว่าง 41 – 50 ปี (41 – 50 years old)

ระหว่าง 51 – 60 ปี (51 – 60 years old)

มากกว่า 60 ปี (Older than 60 years old)

3. การศึกษาสูงสุด (Highest education)

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- ต่ำกว่าปริญญาตรี (Under a bachelor's degree)
- ปริญญาตรี (Bachelor's degree)
- สูงกว่าปริญญาตรี (Higher than a bachelor's degree)

4. อาชีพ (Occupation)

- อาชีพอิสระ (Self-employed)
- พนักงานบริษัท (Company employee)
- ข้าราชการ (Government officer)
- พนักงานรัฐวิสาหกิจ (State enterprise employee)
- ว่างาน / เกษียณ (Unemployed/Retired)
- อื่นๆ (โปรดระบุ) Other (please state): \_\_\_\_\_

5. รายได้ต่อเดือน (Salary per month)

- น้อยกว่า 35,001 บาท (Not more than 35,000 Baht)
- ระหว่าง 35,001 – 70,000 บาท (35,001 – 70,000 Baht)
- ระหว่าง 70,001 – 105,000 บาท (70,001 – 105,000 Baht)
- มากกว่า 105,000 บาท (More than 105,000 Baht)

6. คุณอาศัยอยู่ภูมิภาคใดในประเทศไทย (Where are you living in the region of Thailand?)

- ภาคเหนือ (Northern)  ภาคตะวันออกเฉียงเหนือ (Northeastern)
- ภาคกลาง (Central)  ภาคตะวันออก (Eastern)
- ภาคตะวันตก (Western)  ภาคใต้ (Southern)
- กรุงเทพมหานคร (Bangkok)

ส่วนที่ 2: คำถามเกี่ยวกับความรู้พื้นฐานด้านนวัตกรรมเทคโนโลยีการบริการตนเองทางออมนิ  
แชนเนล

**Part 2: Questions about the basic knowledge of Self-Service Technologies Innovation on  
Omnichannel**

7. คุณใช้เทคโนโลยีการบริการตนเองบ่อยแค่ไหน? (How often are you using the Self-Service )  
technology?

- ทุกวัน (Everyday)  4-6 วันต่อสัปดาห์ (4-6 days per week)
- 1-3 วันต่อสัปดาห์ (1-3 days per week)  ไม่เคยใช้บริการ (Never used)

8. คุณเคยใช้เทคโนโลยีบริการตนเองทางช่องทางใด (ตอบได้มากกว่า 1 ข้อ) (Which self-service  
technology have you ever used?)

ออฟไลน์ (offline) : การบริการชำระเงินด้วยตนเองที่ซูเปอร์มาร์เก็ต,ร้านสะดวกซื้อ หรือผ่านตู้ kiosk บริเวณร้านอาหาร เช่น Big C, Lotus, TOPS Supermarket, 7-Eleven, Gourmet, McDonald's เป็นต้น (Offline : Self-service payment at supermarkets, convenience stores, or via kiosk at restaurants such as Big C, Lotus, TOPS Supermarket, 7-Eleven, Gourmet, McDonald's etc.)

ออนไลน์ (online) : การซื้อสินค้าผ่านระบบออนไลน์ เช่น Lazada, Shopee, Central online, JD central, Advice.co.th, BigC.co.th, makroclick.com , การผสมผสานโลกแห่งความเป็นจริงและโลกเสมือนจริง (AR: Augmented Reality) และ (VR: Virtual Reality) โดยวัตถุเสมือนที่วางนั้น อาจจะเป็น ภาพ วิดีโอ เสียง ข้อมูลต่าง ๆ ที่ประมวลผลมาจากคอมพิวเตอร์ มือถือ เป็นการสร้างวัตถุเสมือนร่วมกับโลกแห่งความเป็นจริงสำหรับการซื้อสินค้า เช่น AR ของ Shopee, AR ของ IKEA, AR ของ Artistry , Virtual Expo , การจำลองภาพให้เหมือนจริงแบบ 360 องศา ต้องใช้ควบคู่ไปกับอุปกรณ์แว่นตา VR สำหรับการซื้อสินค้า เป็นต้น (Online : Shopping through online systems such as Lazada, Shopee, Central online, JD central, Advice.co.th, BigC.co.th, makroclick.com, merging the real world and the virtual world (AR: Augmented Reality). and (VR: Virtual Reality) by virtual objects that may be images, videos, sounds, various information processed from computers, mobile phones to create virtual objects together with the real world for purchases such as AR of Shopee, IKEA AR, Artistry's AR, Virtual Expo, 360-degree visualization must be used in conjunction with VR for purchases, etc.)

Other \_\_\_\_\_

ส่วนที่ 3 คำถามเกี่ยวกับความเต็มใจที่จะใช้นวัตกรรมเทคโนโลยีการบริการตนเองทางออมนิแชนเนล (Omnichannel) สำหรับธุรกิจค้าปลีกในประเทศไทย

**Part 3: Questions about Willingness to Use Self-Service Technologies Innovation on Omnichannel for Retail Business in Thailand.**

Question	Very Low <--> Very High				
	1	2	3	4	5
<b>ความคุ้มค่า (Price Value)</b>					
ราคา (Price)					

Question		Very Low <--> Very High				
		1	2	3	4	5
9	การใช้เทคโนโลยีการบริการตนเองมีความคุ้มค่ากับเงินที่ใช้จ่าย Using self-service technology is a good value for the money.					
	คุณค่า (Value)					
10	การใช้เทคโนโลยีการบริการตนเองสามารถสร้างมูลค่าให้แก่ ราคาสินค้าต่างๆ ได้อย่างเหมาะสม Using self-service technology provides a good value for properly pricing various products.					
11	ในการใช้เทคโนโลยีการบริการตนเองต้องใช้เวลาพยายามน้อยกว่าเมื่อเทียบกับพนักงานเก็บเงินแบบดั้งเดิม Compared to traditional cashiers, self-service technology requires less effort					
สภาพสิ่งอำนวยความสะดวกในการใช้งาน (Facilitating Conditions )						
	ทรัพยากร (Resources )					
12	ฉันมีทรัพยากร/อุปกรณ์ที่จำเป็นสำหรับการใช้เทคโนโลยีการ บริการตนเอง I have the resources necessary to use self-service technology.					
13	ฉันมีทรัพยากร/อุปกรณ์ที่พร้อมต่อการใช้เทคโนโลยีการบริการ ตนเอง I have a resource/device ready to use the self-service technology.					
	องค์ความรู้ (Knowledge)					
14	ฉันมีความรู้ที่จำเป็นเพียงพอต่อการใช้เทคโนโลยีการบริการ ตนเอง I have the knowledge necessary to use self-service technology.					
15	ฉันใช้เวลาไม่มากในการเรียนรู้วิธีการใช้เทคโนโลยีการบริการ ตนเอง I did not spend much time learning how to use self-service technology. spend less time for learning					
	ความเข้ากันได้ (Compatible )					

Question		Very Low <--> Very High				
		1	2	3	4	5
16	ฉันสามารถใช้เทคโนโลยีการบริการตนเองร่วมกับเทคโนโลยีอื่นที่ใช้งานอยู่ได้ Self-service technology is compatible with other technologies I use.					
17	เทคโนโลยีการบริการตนเองมีความคล้ายกับเทคโนโลยีอื่นที่ฉันใช้อยู่ The self-service technology is similar to other technologies I use					
	ความช่วยเหลือ (Assistance)					
18	ฉันสามารถขอความช่วยเหลือจากผู้อื่นได้ เมื่อมีปัญหากในการใช้เทคโนโลยีการบริการตนเอง I can get help from others when I have difficulties using self-service technology.					
19	คู่มือและคำแนะนำของเทคโนโลยีการบริการตนเองมีความเหมาะสม Guidance will be available to me in the use of self-service technology.					
20	เมื่อเกิดข้อผิดพลาดจากการใช้เทคโนโลยีบริการตนเอง ฉันสามารถขอความช่วยเหลือจากพนักงานหรือแจ้งปัญหาการใช้งานได้ It is possible to get help from an employee in dealing with self-service technology.					
<b>อิทธิพลทางสังคม (Social Influence )</b>						
	อิทธิพล (Influence )					
21	การรับข้อมูลจากสื่อต่างๆ มีอิทธิพลต่อการใช้เทคโนโลยีการบริการตนเอง Listening to the media influences the use of Self-service technology.					
	ความสำคัญ (Important)					

Question		Very Low <--> Very High				
		1	2	3	4	5
22	ฉันคิดว่าการใช้เทคโนโลยีการบริการตนเองมีบทบาทต่อการเลือกซื้อสินค้าและบริการของฉัน I think the use of self-service technology plays a role in my purchasing of goods and services.					
<b>รับรู้ประโยชน์ (Perceived Usefulness)</b>						
	มีประโยชน์ (Useful)					
23	การใช้เทคโนโลยีการบริการตนเองช่วยให้ฉันซื้อสินค้าได้สำเร็จเร็วขึ้น Using Self-service technology helps me to accomplish things more quickly					
24	การใช้เทคโนโลยีการบริการตนเองช่วยให้ฉันซื้อสินค้าหลายอย่างได้สะดวกมากยิ่งขึ้น Using Self-service technology helps me to perform many things more conveniently					
	ให้ความช่วยเหลือ (Helpful)					
25	ฉันรู้สึกว่าการทำงานจะง่ายขึ้นหลังจากใช้เทคโนโลยีการบริการตนเอง Work becomes easier after using self-service technology.					
<b>ความคาดหวัง (Expectation Confirmation)</b>						
	ประสบการณ์ (Experience)					
26	จากประสบการณ์ของฉัน การใช้เทคโนโลยีการบริการตนเองดีกว่าที่ฉันคาดไว้ My experience with self-service technology was better than what I expected					
27	โดยรวมการใช้เทคโนโลยีการบริการตนเอง เป็นไปตามที่คาดหวัง Overall, most of my expectations toward self-service technology were confirmed					
	การบริการ (Service)					

Question		Very Low <--> Very High				
		1	2	3	4	5
28	การใช้เทคโนโลยีการบริการตนเองสามารถตอบสนองความต้องการของฉันในเรื่องต่างๆ The use of self-service technology can meet my needs in a variety of situations.					
<b>ความสนใจนวัตกรรมส่วนบุคคล (Personal Innovativeness )</b>						
	การทดลอง (Experiment)					
29	ฉันชอบทดลองใช้เทคโนโลยีการบริการตนเอง I like to experiment with using self-service technology					
	พยายาม (Trying)					
30	ฉันไม่ลังเลที่จะทดลองใช้เทคโนโลยีการบริการตนเองใหม่ๆ In general, I am not hesitant to try out new self-service technology.					
<b>ความพึงพอใจของลูกค้า (Customer Satisfaction )</b>						
	ความพอใจ (Satisfied )					
31	ฉันพอใจมากกับการใช้งานเทคโนโลยีการบริการตนเอง I am very satisfied with self-service technology.					
32	ฉันรู้สึกดีกับการใช้งานเทคโนโลยีการบริการตนเอง I am very contented with using self-service technology.					
	ความยินดี (Pleased)					
33	ฉันมีความยินดีในการใช้เทคโนโลยีการบริการตนเอง I am very pleased with using self-service technology.					
34	ฉันรู้สึกยินดีเป็นอย่างยิ่งกับคุณภาพการบริการที่ได้รับจากเทคโนโลยีการบริการตนเอง I am extremely pleased with the quality of service provided by the self-service technology.					
<b>คุณภาพเทคโนโลยีการบริการตนเอง (SST Service Quality)</b>						
	ฟังก์ชันการทำงาน / การปรับแต่ง / ความสะดวก / ความปลอดภัย (Functionality / Customization / Convenience / Security )					

