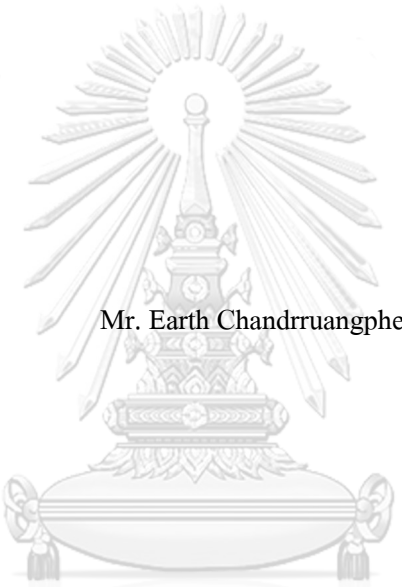
Innovation in Evaluating and Recommending Fashion Clothing Sellers on Live Streaming

Mr. Earth Chandrruangphen



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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรดุษฎีบัณฑิต
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เอิร์ธ จันทร์เรืองเพ็ญ : นวัตกรรมการประเมินและแนะนำผู้ขายเสื้อผ้าผ่านช่องทางไลฟ์สตีมมิ่ง. (Innovation in Evaluating and Recommending Fashion Clothing Sellers on Live Streaming) อ.ที่ปรึกษาหลัก : รศ. ดร.ณัฐพล อัสสะรัตน์, อ.ที่ปรึกษาร่วม : ผศ. ดร.สุกรี สินธุภิญโญ

ในทุกวันนี้ นักขายจำนวนมากได้ใช้ไลฟ์สตีมมิ่งเป็นช่องทางในการนำเสนอและขายเสื้อผ้าแฟชั่นให้กับลูกค้าโดยตรง วิธีการนี้ได้เป็นที่นิยมอย่างมากในประเทศไทยเพราะเป็นวิธีที่สะดวก ประหยัด และสามารถเข้าถึงลูกค้าได้เป็นจำนวนมาก งานวิจัยนี้มีส่วนในการสนับสนุนทั้งในเชิงวิชาการและในเชิงพาณิชย์

ในด้านการสนับสนุนเชิงวิชาการ งานวิจัยนี้ได้สำรวจปัจจัยต่างๆในการเลือกซื้อสินค้าผ่านช่องทางไลฟ์สตีมมิ่งที่มีอิทธิพลต่อความตั้งใจของลูกค้าในการชมและซื้อเสื้อผ้าแฟชั่น ผลการวิจัยพบว่า จากปัจจัยต่าง ๆ 20 ข้อ มีปัจจัยสามข้อที่มีอิทธิพลเชิงบวกอย่างมีนัยสำคัญ ได้แก่ คุณภาพผลิตภัณฑ์ ความโปร่งใสด้านราคา และการประกาศล่วงหน้าเกี่ยวกับเวลาออกอากาศ และมีปัจจัยอีกสามข้อที่มีอิทธิพลระดับอ่อนเชิงบวก ได้แก่ ภาพลักษณ์ของผู้ขาย คุณภาพของเนื้อหาใน Facebook ของผู้ขาย และการกำหนดราคาของสินค้า

ในแง่ของการสนับสนุนเชิงพาณิชย์ งานวิจัยนี้ได้นำผลของปัจจัยที่สำคัญมาใช้ในการออกแบบและพัฒนาเว็บไซต์รีวิวและให้คะแนนแม่ค้าไลฟ์สตีมมิ่ง (LSRW) LSRW เป็นศูนย์รวมข้อมูลของนักขายผ่านช่องทางไลฟ์สตีมมิ่งที่เปิดให้ลูกค้าสามารถรีวิวและให้คะแนนนักขายได้ งานวิจัยนี้ได้พัฒนาต้นแบบ LSRW และทำทั้งการประเมินทางเทคนิคของโมเดลการแนะนำแม่ค้าและการทดสอบการยอมรับของผู้ใช้ ผลวิจัยแสดงให้เห็นว่ามีความน่าจะเป็น 63-81% ที่ผู้ใช้มีทัศนคติที่ดีและตั้งใจที่จะใช้ LSRW ในส่วนสุดท้ายของงานวิจัยนี้ ได้มีการนำเสนอแผนธุรกิจโดยละเอียดของ LSRW รวมถึงคำแนะนำต่าง ๆ เพื่อต่อยอดงานวิจัยนี้ในอนาคต