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	Question	Very Low <--> Very High				
		1	2	3	4	5
35	ฉันสามารถใช้บริการเทคโนโลยีการบริการตนเองสำเร็จอย่างรวดเร็ว I can get my service done with the self-service technology in a short time.					
36	การให้บริการของเทคโนโลยีการบริการตนเองมีความชัดเจนเข้าใจง่าย The service process of the self-service technology is clear.					
37	แต่ละฟังก์ชันและรายการบริการของเทคโนโลยีการบริการตนเองมีความถูกต้องไม่มีข้อผิดพลาด Each service item/function of the self-service technology is error-free					
38	บริษัทผู้ให้บริการเทคโนโลยีการบริการตนเองมีความเข้าใจความต้องการเฉพาะของฉัน The self-service technology understands my specific needs					
39	บริษัทผู้ให้บริการเทคโนโลยีการบริการตนเอง เป็นบริษัทที่ดำเนินงานได้ตรงกับความสนใจฉัน The firm's self-service technology has features that are personalized for me.					
40	ช่วงเวลาให้บริการของเทคโนโลยีการบริการตนเอง มีความเหมาะสมสะดวกแก่ลูกค้า The self-service technology has operating hours convenient to customers.					
41	การเข้าถึงเทคโนโลยีการบริการตนเองเป็นเรื่องง่าย และสะดวกสบายในการใช้งาน It is easy and convenient to reach the self-service technology.					
42	ฉันรู้สึกปลอดภัยในการทำธุรกรรมด้วยเทคโนโลยีการบริการตนเอง I feel safe in my transactions with the self-service technology.					
43	บริษัทผู้ให้บริการเทคโนโลยีการบริการตนเองจะมีการระบุนโยบายความเป็นส่วนตัวที่ชัดเจน					

Question		Very Low <--> Very High				
		1	2	3	4	5
	A clear privacy policy is stated when I use the self-service technology.					
	การรับรอง (Assurance)					
44	บริษัทที่ให้บริการเทคโนโลยีการบริการตนเองเป็นบริษัทที่มีชื่อเสียง เป็นที่รู้จัก The firm providing self-service technology is well-known.					
45	บริษัทที่ให้บริการเทคโนโลยีการบริการตนเองเป็นบริษัทที่ได้รับการรับรองมาตรฐาน Self-service technology services company is a certified company.					
	การออกแบบ / ความเพลิดเพลิน (Design / Enjoyment)					
46	การออกแบบเทคโนโลยีการบริการตนเอง สามารถดึงดูดให้ใช้งานได้เป็นอย่างมาก The layout of the self-service technology is esthetically appealing.					
47	การออกแบบเทคโนโลยีการบริการตนเองมีความทันสมัย The self-service technology appears to use up-to-date technology.					
48	การออกแบบฟังก์ชันต่างๆ ของเทคโนโลยีการบริการตนเองมีความน่าสนใจ The operation of the self-service technology is interesting.					
ความเต็มใจที่จะใช้เทคโนโลยีการบริการตนเอง (Willingness to Use SST)						
	ใช้งานต่อเนื่อง (Continuous Use)					
49	ในอนาคตฉันจะใช้เทคโนโลยีการบริการตนเองนี้ในการซื้อสินค้าอย่างเป็นประจำ I will continue using this self-service technology for shopping in the future.					
	ความตั้งใจในการใช้ (Intention to use)					

Question		Very Low <--> Very High				
		1	2	3	4	5
50	<p>ในอีก 6 เดือนข้างหน้า ฉันตั้งใจจะใช้เทคโนโลยีการบริการตนเองอย่างแน่นอน</p> <p>During the next six (6) months, I intend to use Self-service technology innovation</p>					
	ความตั้งใจในการเปิดรับ (Intention to adopt)					
51	<p>ฉันคาดว่า ฉันจะใช้เทคโนโลยีใหม่ๆ ที่ถูกนำเข้ามาใช้ในเทคโนโลยีการบริการตนเอง เช่น AR,VR,MR, Just Walk Out (Amazon Go) เป็นต้น</p> <p>I predict I will use self-service technology in the future such as AR,VR,MR, Just Walk Out (Amazon Go), etc.</p>					
52	<p>ฉันต้องการที่จะนำเทคโนโลยีบริการตนเองที่จะถูกพัฒนาขึ้นนำมาปรับใช้ในอนาคต เช่น AR,VR,MR, Just Walk Out (Amazon Go) เป็นต้น</p> <p>I need to adopt self-service technology in the future such as AR,VR,MR, Just Walk Out (Amazon Go), etc.</p>					

Part 4: Suggestions of respondents

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## APPENDIX E

### INSTRUMENT'S RELIABILITY AND VALIDITY

Five Self-Service Technologies and Omnichannel experts checked the quality of the questionnaires in this research. The instruments for the IOC have been determined for each question and attribute. A formula to calculate the value (R. C. Turner & Carlson, 2003)

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

Where

*IOC*: All the experts' and specialists' points are summarized.

*N*: Number of specialists and experts

1: The questions have been measured for objectives.

0: Not confident in the questions have been measured for objectives.

-1: The questions have not been measured for objectives.

The value of the IOC ranges from -1 to +1. A good question should, therefore, be concluded at 1. Every question has an IOC of under 0.50 and should be revised or removed.

1: The experts agree that the questions are in accordance with the content.

0: The experts are not confident that the questions are in accordance with the content.

-1: The experts agree that the questions are not in accordance with the content.

The IOC standards criterion is as follows:

- a. The validity factor of questions with IOC values between 0.5 and 1.00.
- b. Questions with an IOC value of less than 0.5 must be changed and cannot be included.

The consistency and validity of the instrument have verified the questionnaires by one expert and two professors with knowledge and experience in business and technology to review, consider, and advise the questionnaire details as simple to comprehend and achieve with the point of research view. Firstly, Mr. Adisorn Kamontawikul, Associate Director at True Corporation has expertise in emerging technology. Secondly, Dr. Paneepan Sombat, the Rajamangala University of Technology Tawan-ok specialist in information systems. Lastly, Dr. Vasu Keerativutisest, King

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Mongkut's Institute of Technology Ladkrabang specializes in Business and Advanced Technology Management. Three experts examined the questionnaire using expert scores to find the consistency index between the question and the index of item objective congruence (IOC).

### ส่วนที่ 1: ข้อมูลส่วนบุคคลของผู้ตอบ (Part 1: Personal Data of Respondent)

#### 1. เพศ (Gender)

ชาย (Male)

หญิง (Female)

#### 2. อายุ (Age)

ต่ำกว่า 21 ปี (Under 21 years old)

ระหว่าง 21 – 30 ปี (21 – 30 years old)

ระหว่าง 31 – 40 ปี (31 – 40 years old)

ระหว่าง 41 – 50 ปี (41 – 50 years old)

ระหว่าง 51 – 60 ปี (51 – 60 years old)

มากกว่า 60 ปี (Older than 60 years old)

#### 3. การศึกษาสูงสุด (Highest education)

ต่ำกว่าปริญญาตรี (Under a bachelor's degree)

ปริญญาตรี (Bachelor's degree)

สูงกว่าปริญญาตรี (Higher than a bachelor's degree)

#### 4. อาชีพ (Occupation)

อาชีพอิสระ (Self-employed)

พนักงานบริษัท (Company employee)

ข้าราชการ (Government officer)

พนักงานรัฐวิสาหกิจ (State enterprise employee)

ว่างงาน / เกษียณ (Unemployed/Retired)

อื่นๆ (โปรดระบุ) Other (please state): \_\_\_\_\_

#### 5. รายได้ต่อเดือน (Salary per month)

น้อยกว่า 35,001 บาท (Not more than 35,000 Baht)

ระหว่าง 35,001 – 70,000 บาท (35,001 – 70,000 Baht)

ระหว่าง 70,001 – 105,000 บาท (70,001 – 105,000 Baht)

มากกว่า 105,000 บาท (More than 105,000 Baht)

#### 6. คุณอาศัยอยู่ภูมิภาคใดในประเทศไทย (Where are you living in the region of Thailand?)

ภาคเหนือ (Northern)

ภาคตะวันออกเฉียงเหนือ (Northeastern)

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- ภาคกลาง (Central)       ภาคตะวันออก (Eastern)  
 ภาคตะวันตก (Western)       ภาคใต้ (Southern)  
 กรุงเทพมหานคร (Bangkok)

**ส่วนที่ 2: คำถามเกี่ยวกับความรู้พื้นฐานด้านนวัตกรรมเทคโนโลยีการบริการตนเองทางออมนิ  
แชนเนล**

**Part 2: Questions about the basic knowledge of Self-Service Technologies Innovation on  
Omnichannel**

7. คุณใช้เทคโนโลยีการบริการตนเองบ่อยแค่ไหน? (How often are you using the Self-Service technology?)

- ทุกวัน (Everyday)       4-6 วันต่อสัปดาห์ (4-6 days per week)  
 1-3 วันต่อสัปดาห์ (1-3 days per week)       ไม่เคยใช้บริการ (Never used)

8. คุณเคยใช้เทคโนโลยีบริการตนเองทางช่องทางใด (ตอบได้มากกว่า 1 ข้อ) (Which self-service technology have you ever used?)

- ออฟไลน์ (offline) : การบริการชำระเงินด้วยตนเองที่ซูเปอร์มาร์เก็ต, ร้านสะดวกซื้อ หรือผ่านตู้ kiosk บริเวณร้านอาหาร เช่น Big C, Lotus, TOPS Supermarket, 7-Eleven, Gourmet, McDonald's เป็นต้น (Offline : Self-service payment at supermarkets, convenience stores, or via kiosk at restaurants such as Big C, Lotus, TOPS Supermarket, 7-Eleven, Gourmet, McDonald's etc.)
- ออนไลน์ (online) : การซื้อสินค้าผ่านระบบออนไลน์ เช่น Lazada, Shopee, Central online, JD central, Advice.co.th, BigC.co.th, makroclick.com , การผสมผสานโลกแห่งความเป็นจริงและโลกเสมือนจริง (AR: Augmented Reality) และ (VR: Virtual Reality) โดยวัตถุเสมือนที่วางนั้น อาจจะเป็น ภาพ วิดีโอ เสียง ข้อมูลต่าง ๆ ที่ประมวลผลมาจากคอมพิวเตอร์ มือถือ เป็นการสร้างวัตถุเสมือนร่วมกับโลกแห่งความเป็นจริงสำหรับการซื้อสินค้า เช่น AR ของ Shopee, AR ของ IKEA, AR ของ Artistry , Virtual Expo , การจำลองภาพให้เหมือนจริงแบบ 360 องศา ต้องใช้ควบคู่ไปกับอุปกรณ์แว่นตา VR สำหรับการซื้อสินค้า เป็นต้น (Online : Shopping through online systems such as Lazada, Shopee, Central online, JD central, Advice.co.th, BigC.co.th, makroclick.com, merging the real world and the virtual world (AR: Augmented Reality). and (VR: Virtual Reality) by virtual objects that may be images, videos, sounds, various information processed from computers, mobile phones to create virtual objects together with the real world for purchases such as AR of Shopee,

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IKEA AR, Artistry's AR, Virtual Expo, 360-degree visualization must be used in conjunction with VR for purchases, etc.)

Other \_\_\_\_\_

ส่วนที่ 3 คำถามเกี่ยวกับความเต็มใจที่จะใช้นวัตกรรมเทคโนโลยีการบริการตนเองทางออมนิแชนเนล (Omnichannel) สำหรับธุรกิจค้าปลีกในประเทศไทย

Part 3: Questions about Willingness to Use Self-Service Technologies Innovation on Omnichannel for Retail Business in Thailand.

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
ความคุ้มค่า (Price Value)					
	ราคา (Price)				
9	การใช้เทคโนโลยีการบริการตนเอง มีความคุ้มค่ากับเงินที่ใช้จ่าย Using self-service technology is a good value for the money.	0	1	1	0.66
คุณค่า (Value)					
10	การใช้เทคโนโลยีการบริการตนเอง สามารถสร้างมูลค่าให้แก่ราคาสินค้าต่างๆ ได้อย่างเหมาะสม Using self-service technology provides a good value for properly pricing various products.	1	1	1	1
11	ในการใช้เทคโนโลยีการบริการตนเองต้องใช้ความพยายามน้อยกว่าเมื่อเทียบกับพนักงานเก็บเงินแบบดั้งเดิม	1	1	1	1

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
	Compared to traditional cashiers, self-service technology requires less effort				
<b>สภาพสิ่งอำนวยความสะดวกในการใช้งาน (Facilitating Conditions )</b>					
	ทรัพยากร (Resources )				
12	ฉันมีทรัพยากร/อุปกรณ์ที่จำเป็นสำหรับการใช้เทคโนโลยีการบริการตนเอง I have the resources necessary to use self-service technology.	1	1	1	1
13	ฉันมีทรัพยากร/อุปกรณ์ที่พร้อมต่อการใช้เทคโนโลยีการบริการตนเอง I have a resource/device ready to use the self-service technology.	1	1	1	1
	องค์ความรู้ (Knowledge)				
14	ฉันมีความรู้ที่จำเป็นเพียงพอต่อการใช้เทคโนโลยีการบริการตนเอง I have the knowledge necessary to use self-service technology.	1	1	1	1
15	ฉันใช้เวลาไม่มากในการเรียนรู้วิธีการใช้เทคโนโลยีการบริการตนเอง I did not spend much time learning how to use self-service technology. spend less time for learning	0	1	1	0.66
	ความเข้ากันได้ (Compatible )				
16	ฉันสามารถใช้เทคโนโลยีการบริการตนเองร่วมกับเทคโนโลยีอื่นที่ใช้งานอยู่ได้	1	1	1	1

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
	Self-service technology is compatible with other technologies I use.				
17	เทคโนโลยีการบริการตนเองมีความคล้ายกับเทคโนโลยีอื่นที่ฉันใช้อยู่ The self-service technology is similar to other technologies I use	1	1	1	1
	ความช่วยเหลือ (Assistance)				
18	ฉันสามารถขอความช่วยเหลือจากผู้อื่นได้ เมื่อมีปัญหาในการใช้เทคโนโลยีการบริการตนเอง I can get help from others when I have difficulties using self-service technology.	0	1	1	0.66
19	คู่มือและคำแนะนำของเทคโนโลยีการบริการตนเองมีความเหมาะสม Guidance will be available to me in the use of self-service technology.	0	1	1	0.66
20	เมื่อเกิดข้อผิดพลาดจากการใช้เทคโนโลยีบริการตนเอง ฉันสามารถขอความช่วยเหลือจากพนักงานหรือแจ้งปัญหาการใช้งานได้ It is possible to get help from an employee in dealing with self-service technology.	1	1	1	1
<b>อิทธิพลทางสังคม (Social Influence )</b>					
	อิทธิพล (Influence )				

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
21	การรับข้อมูลจากสื่อต่างๆ มีอิทธิพลต่อการใช้เทคโนโลยีการบริการตนเอง Listening to the media influences the use of Self-service technology.	1	1	1	1
	ความสำคัญ (Important)				
22	ฉันคิดว่าการใช้เทคโนโลยีการบริการตนเองมีบทบาทต่อการเลือกซื้อสินค้าและบริการของฉัน I think the use of self-service technology plays a role in my purchasing of goods and services.	1	0	1	0.66
<b>รับรู้ประโยชน์ (Perceived Usefulness)</b>					
	มีประโยชน์ (Useful)				
23	การใช้เทคโนโลยีการบริการตนเองช่วยให้ฉันซื้อสินค้าได้สำเร็จเร็วขึ้น Using Self-service technology helps me to accomplish things more quickly	1	1	1	1
24	การใช้เทคโนโลยีบริการตนเองช่วยให้ฉันซื้อสินค้าหลายอย่างได้สะดวกมากยิ่งขึ้น Using Self-service technology helps me to perform many things more conveniently	0	1	1	0.66
	ให้ความช่วยเหลือ (Helpful)				
25	ฉันรู้สึกว่าการทำงานจะง่ายขึ้นหลังจากใช้เทคโนโลยีการบริการตนเอง	1	1	0	0.66

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
	Work becomes easier after using self-service technology.				
<b>ความคาดหวัง (Expectation Confirmation )</b>					
	ประสบการณ์ (Experience )				
26	จากประสบการณ์ของฉัน การใช้เทคโนโลยีการบริการตนเองดีกว่าที่ฉันคาดไว้ My experience with self-service technology was better than what I expected	0	1	1	0.66
27	โดยรวมการใช้เทคโนโลยีการบริการตนเอง เป็นไปตามที่คาดหวัง Overall, most of my expectations toward self-service technology were confirmed	1	1	1	1
	การบริการ (Service)				
28	การใช้เทคโนโลยีการบริการตนเอง สามารถตอบสนองความต้องการของฉันในเรื่องต่างๆ The use of self-service technology can meet my needs in a variety of situations.	0	1	1	0.66
<b>ความสนใจนวัตกรรมส่วนบุคคล (Personal Innovativeness )</b>					
	การทดลอง (Experiment)				
29	ฉันชอบทดลองใช้เทคโนโลยีการบริการตนเอง I like to experiment with using self-service technology	0	1	1	0.66
	พยายาม (Trying)				

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
30	ฉันไม่ลังเลที่จะทดลองใช้เทคโนโลยีการบริการตนเองใหม่ ๆ In general, I am not hesitant to try out new self-service technology.	0	1	1	0.66
<b>ความพึงพอใจของลูกค้า (Customer Satisfaction)</b>					
ความพอใจ (Satisfied)					
31	ฉันพอใจมากกับการใช้งานเทคโนโลยีการบริการตนเอง I am very satisfied with self-service technology.	0	1	1	0.66
32	ฉันรู้สึกดีกับการใช้งานเทคโนโลยีการบริการตนเอง I am very contented with using self-service technology.	0	1	1	0.66
ความยินดี (Pleased)					
33	ฉันมีความยินดีในการใช้เทคโนโลยีการบริการตนเอง I am very pleased with using self-service technology.	1	1	1	1
34	ฉันรู้สึกยินดีเป็นอย่างยิ่งกับคุณภาพการบริการที่ได้รับจากเทคโนโลยีการบริการตนเอง I am extremely pleased with the quality of service provided by the self-service technology.	0	1	1	0.66
<b>คุณภาพเทคโนโลยีการบริการตนเอง (SST Service Quality)</b>					
ฟังก์ชันการทำงาน / การปรับแต่ง / ความสะดวก / ความปลอดภัย					

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
	(Functionality / Customization / Convenience / Security )				
35	ฉันสามารถใช้บริการเทคโนโลยีการบริการตนเองสำเร็จอย่างรวดเร็ว I can get my service done with the self-service technology in a short time.	1	1	1	1
36	การให้บริการของเทคโนโลยีการบริการตนเองมีความชัดเจน เข้าใจง่าย The service process of the self-service technology is clear.	0	1	1	0.66
37	แต่ละฟังก์ชันและรายการบริการของเทคโนโลยีการบริการตนเองมีความถูกต้องไม่มีข้อผิดพลาด Each service item/function of the self-service technology is error-free	1	1	1	1
38	บริษัทผู้ให้บริการเทคโนโลยีการบริการตนเองมีความเข้าใจ ความต้องการเฉพาะของฉัน The self-service technology understands my specific needs	0	1	1	0.66
39	บริษัทผู้ให้บริการเทคโนโลยีการบริการตนเอง เป็นบริษัทที่ดำเนินงานได้ตรงกับความต้องการของฉัน The firm's self-service technology has features that are personalized for me.	0	1	1	0.66

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
40	<p>ช่วงเวลาให้บริการของเทคโนโลยีการบริการตนเอง มีความเหมาะสม สะดวกแก่ลูกค้า</p> <p>The self-service technology has operating hours convenient to customers.</p>	1	1	1	1
41	<p>การเข้าถึงเทคโนโลยีการบริการตนเองเป็นเรื่องง่าย และสะดวกสบายในการใช้งาน</p> <p>It is easy and convenient to reach the self-service technology.</p>	1	1	1	1
42	<p>ฉันรู้สึกปลอดภัยในการทำธุรกรรมด้วยเทคโนโลยีการบริการตนเอง</p> <p>I feel safe in my transactions with the self-service technology.</p>	0	1	1	0.66
43	<p>บริษัทผู้ให้บริการเทคโนโลยีการบริการตนเองจะมีการระบุนโยบายความเป็นส่วนตัวที่ชัดเจน</p> <p>A clear privacy policy is stated when I use the self-service technology.</p>	1	1	1	1
	การรับรอง (Assurance)				
44	<p>บริษัทที่ให้บริการเทคโนโลยีการบริการตนเองเป็นบริษัทที่มีชื่อเสียงเป็นที่รู้จัก</p> <p>The firm providing self-service technology is well-known.</p>	1	1	1	1
45	<p>บริษัทที่ให้บริการเทคโนโลยีการบริการตนเองเป็นบริษัทที่ได้รับการรับรองมาตรฐาน</p>	0	1	1	0.66

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
	Self-service technology services company is a certified company.				
	การออกแบบ / ความเพลิดเพลิน (Design / Enjoyment)				
46	การออกแบบเทคโนโลยีการบริการตนเอง สามารถดึงดูดให้ใช้งานได้เป็นอย่างมาก The layout of the self-service technology is esthetically appealing.	0	1	1	0.66
47	การออกแบบเทคโนโลยีการบริการตนเองมีความทันสมัย The self-service technology appears to use up-to-date technology.	0	1	1	0.66
48	การออกแบบฟังก์ชันต่างๆ ของเทคโนโลยีการบริการตนเองมีความน่าสนใจ The operation of the self-service technology is interesting.	0	1	1	0.66
ความเต็มใจที่จะใช้เทคโนโลยีการบริการตนเอง (Willingness to Use SST)					
	ใช้งานต่อเนื่อง (Continue Use)				
49	ในอนาคตฉันจะใช้เทคโนโลยีการบริการตนเองนี้ในการซื้อสินค้าอย่างเป็นประจำ I will continue using this self-service technology for shopping in the future.	1	1	1	1
	ความตั้งใจในการใช้ (Intend to use)				

		Opinion of			IOC
		Expert 1	Expert 2	Expert 3	
50	<p>ในอีก 6 เดือนข้างหน้า ฉันตั้งใจจะ ใช้เทคโนโลยีการบริการตนเอง อย่างแน่นอน</p> <p>During the next six (6) months, I intend to use Self-service technology innovation</p>	1	1	1	1
	ความตั้งใจในการเปิดรับ (Intend to adopt)				
51	<p>ฉันคาดว่า ฉันจะใช้เทคโนโลยี ใหม่ๆ ที่ถูกนำเข้ามาใช้ใน เทคโนโลยีการบริการตนเอง เช่น AR,VR,MR, Just walk out (Amazon go) เป็นต้น</p> <p>I predict I will use self-service technology in the future such as AR,VR,MR, Just walk out (Amazon go), etc.</p>	1	1		1
52	<p>ฉันต้องการที่จะนำเทคโนโลยี บริการตนเองที่จะถูกพัฒนาขึ้น นำมาปรับใช้ในอนาคต เช่น AR,VR,MR, Just walk out (Amazon go) เป็นต้น</p> <p>I need to adopt self-service technology in the future such as AR,VR,MR, Just walk out (Amazon go), etc.</p>	1	1	1	1

Cronbach's alpha coefficient has been used to measure reliability estimates. The constructs and subscales are higher than the minimum desirable of 0.60, and these findings thus exceed Kline

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(2011) indicated that the reliability is considered excellent when it is  $>0.9$ , adequate if  $>0.8$ , and acceptable if  $>0.5$ . The constructs exceed the minimum acceptable threshold at 0.684, which is accepted because it is above 0.60. First with a pilot study sample ( $n=30$ ). The results are showed below:

#### Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded <sup>a</sup>	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

#### Reliability Statistics

Cronbach's Alpha	N of Items
.919	44

Table of Results reliability test.

Latent variable	Observed variable	Loadings	Cronbach's alpha
FC	Resources	0.77	.900
	Knowledge	0.85	
	Compatible	0.82	
	Assistance	0.59	
PV	Price	0.72	.793
	Value	0.81	
SI	Influence	0.64	.684
	Important	0.75	

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Latent variable	Observed variable	Loadings	Cronbach's alpha
PU	Useful	0.84	.797
	Helpful	0.78	
EC	Experience	0.85	.817
	Service	0.77	
PI	Experiment X Influence	0.93	.816
	Experiment X Important	0.62	
	Trying X Influence	0.71	
	Trying X Important	0.47	
CS	Satisfied	0.88	.899
	Pleased	0.91	
SQ	Functionality / Customization / Convenience / Security	0.90	.910
	Assurance	0.83	
	Design / Enjoyment	0.84	
WTU	Continue Use	0.76	.837
	Intend to use	0.77	
	Intend to adopt	0.77	

# APPENDIX F

## CFA ANALYSIS RESULT

Analysis Summary

Date and Time

Date: 18 มิถุนายน 2565

Time: 17:45:29

Title

Groups

Group number 1 (Group number 1)

Notes for Group (Group number 1)

The model is recursive.