สาขาวิชา	ธุรกิจเทคโนโลยีและการจัดการนวัตกรรม (สหสาขาวิชา)	ลายมือชื่อนิสิต .....
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KEYWORD: social commerce, live streaming, online shopping, consumer behavior, consumer trust, aggregator website

Earth Chandrruangphen : Innovation in Evaluating and Recommending Fashion Clothing Sellers on Live Streaming. Advisor: Assoc. Prof. NUTTAPOL ASSARUT, Ph.D. Co-advisor: Asst. Prof. SUKREE SINTHUPINYO, Ph.D.

Today, many sellers use live streaming to directly present and sell fashion clothes to customers. The approach is very popular in Thailand because it is convenient, cost effective, and could reach a large number of customers. This research has made various academic and practical contributions.

In terms of academic contribution, it explores live streaming shopping criteria that influence customer intention to watch and purchase fashion clothes. The results show that, among 20 different criteria, there are three criteria with significant positive influence: product quality, price transparency, and broadcast timing pre-announcement; and three criteria with weak positive influence: seller image, seller Facebook page, and product pricing.

In terms of practical contribution, it uses the resulting criteria in designing and developing an innovative live streaming rating website (LSRW). LSRW is a repository of live streaming sellers that allows customers to provide ratings and reviews on them. This research has developed LSRW prototype and perform both the technical evaluation on the recommendation model and the user acceptance test. Based on the results, there is a 63-81% probability that users have favorable attitudes and likely intentions to use LSRW. This research finishes its study with detailed commercialization plan of LSRW and future recommendations.

Field of Study:	Technopreneurship and Innovation Management	Student's Signature .....
Academic Year:	2021	Advisor's Signature .....
		Co-advisor's Signature .....

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Earth Chandrruangphen

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CHAPTER 1

INTRODUCTION

1.1 Rational

In consumer shopping such as shopping for fashion clothes, several marketing activities are performed to move shoppers through the entire cycle of shopping experience from the moments shoppers are motivated to shop through to the moments of purchase and post purchase experience (Eine & Charoensukmongkol, 2021). Shankar, Inman, Mantrala, Kelley, and Rizley (2011) has outlined a number of innovations that happened in this marketing area. Some of which are digital innovations that include advanced developments of mobile apps, social media advertising capabilities, and personalization capabilities through recommendation engines (Sasatanun & Charoensukmongkol, 2016). These innovations are designed to influence the attitudes and behaviors of shoppers. One of the most recent digital innovations in shopper marketing is the feature of live streaming on e-commerce and social media platforms. This feature has greatly opened up new changes in how marketers perform activities to influence the attitudes and behaviors of shoppers.

Live streaming is a broadcasting of real-time online videos, usually showing one person or more performing an activity for others to watch and interact with. A person creating such live streaming content is called a streamer. The content types include singing, dancing, chatting, and video-gaming which are often called “showroom performances” (Hamilton, Garretson, & Kerne, 2014; Lu, Xia, Heo, & Wigdor, 2018; Tang, Venolia, & Inkpen, 2016). In live streaming selling of fashion clothing, streamers broadcast content related to the goods being sold and audience usually interact with the streamers and other audience via text chat. Interactions include asking questions, expressing opinions, or making purchase. As a direct selling channel, live streaming is growing in popularity. Small sellers use it as a means to present their products. They show how the products are used or worn. They answer the audience questions and perform promotional activities during the live to entertain the audience and promote the sales. Small individual sellers increasingly use live streaming as a channel to demonstrate products and conduct sales. (Wongkitrungrueng & Assarut, 2020; Wongkitrungrueng, Dehouche, & Assarut, 2020)