Sample size = 460

Variable Summary (Group number 1)

Your model contains the following variables (Group number 1)

Observed, endogenous variables

WTU2

EC\_Experience

EC5

SI3

SI2

PU\_Useful

PU6

SQ\_FCCSMean

SQ\_Assurance

SQ\_DEMean

CS\_Pleased

CS\_Satisfied

WTU5

WTU\_IntendAdopt

PV2

PV\_Value

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FC\_ResourcesMean

FC\_KnowledgeMean

FC\_CompatibleMean

PI4xSI2

PI4xSI3

PI1xSI2

PI1xSI3

FC\_AssistanceMean

Unobserved, exogenous variables

WTU

e22

EC

e15

e16

SI

e8

e7

PU

e13

e14

SQ

e21

e20

e19

CS

e17

e18

e23

e24

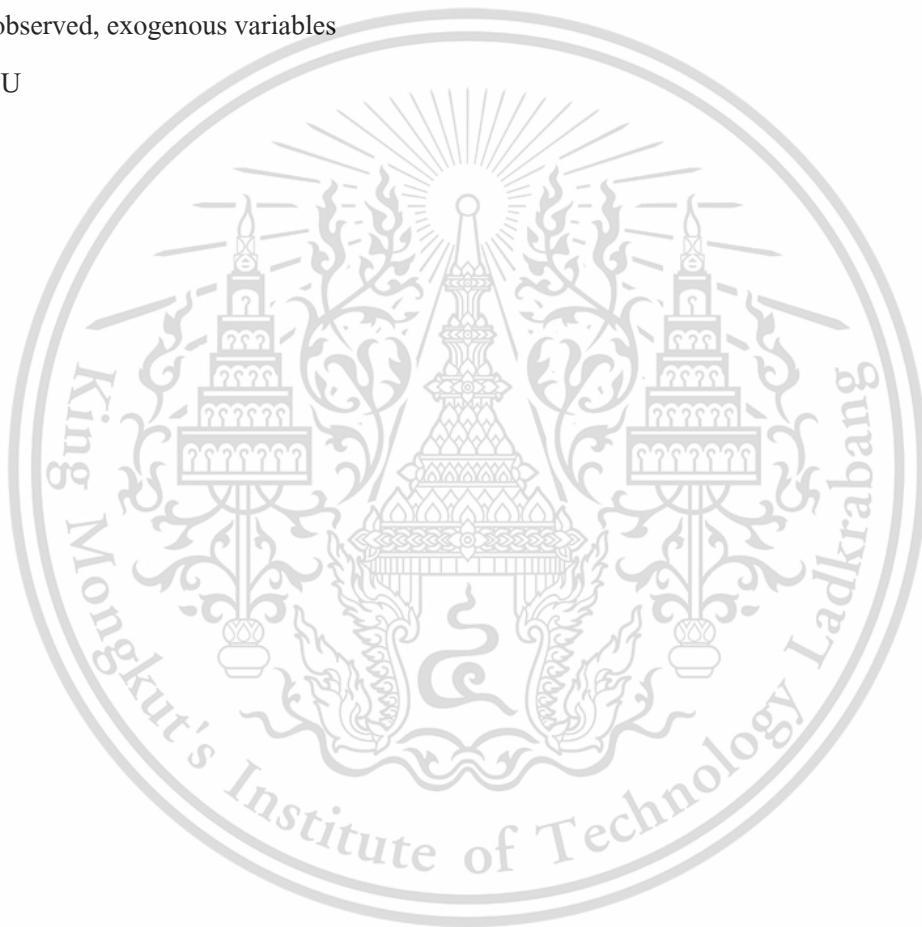
PV

e5

e6

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FC

e1

e2

e3

PIxSI

e12

e11

e10

e9

e4

Variable counts (Group number 1)

Number of variables in your model: 57

Number of observed variables: 24

Number of unobserved variables: 33

Number of exogenous variables: 33

Number of endogenous variables: 24

Parameter Summary (Group number 1)

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	33	0	0	0	0	33
Labeled	0	0	0	0	0	0
Unlabeled	15	40	33	0	0	88
Total	48	40	33	0	0	121

Models

Default model (Default model)

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments: 300

Number of distinct parameters to be estimated: 88

Degrees of freedom (300 - 88): 212

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Result (Default model)

Minimum was achieved

Chi-square = 412.154

Degrees of freedom = 212

Probability level = .000

Group number 1 (Group number 1 - Default model)

Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
WTU2	<---	WTU	1.000				
EC_Experience	<---	EC	1.000				
EC5	<---	EC	.967	.049	19.808	***	
SI3	<---	SI	1.000				
SI2	<---	SI	.926	.070	13.134	***	
PU_Useful	<---	PU	1.000				
PU6	<---	PU	1.035	.055	18.706	***	
SQ_FCCSMean	<---	SQ	1.000				
SQ_Assurance	<---	SQ	1.004	.039	25.467	***	
SQ_DEMean	<---	SQ	.964	.037	26.141	***	
CS_Pleased	<---	CS	1.051	.038	27.412	***	
CS_Satisfied	<---	CS	1.000				
WTU5	<---	WTU	1.077	.058	18.625	***	
WTU_IntendAdopt	<---	WTU	.971	.059	16.586	***	
PV2	<---	PV	1.068	.068	15.689	***	
PV_Value	<---	PV	1.000				
FC_ResourcesMean	<---	FC	.903	.044	20.572	***	
FC_KnowledgeMean	<---	FC	.949	.041	22.950	***	
FC_CompatibleMean	<---	FC	1.000				

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			Estimate	S.E.	C.R.	P	Label
PI4xSI2	<---	PIxSI	1.000				
PI4xSI3	<---	PIxSI	1.140	.093	12.289	***	
PI1xSI2	<---	PIxSI	1.319	.096	13.768	***	
PI1xSI3	<---	PIxSI	.907	.067	13.596	***	
FC_AssistanceMean	<---	FC	.901	.043	20.972	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
WTU2	<---	WTU	.758
EC_Experience	<---	EC	.876
EC5	<---	EC	.790
SI3	<---	SI	.755
SI2	<---	SI	.688
PU_Useful	<---	PU	.846
PU6	<---	PU	.787
SQ_FCCSMean	<---	SQ	.933
SQ_Assurance	<---	SQ	.836
SQ_DEMean	<---	SQ	.846
CS_Pleased	<---	CS	.919
CS_Satisfied	<---	CS	.888
WTU5	<---	WTU	.780
WTU_IntendAdopt	<---	WTU	.797
PV2	<---	PV	.805
PV_Value	<---	PV	.818
FC_ResourcesMean	<---	FC	.794
FC_KnowledgeMean	<---	FC	.846
FC-CompatibleMean	<---	FC	.875
PI4xSI2	<---	PIxSI	.714
PI4xSI3	<---	PIxSI	.798

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			Estimate
PI1xSI2	<---	PIxSI	.922
PI1xSI3	<---	PIxSI	.618
FC_AssistanceMean	<---	FC	.794

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
PV	<-->	FC	.210	.020	10.255	***	
SI	<-->	FC	.211	.021	10.140	***	
FC	<-->	PIxSI	-.068	.020	-3.343	***	
PU	<-->	FC	.196	.018	11.052	***	
EC	<-->	FC	.210	.019	11.203	***	
CS	<-->	FC	.184	.018	10.487	***	
SQ	<-->	FC	.198	.017	11.422	***	
WTU	<-->	FC	.200	.019	10.338	***	
SI	<-->	PV	.191	.022	8.849	***	
PV	<-->	PIxSI	-.038	.021	-1.761	.078	
PU	<-->	PV	.169	.018	9.317	***	
EC	<-->	PV	.188	.019	9.667	***	
CS	<-->	PV	.172	.018	9.302	***	
SQ	<-->	PV	.179	.018	9.906	***	
WTU	<-->	PV	.164	.019	8.544	***	
SI	<-->	PIxSI	-.109	.024	-4.622	***	
SI	<-->	PU	.203	.020	10.332	***	
EC	<-->	SI	.203	.020	10.026	***	
SI	<-->	CS	.184	.019	9.608	***	
SI	<-->	SQ	.189	.019	10.122	***	
WTU	<-->	SI	.185	.020	9.110	***	
PU	<-->	PIxSI	-.104	.020	-5.095	***	
EC	<-->	PIxSI	-.088	.021	-4.204	***	

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			Estimate	S.E.	C.R.	P	Label
CS	<-->	PIxSI	-.074	.020	-3.750	***	
SQ	<-->	PIxSI	-.082	.019	-4.225	***	
WTU	<-->	PIxSI	-.066	.020	-3.301	***	
EC	<-->	PU	.202	.018	11.422	***	
PU	<-->	CS	.192	.017	11.256	***	
PU	<-->	SQ	.176	.016	11.039	***	
WTU	<-->	PU	.188	.018	10.392	***	
EC	<-->	CS	.213	.018	11.668	***	
EC	<-->	SQ	.209	.017	12.001	***	
WTU	<-->	EC	.208	.019	10.723	***	
SQ	<-->	CS	.214	.017	12.343	***	
WTU	<-->	CS	.203	.019	10.736	***	
WTU	<-->	SQ	.212	.019	11.374	***	
e11	<-->	e10	-.336	.048	-7.020	***	
e1	<-->	e2	.023	.008	2.933	.003	
e20	<-->	e19	.015	.006	2.321	.020	
e22	<-->	e23	.037	.013	2.913	.004	

Correlations: (Group number 1 - Default model)

			Estimate
PV	<-->	FC	.721
SI	<-->	FC	.761
FC	<-->	PIxSI	-.169
PU	<-->	FC	.773
EC	<-->	FC	.765
CS	<-->	FC	.675
SQ	<-->	FC	.743
WTU	<-->	FC	.753
SI	<-->	PV	.675

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			Estimate
PV	<-->	PIxSI	-.092
PU	<-->	PV	.653
EC	<-->	PV	.671
CS	<-->	PV	.617
SQ	<-->	PV	.657
WTU	<-->	PV	.606
SI	<-->	PIxSI	-.280
SI	<-->	PU	.822
EC	<-->	SI	.762
SI	<-->	CS	.696
SI	<-->	SQ	.729
WTU	<-->	SI	.718
PU	<-->	PIxSI	-.290
EC	<-->	PIxSI	-.227
CS	<-->	PIxSI	-.191
SQ	<-->	PIxSI	-.217
WTU	<-->	PIxSI	-.177
EC	<-->	PU	.826
PU	<-->	CS	.790
PU	<-->	SQ	.737
WTU	<-->	PU	.795
EC	<-->	CS	.811
EC	<-->	SQ	.813
WTU	<-->	EC	.815
SQ	<-->	CS	.838
WTU	<-->	CS	.800
WTU	<-->	SQ	.853
e11	<-->	e10	-1.246

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			Estimate
e1	<-->	e2	.194
e20	<-->	e19	.148
e22	<-->	e23	.200

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
WTU	.247	.028	8.937	***	
EC	.264	.024	11.199	***	
SI	.269	.032	8.309	***	
PU	.227	.021	10.543	***	
SQ	.250	.019	12.948	***	
CS	.261	.022	11.822	***	
PV	.297	.031	9.516	***	
FC	.285	.025	11.530	***	
PIxSI	.567	.070	8.120	***	
e22	.183	.016	11.572	***	
e15	.080	.010	8.166	***	
e16	.148	.012	11.898	***	
e8	.203	.021	9.702	***	
e7	.256	.022	11.755	***	
e13	.090	.010	9.165	***	
e14	.149	.013	11.553	***	
e21	.037	.005	7.280	***	
e20	.109	.009	11.983	***	
e19	.092	.008	11.756	***	
e17	.053	.007	7.507	***	
e18	.070	.007	9.718	***	
e23	.184	.017	11.115	***	
e24	.134	.012	11.280	***	

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	Estimate	S.E.	C.R.	P	Label
e5	.184	.021	8.964	***	
e6	.146	.017	8.398	***	
e1	.136	.011	12.101	***	
e2	.102	.009	11.000	***	
e3	.088	.009	10.247	***	
e12	.543	.046	11.931	***	
e11	.420	.061	6.870	***	
e10	.173	.060	2.906	.004	
e9	.755	.055	13.766	***	
e4	.136	.011	12.654	***	

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
FC_AssistanceMean	.630
PI1xSI3	.382
PI1xSI2	.850
PI4xSI3	.637
PI4xSI2	.510
FC_CompatibleMean	.765
FC_KnowledgeMean	.715
FC_ResourcesMean	.631
PV_Value	.670
PV2	.648
WTU_IntendAdopt	.636
WTU5	.609
CS_Satisfied	.788
CS_Pleased	.845
SQ_DEMean	.716
SQ_Assurance	.699

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	Estimate
SQ_FCCSMean	.871
PU6	.619
PU_Useful	.716
SI2	.474
SI3	.570
EC5	.625
EC_Experience	.767
WTU2	.574

Notes for Group/Model (Group number 1 - Default model)

The following covariance matrix is not positive definite (Group number 1 - Default model)

	e10	e11
e10	.173	
e11	-.336	.420

This solution is not admissible.