The popularity of live streaming shopping is growing. Leading e-commerce platforms in Thailand such as Lazada and Shopee have already developed and launched live streaming features for individuals to sell their products. Large business organizations are joining and sponsoring their products to be shown through these live streaming shopping platforms. Electronic Transactions Development Agency (2019) which is a part of the Ministry of Digital Economy and Society of Thailand has published a report in 2019 pointing out that the top platforms for sellers to sell are Facebook at 64%, Shopee 43.1%, and Line 39.5%. During covid-19 pandemic period starting from March 2020, large retailers and department stores such as Supersports, Robinson, and Central partnering with well-known clothing brands such as Wrangler, Levi's, G2000, Calvin Klein, DeFry 01, and Alumnus had daily live streaming programs on Facebook to promote and sell their goods. A 60 minute live streaming session of G2000 received over 25,000 views, including replays, within 3 days. Shopee Live Thailand streams over 10,000 hours of video views per day and over 1 billion game promotions have been played in 2019 (Manager Online, 2020).

In Facebook Live, users can search the live streams by keywords or can happen to see them shared by friends or broadcasted by pages or groups that user follows or belongs to. A user can evaluate some information about the live stream before deciding either to watch or not. Current information being shown includes the screenshot image of a live stream, the live stream title, the fanpage title, and the number of current viewers. Prior research has shown that live streams with a large number of viewers may motivate viewers to make impulse purchases due to the effect of perceived crowding (Leeraphong & Sukrat, 2018).

However, a number of prior research had shown mixed results regarding the relationship between user engagement in social media and the intentions to view or to purchase. Richard and Guppy (2014) finds that the number of 'likes' on Facebook fanpage significantly influences consumer purchase intention but the number of 'comments' on Facebook posts does not have significant influence on the consumer purchase intention. Coursaris, Osch, and Balogh (2016) finds that even though engaging brand content has significant positive effect on brand image which in turn has significant positive effect on consumer intentions such as intention to engage on

social media or intention to purchase, but also finds that brand social media engagement intention does not have significant effect on purchase intention. Yüksel (2016) finds that the number of views, like, and comments on Youtube videos that review beauty products have significant positive effect on perceived credibility but do not have significant effect on perceived usefulness, which contradicts the results of Mir and Rehman (2013). Moreover, De Vries (2019) finds that having too high number of 'likes' negatively influences perceived credibility if the ratio of likes-to-followers is not moderate. Kawaf and Istanbulluoglu (2019) finds that the effect of 'likes' on fashion brand pages on Facebook is unclear. Liking a Facebook fanpage become less relevant due to overcrowding messages on social media and does not equate to any long-term engagement with the brand.

Due to these findings, we believe that the number of current viewers and the title descriptions about live stream may not be sufficient criteria to motivate users to watch or make purchase.

As a way to help users evaluate live streams to watch, we propose a study to identify new set of criteria that will be derived from factors that reflect the intentions to watch and to purchase. Relevant characteristics of live streaming shopping will be identified as to the reasoning of the problems and desires of shoppers to shop in live streaming. These factors or characteristics will be the basis to form rating criteria of the live steams to help shoppers evaluate the live streams.

Wongkitrungrueng and Assarut (2020) has studied perceived shopping values in live streaming and how they enhance trusts and in turn lead to customer engagement. In their study, live streaming shopping values consist of three types of perceived values including utilitarian value that helps shoppers complete their shopping tasks, hedonic value that represents shopping enjoyment, and symbolic value that enhances shoppers' personal identity. Their study, however, does not distinguish each characteristic of live streaming shopping separately. Certain characteristics such as product assortment, product brand name, and product quality are not examined. Moreover, their study examines the overall usage of live streaming shopping without focusing on any particular product types. This study will extend the knowledge by particularly studying the shopping behaviors of fashion clothing product on live streaming. This study will

examine each live streaming characteristic that live streaming sellers should have and not just the overall perceived shopping values.