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

			M.I.	Par Change
e4	<-->	FC	6.806	-.016
e4	<-->	PV	8.762	.025
e4	<-->	SQ	34.214	.031
e4	<-->	PU	8.781	-.018
e4	<-->	WTU	8.522	-.018
e11	<-->	CS	9.116	.036
e11	<-->	SI	8.938	-.052
e11	<-->	e4	7.233	-.041
e3	<-->	CS	7.713	.014
e3	<-->	SQ	14.869	-.018
e3	<-->	WTU	7.140	.015

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			M.I.	Par Change
e2	<-->	PV	4.717	-.016
e2	<-->	CS	4.302	-.010
e1	<-->	SQ	4.475	-.011
e6	<-->	EC	4.308	-.015
e6	<-->	e4	13.053	.031
e5	<-->	EC	4.541	.017
e5	<-->	e9	4.218	-.042
e5	<-->	e2	4.018	-.016
e24	<-->	e9	4.459	-.035
e23	<-->	e4	11.563	-.028
e18	<-->	e11	4.801	.027
e18	<-->	e2	5.815	-.012
e18	<-->	e1	4.287	.011
e17	<-->	e3	5.101	.011
e19	<-->	SQ	4.247	-.008
e19	<-->	PU	9.490	.015
e19	<-->	WTU	7.770	.014
e19	<-->	e1	7.949	.016
e19	<-->	e24	9.577	.019
e20	<-->	CS	4.215	-.010
e20	<-->	SQ	4.561	.009
e20	<-->	e18	4.978	-.011
e21	<-->	CS	6.915	.010
e21	<-->	PU	7.437	-.011
e21	<-->	e4	27.044	.025
e21	<-->	e1	13.393	-.017
e21	<-->	e5	4.076	-.012
e21	<-->	e17	4.125	.007

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			M.I.	Par Change
e14	<-->	SQ	4.494	.012
e14	<-->	e12	4.021	-.029
e14	<-->	e2	9.672	.021
e14	<-->	e1	9.850	-.024
e13	<-->	e4	5.452	-.016
e13	<-->	e1	18.101	.027
e13	<-->	e19	13.266	.019
e13	<-->	e21	14.837	-.016
e7	<-->	e14	6.063	-.027
e7	<-->	e13	4.192	.019
e8	<-->	e9	10.155	.066
e8	<-->	e11	16.320	-.081
e16	<-->	e19	4.635	-.014
e15	<-->	e9	5.867	-.034
e15	<-->	e5	6.448	.021
e15	<-->	e17	5.270	-.011
e22	<-->	e9	6.417	.045

Variances: (Group number 1 - Default model)

	M.I.	Par Change

Regression Weights: (Group number 1 - Default model)

			M.I.	Par Change
FC_AssistanceMean	<---	PV	5.854	.090
FC_AssistanceMean	<---	SQ	8.801	.114
FC_AssistanceMean	<---	PI4xSI3	5.435	-.040
FC_AssistanceMean	<---	PV_Value	12.322	.098
FC_AssistanceMean	<---	SQ_DEMean	4.528	.069
FC_AssistanceMean	<---	SQ_Assurance	8.105	.088
FC_AssistanceMean	<---	SQ_FCCSMean	16.636	.142

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			M.I.	Par Change
PI1xSI3	<---	FC	7.404	-.213
PI1xSI3	<---	PV	6.063	-.198
PI1xSI3	<---	CS	4.904	-.181
PI1xSI3	<---	SQ	5.274	-.190
PI1xSI3	<---	PU	6.613	-.230
PI1xSI3	<---	EC	9.122	-.249
PI1xSI3	<---	WTU	8.192	-.245
PI1xSI3	<---	FC_CompatibleMean	7.351	-.178
PI1xSI3	<---	FC_KnowledgeMean	5.099	-.151
PI1xSI3	<---	FC_ResourcesMean	6.131	-.163
PI1xSI3	<---	PV2	8.020	-.157
PI1xSI3	<---	WTU_IntendAdopt	10.769	-.217
PI1xSI3	<---	WTU5	7.988	-.165
PI1xSI3	<---	CS_Satisfied	4.859	-.153
PI1xSI3	<---	SQ_DEMean	5.346	-.162
PI1xSI3	<---	PU_Useful	5.505	-.167
PI1xSI3	<---	EC_Experience	11.836	-.235
PI1xSI2	<---	FC	4.654	.143
PI1xSI2	<---	FC_CompatibleMean	4.558	.119
PI1xSI2	<---	SI2	5.495	.114
PI4xSI3	<---	CS	5.010	.176
PI4xSI3	<---	CS_Satisfied	7.630	.185
PI4xSI3	<---	CS_Pleased	4.905	.146
PI4xSI3	<---	SI3	6.239	-.140
PI4xSI2	<---	PU6	4.575	-.115
FC_KnowledgeMean	<---	PV2	4.876	-.049
FC_KnowledgeMean	<---	CS_Satisfied	5.512	-.065
FC_ResourcesMean	<---	PU_Useful	6.966	.083

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			M.I.	Par Change
PV_Value	<---	FC_AssistanceMean	4.353	.075
SQ_DEMean	<---	PU	4.710	.073
SQ_DEMean	<---	FC_ResourcesMean	8.368	.071
SQ_DEMean	<---	WTU_IntendAdopt	8.168	.071
SQ_DEMean	<---	PU_Useful	11.245	.089
SQ_FCCSMean	<---	FC_AssistanceMean	5.154	.045
SQ_FCCSMean	<---	FC_ResourcesMean	7.598	-.054
SQ_FCCSMean	<---	PU_Useful	6.491	-.054
PU_Useful	<---	FC_ResourcesMean	6.007	.067
SI3	<---	PI4xSI3	6.340	-.056

#### Minimization History (Default model)

Iteration		Negative eigenvalues	Condition #	Smallest eigenvalue	Diameter	F	NTries	Ratio
0	e	47		-.771	9999.000	8108.099	0	9999.000
1	e*	40		-.580	3.171	4086.825	20	.563
2	e*	23		-.294	1.079	2494.540	5	.883
3	e*	0	19076.979		1.092	1502.514	5	.613
4	e	1		-1.436	1.241	1248.365	4	.000
5	e	1		-.202	.389	746.015	7	1.032
6	e	0	483.448		.720	497.937	5	.860
7	e	0	509.099		.633	425.886	1	1.087
8	e	0	626.401		.319	412.539	1	1.074
9	e	0	675.317		.071	412.156	1	1.037
10	e	0	674.608		.004	412.154	1	1.003
11	e	0	676.082		.000	412.154	1	1.000

#### Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	88	412.154	212	.000	1.944
Saturated model	300	.000	0		
Independence model	24	7768.850	276	.000	28.148

## RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.019	.930	.901	.657
Saturated model	.000	1.000		
Independence model	.190	.173	.101	.159

## Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.947	.931	.974	.965	.973
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

## Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.768	.727	.748
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

## NCP

Model	NCP	LO 90	HI 90
Default model	200.154	146.452	261.654
Saturated model	.000	.000	.000
Independence model	7492.850	7208.666	7783.389

## FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.898	.436	.319	.570
Saturated model	.000	.000	.000	.000

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Model	FMIN	F0	LO 90	HI 90
Independence model	16.926	16.324	15.705	16.957

## RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.045	.039	.052	.878
Independence model	.243	.239	.248	.000

## AIC

Model	AIC	BCC	BIC	CAIC
Default model	588.154	598.293	951.702	1039.702
Saturated model	600.000	634.562	1839.368	2139.368
Independence model	7816.850	7819.615	7916.000	7940.000

## ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.281	1.164	1.415	1.303
Saturated model	1.307	1.307	1.307	1.382
Independence model	17.030	16.411	17.663	17.036

## HOELTER

Model	HOELTER	HOELTER
	.05	.01
Default model	276	293
Independence model	19	20

## Execution time summary

Minimization: .026

Miscellaneous: .591

Bootstrap: .000

Total: .617

# APPENDIX E

## SEM ANALYSIS RESULT

Analysis Summary

Date and Time

Date: 18 มิถุนายน 2565

Time: 17:46:29

Title

Groups

Group number 1 (Group number 1)

Notes for Group (Group number 1)

The model is recursive.

Sample size = 460

Variable Summary (Group number 1)

Your model contains the following variables (Group number 1)

Observed, endogenous variables

WTU2

EC\_Experience

EC5

SI3

SI2

PU\_Useful

PU6

SQ\_FCCSMean

SQ\_Assurance

SQ\_DEMean

CS\_Pleased

CS\_Satisfied

WTU5

WTU\_IntendAdopt

PV2

PV\_Value

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FC\_ResourcesMean

FC\_KnowledgeMean

FC\_CompatibleMean

PI4xSI2

PI4xSI3

PI1xSI2

PI1xSI3

FC\_AssistanceMean

Unobserved, endogenous variables

WTU

PU

EC

CS

SQ

SI

PV

FC

PIxSI

Unobserved, exogenous variables

e22

e29

e31

e32

e15

e16

e33

e30

e8

e7

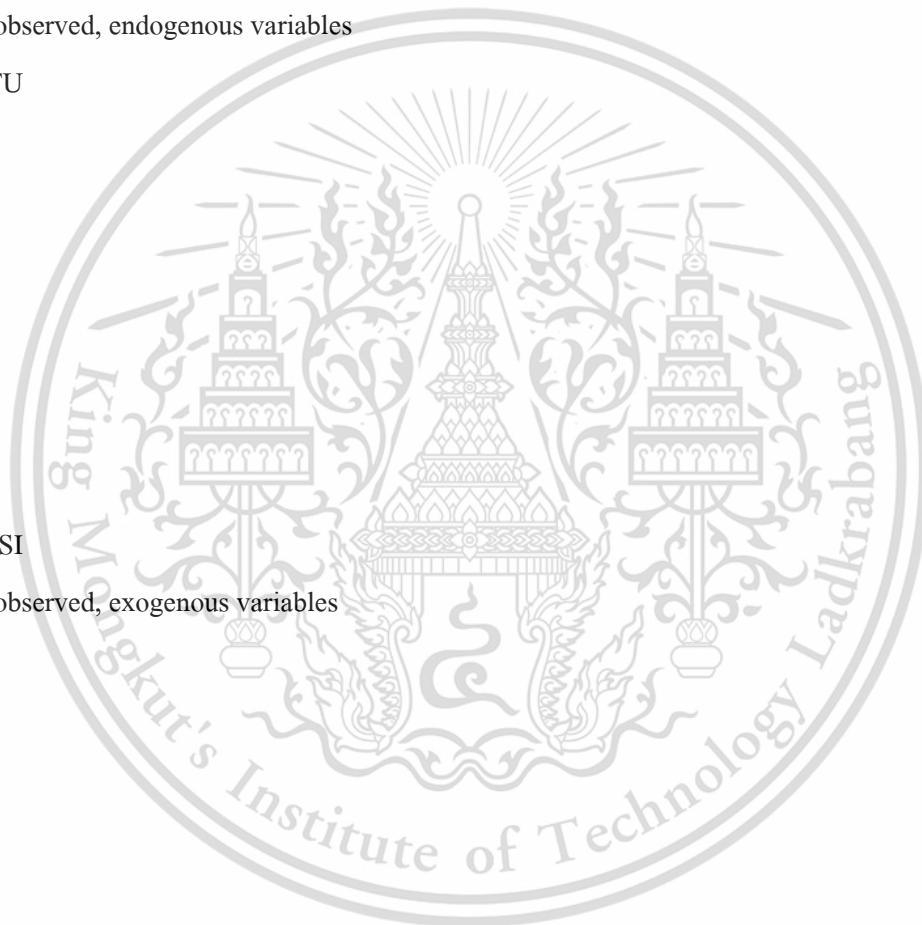
e27

e13

e14

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e21

e20

e19

e17

e18

e23

e24

e5

e26

e6

e1

e25

e2

e3

e28

e12

e11

e10

e9

e4

Variable counts (Group number 1)

Number of variables in your model: 66

Number of observed variables: 24

Number of unobserved variables: 42

Number of exogenous variables: 33

Number of endogenous variables: 33

Parameter Summary (Group number 1)

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	42	0	0	0	0	42
Labeled	0	0	0	0	0	0
Unlabeled	26	59	33	0	0	118

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	Weights	Covariances	Variances	Means	Intercepts	Total
Total	68	59	33	0	0	160

Models

Default model (Default model)

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments: 300

Number of distinct parameters to be estimated: 118

Degrees of freedom (300 - 118): 182

Result (Default model)

Minimum was achieved

Chi-square = 362.482

Degrees of freedom = 182

Probability level = .000

Group number 1 (Group number 1 - Default model)

Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
PU	<---	EC	.982	.065	15.098	***	
CS	<---	PU	.335	.084	3.981	***	
CS	<---	EC	.314	.083	3.766	***	
CS	<---	SQ	.357	.060	5.946	***	
WTU	<---	CS	.235	.077	3.050	.002	
WTU	<---	SQ	.233	.095	2.436	.015	
WTU	<---	SI	.117	.056	2.074	.038	
WTU	<---	PU	.332	.083	3.980	***	
WTU	<---	PV	.112	.055	2.027	.043	
WTU	<---	FC	.105	.040	2.606	.009	

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			Estimate	S.E.	C.R.	P	Label
WTU	<---	PIxSI	.048	.024	1.994	.046	
WTU2	<---	WTU	1.000				
EC_Experience	<---	EC	1.000				
EC5	<---	EC	1.010	.058	17.284	***	
SI3	<---	SI	1.000				
SI2	<---	SI	.838	.082	10.262	***	
PU_Useful	<---	PU	1.000				
PU6	<---	PU	1.077	.060	17.883	***	
SQ_FCCSMean	<---	SQ	1.000				
SQ_Assurance	<---	SQ	1.049	.045	23.341	***	
SQ_DEMean	<---	SQ	1.006	.043	23.514	***	
CS_Pleased	<---	CS	1.054	.040	26.265	***	
CS_Satisfied	<---	CS	1.000				
WTU5	<---	WTU	1.059	.060	17.783	***	
WTU_IntendAdopt	<---	WTU	.937	.060	15.603	***	
PV2	<---	PV	1.047	.093	11.299	***	
PV_Value	<---	PV	1.000				
FC_ResourcesMean	<---	FC	.942	.052	18.049	***	
FC_KnowledgeMean	<---	FC	1.022	.051	20.080	***	
FC_CompatibleMean	<---	FC	1.000				
PI4xSI2	<---	PIxSI	1.000				
PI4xSI3	<---	PIxSI	.678	.058	11.628	***	
PI1xSI2	<---	PIxSI	1.327	.102	13.072	***	
PI1xSI3	<---	PIxSI	.921	.073	12.556	***	
FC_AssistanceMean	<---	FC	.784	.057	13.695	***	

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## Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
PU	<---	EC	.985
CS	<---	PU	.312
CS	<---	EC	.293
CS	<---	SQ	.322
WTU	<---	CS	.237
WTU	<---	SQ	.212
WTU	<---	SI	.117
WTU	<---	PU	.312
WTU	<---	PV	.115
WTU	<---	FC	.097
WTU	<---	PIxSI	.074
WTU2	<---	WTU	.755
EC_Experience	<---	EC	.849
EC5	<---	EC	.767
SI3	<---	SI	.747
SI2	<---	SI	.611
PU_Useful	<---	PU	.839
PU6	<---	PU	.779
SQ_FCCSMean	<---	SQ	.900
SQ_Assurance	<---	SQ	.830
SQ_DEMean	<---	SQ	.837
CS_Pleased	<---	CS	.913
CS_Satisfied	<---	CS	.877
WTU5	<---	WTU	.771
WTU_IntendAdopt	<---	WTU	.774
PV2	<---	PV	.718
PV_Value	<---	PV	.811

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			Estimate
FC_ResourcesMean	<---	FC	.768
FC_KnowledgeMean	<---	FC	.851
FC_CompatibleMean	<---	FC	.824
PI4xSI2	<---	PIxSI	.712
PI4xSI3	<---	PIxSI	.475
PI1xSI2	<---	PIxSI	.925
PI1xSI3	<---	PIxSI	.622
FC_AssistanceMean	<---	FC	.591

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
e32	<-->	e30	.141	.012	11.602	***	
e29	<-->	e30	-.040	.010	-3.813	***	
e27	<-->	e30	.159	.015	10.346	***	
e27	<-->	e32	.137	.014	9.673	***	
e26	<-->	e30	.123	.014	8.734	***	
e26	<-->	e32	.121	.013	9.208	***	
e25	<-->	e32	.118	.011	11.128	***	
e28	<-->	e30	-.050	.012	-4.258	***	
e27	<-->	e28	-.037	.018	-2.029	.042	
e7	<-->	e26	.128	.018	7.052	***	
e3	<-->	e26	.121	.014	8.539	***	
e3	<-->	e30	.129	.012	10.940	***	
e3	<-->	e27	.027	.011	2.503	.012	
e1	<-->	e26	.115	.014	8.071	***	
e2	<-->	e26	.104	.014	7.629	***	
e1	<-->	e30	.129	.012	10.775	***	
e2	<-->	e30	.120	.012	10.371	***	
e22	<-->	e27	-.024	.010	-2.368	.018	

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			Estimate	S.E.	C.R.	P	Label
e7	<-->	e25	.107	.015	7.179	***	
e8	<-->	e2	.019	.012	1.586	.113	
e12	<-->	e11	.257	.036	7.048	***	
e11	<-->	e9	.242	.038	6.444	***	
e22	<-->	e9	.058	.019	3.131	.002	
e11	<-->	e31	.038	.012	3.174	.002	
e11	<-->	e27	-.096	.021	-4.598	***	
e8	<-->	e5	.147	.021	6.921	***	
e8	<-->	e6	.131	.018	7.183	***	
e8	<-->	e1	.027	.012	2.257	.024	
e14	<-->	e1	-.036	.008	-4.489	***	
e22	<-->	e23	.032	.013	2.547	.011	
e9	<-->	e33	-.035	.015	-2.384	.017	
e2	<-->	e31	-.019	.005	-3.633	***	
e13	<-->	e32	-.016	.006	-2.603	.009	
e7	<-->	e13	.028	.010	2.900	.004	
e15	<-->	e9	-.030	.014	-2.113	.035	
e15	<-->	e5	.007	.010	.678	.498	
e15	<-->	e17	-.011	.005	-2.180	.029	
e19	<-->	e29	.019	.006	3.200	.001	
e17	<-->	e1	-.014	.005	-2.700	.007	
e22	<-->	e18	.011	.006	1.721	.085	
e21	<-->	e31	.020	.005	4.218	***	
e15	<-->	e21	.010	.004	2.258	.024	
e15	<-->	e4	.070	.010	6.770	***	
e15	<-->	e8	-.022	.009	-2.454	.014	
e16	<-->	e11	-.030	.017	-1.844	.065	
e16	<-->	e19	-.015	.006	-2.367	.018	

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			Estimate	S.E.	C.R.	P	Label
e8	<-->	e25	.103	.016	6.295	***	
e22	<-->	e1	-.019	.008	-2.431	.015	
e14	<-->	e6	.013	.010	1.336	.182	
e19	<-->	e1	.019	.006	3.388	***	
e16	<-->	e4	.048	.011	4.233	***	
e7	<-->	e11	.057	.025	2.271	.023	
e14	<-->	e19	-.023	.007	-3.029	.002	
e6	<-->	e4	.094	.013	7.078	***	
e13	<-->	e4	.027	.009	3.211	.001	
e19	<-->	e24	.014	.006	2.181	.029	
e5	<-->	e30	.040	.010	4.100	***	
e11	<-->	e4	-.047	.017	-2.820	.005	
e5	<-->	e9	-.048	.021	-2.225	.026	

Correlations: (Group number 1 - Default model)

			Estimate
e32	<-->	e30	.703
e29	<-->	e30	-.302
e27	<-->	e30	.725
e27	<-->	e32	.645
e26	<-->	e30	.542
e26	<-->	e32	.556
e25	<-->	e32	.600
e28	<-->	e30	-.147
e27	<-->	e28	-.103
e7	<-->	e26	.493
e3	<-->	e26	.792
e3	<-->	e30	.920
e3	<-->	e27	.180

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			Estimate
e1	<-->	e26	.657
e2	<-->	e26	.737
e1	<-->	e30	.809
e2	<-->	e30	.934
e22	<-->	e27	-.115
e7	<-->	e25	.458
e8	<-->	e2	.153
e12	<-->	e11	.368
e11	<-->	e9	.295
e22	<-->	e9	.158
e11	<-->	e31	.152
e11	<-->	e27	-.210
e8	<-->	e5	.677
e8	<-->	e6	.851
e8	<-->	e1	.182
e14	<-->	e1	-.259
e22	<-->	e23	.178
e9	<-->	e33	-.168
e2	<-->	e31	-.251
e13	<-->	e32	-.125
e7	<-->	e13	.183
e15	<-->	e9	-.121
e15	<-->	e5	.048
e15	<-->	e17	-.177
e19	<-->	e29	.228
e17	<-->	e1	-.180
e22	<-->	e18	.098
e21	<-->	e31	.358

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			Estimate
e15	<-->	e21	.168
e15	<-->	e4	.517
e15	<-->	e8	-.180
e16	<-->	e11	-.084
e16	<-->	e19	-.135
e8	<-->	e25	.535
e22	<-->	e1	-.124
e14	<-->	e6	.093
e19	<-->	e1	.189
e16	<-->	e4	.261
e7	<-->	e11	.115
e14	<-->	e19	-.199
e6	<-->	e4	.545
e13	<-->	e4	.195
e19	<-->	e24	.129
e5	<-->	e30	.175
e11	<-->	e4	-.104
e5	<-->	e9	-.108

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
e30	.207	.019	10.780	***	
e29	.084	.014	5.938	***	
e32	.193	.015	12.611	***	
e31	.070	.008	8.660	***	
e27	.233	.031	7.455	***	
e26	.247	.030	8.192	***	
e25	.200	.018	11.104	***	
e28	.563	.072	7.770	***	

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	Estimate	S.E.	C.R.	P	Label
e33	.057	.011	5.342	***	
e22	.181	.016	11.263	***	
e15	.080	.010	8.124	***	
e16	.148	.013	11.591	***	
e8	.185	.023	7.887	***	
e7	.274	.022	12.257	***	
e13	.086	.009	9.095	***	
e14	.154	.013	11.662	***	
e21	.045	.005	8.613	***	
e20	.096	.008	11.779	***	
e19	.083	.007	11.338	***	
e17	.052	.007	7.672	***	
e18	.071	.007	10.193	***	
e23	.178	.016	10.845	***	
e24	.137	.012	11.569	***	
e5	.254	.025	10.108	***	
e6	.129	.021	6.145	***	
e1	.123	.010	12.137	***	
e2	.080	.008	9.577	***	
e3	.095	.009	10.780	***	
e12	.547	.050	10.952	***	
e11	.890	.059	15.015	***	
e10	.167	.061	2.713	.007	
e9	.758	.058	13.047	***	
e4	.229	.015	15.714	***	

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
EC	.000

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	Estimate
SQ	.000
PU	.591
PIxSI	.000
FC	.000
PV	.000
SI	.000
CS	.704
WTU	.755
FC_AssistanceMean	.350
PI1xSI3	.387
PI1xSI2	.856
PI4xSI3	.226
PI4xSI2	.508
FC_CompatibleMean	.678
FC_KnowledgeMean	.724
FC_ResourcesMean	.590
PV_Value	.657
PV2	.516
WTU_IntendAdopt	.599
WTU5	.594
CS_Satisfied	.768
CS_Pleased	.834
SQ_DEMean	.701
SQ_Assurance	.690
SQ_FCCSMean	.810
PU6	.608
PU_Useful	.704
SI2	.374

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	Estimate
SI3	.558
EC5	.588
EC_Experience	.721
WTU2	.557

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
PU	.982	.000	.000	.000	.000	.000	.000	.000	.000
CS	.642	.357	.335	.000	.000	.000	.000	.000	.000
WTU	.477	.317	.411	.048	.105	.112	.117	.235	.000
FC_AssistanceMean	.000	.000	.000	.000	.784	.000	.000	.000	.000
PI1xSI3	.000	.000	.000	.921	.000	.000	.000	.000	.000
PI1xSI2	.000	.000	.000	1.327	.000	.000	.000	.000	.000
PI4xSI3	.000	.000	.000	.678	.000	.000	.000	.000	.000
PI4xSI2	.000	.000	.000	1.000	.000	.000	.000	.000	.000
FC_CompatibleMean	.000	.000	.000	.000	1.000	.000	.000	.000	.000
FC_KnowledgeMean	.000	.000	.000	.000	1.022	.000	.000	.000	.000
FC_ResourcesMean	.000	.000	.000	.000	.942	.000	.000	.000	.000
PV_Value	.000	.000	.000	.000	.000	1.000	.000	.000	.000
PV2	.000	.000	.000	.000	.000	1.047	.000	.000	.000
WTU_IntendAdopt	.447	.297	.385	.045	.098	.105	.110	.220	.937

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	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
WTU5	.505	.335	.435	.051	.111	.119	.124	.249	1.05 9
CS_Satisfied	.642	.357	.335	.000	.000	.000	.000	1.00 0	.000
CS_Pleased	.677	.376	.353	.000	.000	.000	.000	1.05 4	.000
SQ_DEMean	.000	1.00 6	.000	.000	.000	.000	.000	.000	.000
SQ_Assurance	.000	1.04 9	.000	.000	.000	.000	.000	.000	.000
SQ_FCCSMean	.000	1.00 0	.000	.000	.000	.000	.000	.000	.000
PU6	1.05 7	.000	1.07 7	.000	.000	.000	.000	.000	.000
PU_Useful	.982	.000	1.00 0	.000	.000	.000	.000	.000	.000
SI2	.000	.000	.000	.000	.000	.000	.838	.000	.000
SI3	.000	.000	.000	.000	.000	.000	1.00 0	.000	.000
EC5	1.01 0	.000	.000	.000	.000	.000	.000	.000	.000
EC_Experience	1.00 0	.000	.000	.000	.000	.000	.000	.000	.000
WTU2	.477	.317	.411	.048	.105	.112	.117	.235	1.00 0

Standardized Total Effects (Group number 1 - Default model)

	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
PU	.985	.000	.000	.000	.000	.000	.000	.000	.000
CS	.600	.322	.312	.000	.000	.000	.000	.000	.000

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	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
WTU	.449	.288	.386	.074	.097	.115	.117	.237	.000
FC_AssistanceMean	.000	.000	.000	.000	.591	.000	.000	.000	.000
PI1xSI3	.000	.000	.000	.622	.000	.000	.000	.000	.000
PI1xSI2	.000	.000	.000	.925	.000	.000	.000	.000	.000
PI4xSI3	.000	.000	.000	.475	.000	.000	.000	.000	.000
PI4xSI2	.000	.000	.000	.712	.000	.000	.000	.000	.000
FC_CompatibleMean	.000	.000	.000	.000	.824	.000	.000	.000	.000
FC_KnowledgeMean	.000	.000	.000	.000	.851	.000	.000	.000	.000
FC_ResourcesMean	.000	.000	.000	.000	.768	.000	.000	.000	.000
PV_Value	.000	.000	.000	.000	.000	.811	.000	.000	.000
PV2	.000	.000	.000	.000	.000	.718	.000	.000	.000
WTU_IntendAdopt	.348	.223	.298	.058	.075	.089	.091	.184	.774
WTU5	.347	.222	.297	.057	.075	.089	.090	.183	.771
CS_Satisfied	.526	.282	.273	.000	.000	.000	.000	.877	.000
CS_Pleased	.548	.294	.285	.000	.000	.000	.000	.913	.000
SQ_DEMean	.000	.837	.000	.000	.000	.000	.000	.000	.000
SQ_Assurance	.000	.830	.000	.000	.000	.000	.000	.000	.000
SQ_FCCSMean	.000	.900	.000	.000	.000	.000	.000	.000	.000
PU6	.768	.000	.779	.000	.000	.000	.000	.000	.000
PU_Useful	.827	.000	.839	.000	.000	.000	.000	.000	.000
SI2	.000	.000	.000	.000	.000	.000	.611	.000	.000
SI3	.000	.000	.000	.000	.000	.000	.747	.000	.000
EC5	.767	.000	.000	.000	.000	.000	.000	.000	.000
EC_Experience	.849	.000	.000	.000	.000	.000	.000	.000	.000
WTU2	.340	.218	.291	.056	.073	.087	.088	.179	.755

Direct Effects (Group number 1 - Default model)

	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
PU	.982	.000	.000	.000	.000	.000	.000	.000	.000

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	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
CS	.314	.357	.335	.000	.000	.000	.000	.000	.000
WTU	.000	.233	.332	.048	.105	.112	.117	.235	.000
FC_AssistanceMean	.000	.000	.000	.000	.784	.000	.000	.000	.000
PI1xSI3	.000	.000	.000	.921	.000	.000	.000	.000	.000
PI1xSI2	.000	.000	.000	1.327	.000	.000	.000	.000	.000
PI4xSI3	.000	.000	.000	.678	.000	.000	.000	.000	.000
PI4xSI2	.000	.000	.000	1.000	.000	.000	.000	.000	.000
FC_CompatibleMean	.000	.000	.000	.000	1.000	.000	.000	.000	.000
FC_KnowledgeMean	.000	.000	.000	.000	1.022	.000	.000	.000	.000
FC_ResourcesMean	.000	.000	.000	.000	.942	.000	.000	.000	.000
PV_Value	.000	.000	.000	.000	.000	1.000	.000	.000	.000
PV2	.000	.000	.000	.000	.000	1.047	.000	.000	.000
WTU_IntendAdopt	.000	.000	.000	.000	.000	.000	.000	.000	.937
WTU5	.000	.000	.000	.000	.000	.000	.000	.000	1.059
CS_Satisfied	.000	.000	.000	.000	.000	.000	.000	1.000	.000
CS_Pleased	.000	.000	.000	.000	.000	.000	.000	1.054	.000
SQ_DEMean	.000	1.006	.000	.000	.000	.000	.000	.000	.000

	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
SQ_Assurance	.000	1.049	.000	.000	.000	.000	.000	.000	.000
SQ_FCCSMean	.000	1.000	.000	.000	.000	.000	.000	.000	.000
PU6	.000	.000	1.077	.000	.000	.000	.000	.000	.000
PU_Useful	.000	.000	1.000	.000	.000	.000	.000	.000	.000
SI2	.000	.000	.000	.000	.000	.000	.838	.000	.000
SI3	.000	.000	.000	.000	.000	.000	1.000	.000	.000
EC5	1.010	.000	.000	.000	.000	.000	.000	.000	.000
EC_Experience	1.000	.000	.000	.000	.000	.000	.000	.000	.000
WTU2	.000	.000	.000	.000	.000	.000	.000	.000	1.000

## Standardized Direct Effects (Group number 1 - Default model)

	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
PU	.985	.000	.000	.000	.000	.000	.000	.000	.000
CS	.293	.322	.312	.000	.000	.000	.000	.000	.000
WTU	.000	.212	.312	.074	.097	.115	.117	.237	.000
FC_AssistanceMean	.000	.000	.000	.000	.591	.000	.000	.000	.000
PI1xSI3	.000	.000	.000	.622	.000	.000	.000	.000	.000
PI1xSI2	.000	.000	.000	.925	.000	.000	.000	.000	.000
PI4xSI3	.000	.000	.000	.475	.000	.000	.000	.000	.000
PI4xSI2	.000	.000	.000	.712	.000	.000	.000	.000	.000
FC_CompatibleMean	.000	.000	.000	.000	.824	.000	.000	.000	.000
FC_KnowledgeMean	.000	.000	.000	.000	.851	.000	.000	.000	.000

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	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
FC_ResourcesMean	.000	.000	.000	.000	.768	.000	.000	.000	.000
PV_Value	.000	.000	.000	.000	.000	.811	.000	.000	.000
PV2	.000	.000	.000	.000	.000	.718	.000	.000	.000
WTU_IntendAdopt	.000	.000	.000	.000	.000	.000	.000	.000	.774
WTU5	.000	.000	.000	.000	.000	.000	.000	.000	.771
CS_Satisfied	.000	.000	.000	.000	.000	.000	.000	.877	.000
CS_Pleased	.000	.000	.000	.000	.000	.000	.000	.913	.000
SQ_DEMean	.000	.837	.000	.000	.000	.000	.000	.000	.000
SQ_Assurance	.000	.830	.000	.000	.000	.000	.000	.000	.000
SQ_FCCSMean	.000	.900	.000	.000	.000	.000	.000	.000	.000
PU6	.000	.000	.779	.000	.000	.000	.000	.000	.000
PU_Useful	.000	.000	.839	.000	.000	.000	.000	.000	.000
SI2	.000	.000	.000	.000	.000	.000	.611	.000	.000
SI3	.000	.000	.000	.000	.000	.000	.747	.000	.000
EC5	.767	.000	.000	.000	.000	.000	.000	.000	.000
EC_Experience	.849	.000	.000	.000	.000	.000	.000	.000	.000
WTU2	.000	.000	.000	.000	.000	.000	.000	.000	.755

Indirect Effects (Group number 1 - Default model)

	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
PU	.000	.000	.000	.000	.000	.000	.000	.000	.000
CS	.329	.000	.000	.000	.000	.000	.000	.000	.000
WTU	.477	.084	.079	.000	.000	.000	.000	.000	.000
FC_AssistanceMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI1xSI3	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI1xSI2	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI4xSI3	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI4xSI2	.000	.000	.000	.000	.000	.000	.000	.000	.000
FC_CompatibleMean	.000	.000	.000	.000	.000	.000	.000	.000	.000

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	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
FC_KnowledgeMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
FC_ResourcesMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
PV_Value	.000	.000	.000	.000	.000	.000	.000	.000	.000
PV2	.000	.000	.000	.000	.000	.000	.000	.000	.000
WTU_IntendAdopt	.447	.297	.385	.045	.098	.105	.110	.220	.000
WTU5	.505	.335	.435	.051	.111	.119	.124	.249	.000
CS_Satisfied	.642	.357	.335	.000	.000	.000	.000	.000	.000
CS_Pleased	.677	.376	.353	.000	.000	.000	.000	.000	.000
SQ_DEMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
SQ_Assurance	.000	.000	.000	.000	.000	.000	.000	.000	.000
SQ_FCCSMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
PU6	1.057	.000	.000	.000	.000	.000	.000	.000	.000
PU_Useful	.982	.000	.000	.000	.000	.000	.000	.000	.000
SI2	.000	.000	.000	.000	.000	.000	.000	.000	.000
SI3	.000	.000	.000	.000	.000	.000	.000	.000	.000
EC5	.000	.000	.000	.000	.000	.000	.000	.000	.000
EC_Experience	.000	.000	.000	.000	.000	.000	.000	.000	.000
WTU2	.477	.317	.411	.048	.105	.112	.117	.235	.000

## Standardized Indirect Effects (Group number 1 - Default model)

	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
PU	.000	.000	.000	.000	.000	.000	.000	.000	.000
CS	.307	.000	.000	.000	.000	.000	.000	.000	.000
WTU	.449	.076	.074	.000	.000	.000	.000	.000	.000
FC_AssistanceMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI1xSI3	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI1xSI2	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI4xSI3	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI4xSI2	.000	.000	.000	.000	.000	.000	.000	.000	.000

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	EC	SQ	PU	PIxSI	FC	PV	SI	CS	WTU
FC_CompatibleMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
FC_KnowledgeMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
FC_ResourcesMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
PV_Value	.000	.000	.000	.000	.000	.000	.000	.000	.000
PV2	.000	.000	.000	.000	.000	.000	.000	.000	.000
WTU_IntendAdopt	.348	.223	.298	.058	.075	.089	.091	.184	.000
WTU5	.347	.222	.297	.057	.075	.089	.090	.183	.000
CS_Satisfied	.526	.282	.273	.000	.000	.000	.000	.000	.000
CS_Pleased	.548	.294	.285	.000	.000	.000	.000	.000	.000
SQ_DEMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
SQ_Assurance	.000	.000	.000	.000	.000	.000	.000	.000	.000
SQ_FCCSMean	.000	.000	.000	.000	.000	.000	.000	.000	.000
PU6	.768	.000	.000	.000	.000	.000	.000	.000	.000
PU_Useful	.827	.000	.000	.000	.000	.000	.000	.000	.000
SI2	.000	.000	.000	.000	.000	.000	.000	.000	.000
SI3	.000	.000	.000	.000	.000	.000	.000	.000	.000
EC5	.000	.000	.000	.000	.000	.000	.000	.000	.000
EC_Experience	.000	.000	.000	.000	.000	.000	.000	.000	.000
WTU2	.340	.218	.291	.056	.073	.087	.088	.179	.000

Notes for Group/Model (Group number 1 - Default model)

The following covariance matrix is not positive definite (Group number 1 - Default model)

	e30	e32	e29	e28	e25	e26	e27	e31	e33	e4	e9	e11	e12	e3	e2	e1	e6	e5	e24	e23	e18	e17	e19	e21	e14	e13	e7	e8	e16	e15	e22
e30	.																														
e32	.207	.																													

	e30	e32	e29	e28	e25	e26	e27	e31	e33	e4	e9	e11	e12	e3	e2	e1	e6	e5	e24	e23	e18	e17	e19	e21	e14	e13	e7	e8	e16	e15	e22
e29	-	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4	0	8	4																											
	0																														
e28	-	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	5	0	0	0	6	5	0	0	3																			
	5	0	0	6																											
	0			3																											
e25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	1	0	0	2																										
	0	1	0	0	0																										
	0	8	0	0	0																										
e26	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1	1	0	0	0	2																									
	2	2	0	0	0	4																									
	3	1	0	0	0	7																									
e27	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1	1	0	0	0	2																									
	5	3	0	0	0	3																									
	9	7	0	3	0	3																									
e31	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
e33	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
e4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
e9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
e11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
e12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	e30	e32	e29	e28	e25	e26	e27	e31	e33	e4	e9	e11	e12	e3	e2	e1	e6	e5	e24	e23	e18	e17	e19	e21	e14	e13	e7	e8	e16	e15	e22
	0	0	0	0	0	0	0	0	0	0	0	5	4																		
	0	0	0	0	0	0	0	0	0	0	0	7	7																		
e3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0																
	2	0	0	0	0	2	2	0	0	0	0	0	0	0	9																
	9	0	0	0	0	1	7	0	0	0	0	0	0	5																	
e2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0																
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	8																
	0	0	0	0	0	4	0	9	0	0	0	0	0	0	0																
e1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1															
	2	0	0	0	0	1	0	0	0	0	0	0	0	0	2																
	9	0	0	0	0	5	0	0	0	0	0	0	0	0	3																
e6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1															
	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	2															
	0	0	0	0	0	0	0	0	4	0	0	0	0	0	9																
e5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2															
	4	0	0	0	0	0	0	0	0	0	0	4	0	0	5																
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	4																
e24	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7																
e23	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7																
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8																
e18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1																
e17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2																
e19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0															
	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	8															
	0	0	9	0	0	0	0	0	0	0	0	0	0	0	9	3															

	e30	e32	e29	e28	e25	e26	e27	e31	e33	e4	e9	e11	e12	e3	e2	e1	e6	e5	e24	e23	e18	e17	e19	e21	e14	e13	e7	e8	e16	e15	e22	
e21	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4						
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5							
e14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1							
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5							
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	2	0	4						
																6							3									
e13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8						
	0	6	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6						
e7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2		
	0	0	0	0	0	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7		
	0	0	0	0	7	8	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	4		
e8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1		
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	8		
	0	0	0	0	3	0	0	0	0	0	0	0	0	0	9	7	1	7	0	0	0	0	0	0	0	0	0	0	0	5		
e16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4		
	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	8		
										0													5									
e15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	1	0	0	0	0	0	0	0		
										0													1									
e22	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0		
	0	0	0	0	0	0	2	0	0	0	8	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0		
							4									9														1		

This solution is not admissible.

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

			M.I.	Par Change
e28	<-->	e32	8.575	-.033
e25	<-->	e29	4.293	.012
e26	<-->	e25	6.452	.021

			M.I.	Par Change
e4	<-->	e30	5.725	.012
e4	<-->	e29	5.391	.014
e4	<-->	e26	13.900	.034
e10	<-->	e32	5.094	-.024
e5	<-->	e4	15.164	.039
e14	<-->	e4	5.096	.018

Variances: (Group number 1 - Default model)

	M.I. Par Change

Regression Weights: (Group number 1 - Default model)

			M.I.	Par Change
PIxSI	<---	EC	6.244	-.203
PIxSI	<---	SQ	19.488	-.381
PIxSI	<---	PU	11.831	-.286
PIxSI	<---	FC	5.939	-.149
PIxSI	<---	SI	5.204	-.145
PIxSI	<---	CS	10.580	-.252
FC	<---	EC	25.293	.196
FC	<---	SQ	14.650	.159
FC	<---	PU	33.142	.231
FC	<---	PV	19.754	.147
FC	<---	SI	4.585	.060
FC	<---	CS	20.334	.168
PV	<---	FC	5.064	.081
FC_AssistanceMean	<---	EC	48.984	.293
FC_AssistanceMean	<---	SQ	46.311	.317
FC_AssistanceMean	<---	PU	60.101	.341
FC_AssistanceMean	<---	PV	33.207	.206
FC_AssistanceMean	<---	SI	15.563	.136

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			M.I.	Par Change
FC_AssistanceMean	<---	CS	63.368	.333
FC_AssistanceMean	<---	WTU	52.124	.312
FC_AssistanceMean	<---	FC_CompatibleMean	18.290	.154
FC_AssistanceMean	<---	FC_KnowledgeMean	9.964	.115
FC_AssistanceMean	<---	FC_ResourcesMean	8.885	.106
FC_AssistanceMean	<---	PV_Value	32.036	.181
FC_AssistanceMean	<---	PV2	65.920	.220
FC_AssistanceMean	<---	WTU_IntendAdopt	38.177	.207
FC_AssistanceMean	<---	WTU5	17.612	.124
FC_AssistanceMean	<---	CS_Satisfied	52.045	.254
FC_AssistanceMean	<---	CS_Pleased	51.382	.250
FC_AssistanceMean	<---	SQ_DEMean	26.476	.191
FC_AssistanceMean	<---	SQ_Assurance	27.684	.186
FC_AssistanceMean	<---	SQ_FCCSMean	43.758	.266
FC_AssistanceMean	<---	PU6	56.251	.234
FC_AssistanceMean	<---	PU_Useful	38.239	.224
FC_AssistanceMean	<---	SI2	11.213	.099
FC_AssistanceMean	<---	SI3	26.363	.155
FC_AssistanceMean	<---	EC5	31.137	.182
FC_AssistanceMean	<---	EC_Experience	38.582	.227
FC_AssistanceMean	<---	WTU2	25.812	.156
PI1xSI3	<---	EC	4.298	-.180
PI1xSI3	<---	SQ	4.803	-.203
PI1xSI3	<---	PU	5.370	-.207
PI1xSI3	<---	PV	4.897	-.163
PI1xSI3	<---	WTU	4.784	-.188
PI1xSI3	<---	FC_CompatibleMean	5.885	-.174
PI1xSI3	<---	FC_KnowledgeMean	4.098	-.146

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			M.I.	Par Change
PI1xSI3	<---	FC_ResourcesMean	4.996	-.158
PI1xSI3	<---	SQ_DEMean	5.484	-.173
PI1xSI3	<---	PU_Useful	4.876	-.159
PI4xSI2	<---	PU6	4.088	-.108
PV2	<---	SQ	4.568	.125
PV2	<---	FC	4.203	.086
PV2	<---	FC_AssistanceMean	25.460	.209
PV2	<---	FC_CompatibleMean	6.131	.112
PV2	<---	FC_ResourcesMean	5.323	.103
PV2	<---	SQ_Assurance	5.930	.108
PU6	<---	FC_AssistanceMean	5.949	.080

#### Minimization History (Default model)

Iteration		Negative eigenvalues	Condition #	Smallest eigenvalue	Diameter	F	NTries	Ratio
0	e	55		-.922	9999.000	7972.930	0	9999.000
1	e*	45		-.416	3.012	4569.600	20	.476
2	e*	18		-.331	1.159	2750.164	5	.911
3	e	9		-.193	.660	1923.028	4	.902
4	e*	2		-.071	1.007	1268.768	5	.587
5	e	2		-.189	.817	722.683	5	.836
6	e	0	513.903		.607	450.331	6	.982
7	e	0	380.479		.628	377.201	1	.964
8	e	0	344.048		.126	362.878	1	1.076
9	e	0	342.291		.023	362.483	1	1.026
10	e	0	342.958		.001	362.482	1	1.001

#### Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	118	362.482	182	.000	1.992
Saturated model	300	.000	0		
Independence model	24	7768.850	276	.000	28.148

## RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.068	.944	.908	.573
Saturated model	.000	1.000		
Independence model	.190	.173	.101	.159

## Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.953	.929	.976	.963	.976
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

## Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.659	.629	.644
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

## NCP

Model	NCP	LO 90	HI 90
Default model	180.482	130.129	238.621
Saturated model	.000	.000	.000
Independence model	7492.850	7208.666	7783.389

## FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.790	.393	.284	.520
Saturated model	.000	.000	.000	.000

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Model	FMIN	F0	LO 90	HI 90
Independence model	16.926	16.324	15.705	16.957

## RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.046	.039	.053	.791
Independence model	.243	.239	.248	.000

## AIC

Model	AIC	BCC	BIC	CAIC
Default model	598.482	612.077	1085.967	1203.967
Saturated model	600.000	634.562	1839.368	2139.368
Independence model	7816.850	7819.615	7916.000	7940.000

## ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.304	1.194	1.431	1.334
Saturated model	1.307	1.307	1.307	1.382
Independence model	17.030	16.411	17.663	17.036

## HOELTER

Model	HOELTER	HOELTER
	.05	.01
Default model	272	291
Independence model	19	20

## Execution time summary

Minimization: .030

Miscellaneous: .760

Bootstrap: .000

Total: .790

# AUTHOR BIOGRAPHY

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2017 –2020, IT Analyst: AMWAY  
2017 –2017, System Analyst: e-Synergy (Thailand) Co., Ltd.  
2014 – 2017, Technical Support Representative:  
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## Publications and Presentation

1. Junsawang, S., Chaiyasoonthorn, W., Urbański, M., Chaveesuk, S. (2022) **“How to Shift Consumer Willingness to Use the Emerging Technologies On Omnichannel”**,
  - Publishing in Montenegrin Journal of Economics, Vol. 18, No. 3, pp. 183-196. DOI: 10.14254/1800-5845/2022.18-3.15
2. Junsawang, S., Chaveesuk, S., Chaiyasoonthorn, W. **“Testing and Measurement on Willingness to Use Augmented Reality, Virtual Reality, and AI-Enabled Checkouts”**
  - Proceedings in 2022 The 5th International Conference on Artificial Intelligence and Big Data ( ICAIBD 2022) , pp. 495-500, DOI: 10.1109/ICAIBD55127.2022.9820474
  - Presentation in Virtual conference, Chengdu, China on May 27-30, 2022
3. Junsawang, S., Chaveesuk, S., Chaiyasoonthorn, W. **“Willingness to Use Self-Service Technologies Innovation on Omnichannel”**
  - Proceedings in 2021 IEEE 8th International Conference on Industrial Engineering and Applications (ICIEA), 2021, pp. 575-582, DOI: 10.1109/ICIEA52957.2021.9436769.
  - Presentation in Virtual conference on April. 23-26, 2021, Excellent Oral Presentation Award – Session 16
4. Junsawang, S., Chaiyasoonthorn, W., Chaveesuk, S. **“Willingness to Use Self-Service Technologies Similar to Amazon Go at Supermarkets in Thailand”**
  - Proceedings in MSIE 2020: Proceedings of the 2020 2nd International Conference on Management Science and Industrial Engineering, April 2020, pp. 135–139, DOI: 10.1145/3396743.3396785
  - Presentation in Online Conference on April 7-9, 2020, The Best Presentation Award – Session VI
5. Junsawang, S., Chaveesuk, S. **“User Experience of Augmented Reality to Encourage User Satisfaction and Willingness in E-commerce: A Conceptual Framework”**
  - Proceedings of 2019 the 9th International Workshop on Computer Science and Engineering, WCSE 2019, 2020, pp. 611–616, DOI: 10.18178/wcse.2019.06.090

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- Presentation in The 7th International Conference on Information Technology and Science (ICITS 2019), June 15-17, 2019, Hong Kong.



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