Therefore, the study's main objective is to investigate the factors of live stream that motivate shoppers to watch and shop fashion clothes on live streams. The factors would form the rating criteria for the live stream which would help shoppers bypass their decision making process, encourage more purchases and increase their shopping satisfaction. As a way to show the commercialization potential of the research outcome, a prototype website of how the rating criteria is used to help shoppers evaluate live streams will be developed and tested for user acceptance.

The research questions are listed as follow:

1) What should be the factors of live stream that motivate shoppers to watch and shop fashion clothes on live streams?
2) How should the live streaming website use rating criteria to help shoppers evaluate live streams?
3) What should be a business model?

1.2 Objectives

The main aim of this study is to investigate the factors of live stream that motivate shoppers to watch and shop fashion clothes on live streams, forming the rating criteria for the live stream to help shoppers make better decisions on their live stream shopping process for better shopping experience.

The study will be guided by the following objectives:

1) To identify factors of live stream to be used as rating criteria by investigating the role of live stream shopping attributes that affect customer viewing and purchase intentions in fashion cloth shopping

2) To incorporate the live stream rating criteria in the prototype development of the live streaming website

3) To test for user acceptance of the website prototype and assess its commercialization potential

1.3 Scope of Work

The scope of the content

- Live streaming shopping platforms to study will be Facebook Live based only in Thailand.
- The product scope is fashion clothing for both men and women.

The scope of sample

- Shoppers will include those who have experienced in viewing or making purchase for fashion clothing through Facebook Live in the past one year.
- Streamers will include those who have live streamed featuring fashion clothing and active in the past one year on Facebook Live.

The scope of software development

- The development environment of the live streaming website will be primarily for web-based or mobile-based.
- The mechanism to gather live streaming content could be via manual input by the developer or automatic input by the computer program.

1.4 System Definition

The system developed in the project is a live streaming shopping website that incorporates live stream rating criteria for fashion clothing shopping.

1.5 Expected Benefits

Table 1 shows the expected outputs from the research classifying by the CUTIP criteria. Descriptions of the outputs and their benefits are as follows:

The academic contribution

The knowledge about the criteria to rate the fashion shopping live streams. The study extends knowledge about the effect of both product-related factors and seller-related factors on customer viewing and purchase intentions in live streaming shopping for fashion clothing.

The practical contribution

The prototype of live streaming shopping website using rating criteria to help shoppers evaluate fashion clothing live streams to be used for future commercialization. The firms that provide live streaming services can use the rating criteria to add value to their platforms.

Table 1. Expected outputs according to CUTIP criteria

CUTIP Criteria	Expected outputs
Technology	Web application development technology will be used to build live streaming website to help shoppers evaluate live streams for fashion clothing shopping.
Innovation	Service Innovation: a live streaming website for fashion clothing using unique live stream rating criteria which would save shoppers' time, enable efficiency, and increase shopper satisfaction.
Management	Business plan and user assessment of the technology acceptance to commercialize the live streaming shopping website.

The rest of the paper is structured as follow. Chapter 2 describes how to model the live stream rating criteria by investigating the live streaming attributes that motivate shoppers to shop: watching the live streams and making purchases. Chapter 3 contains methods of study: first, it describes a qualitative study to explore live stream factors that affect shopper intentions; second, it describes a quantitative study to test the hypothesis. The resulting framework and live streaming attributes would be used in rating the live streams on the website to help viewers evaluate live streams to watch and shop from. Chapter 4 discusses the development of live

streaming website prototype and how the live stream rating criteria can become the inner working mechanism to help shoppers evaluate the live streams. The end of this part describes a method to design the live streaming website prototype and test for technology acceptance and commercialization.

CHAPTER 2

LITERATURE REVIEW

Given that the live stream ratings will help users evaluate live streams, there is a need to identify the live stream attributes that motivate shoppers to watch and purchase from the live stream.

2.1 Live Stream Attributes for Fashion Clothing Shopping

There have been a lot of studies in how traditional store attributes and online shopping website attributes affect consumer intention to visit the store or the website and make purchase while fewer studies have explored live stream shopping attributes. Though the attributes are not the same, the formers share a lot of common attributes with the latter. Liang and Lai (2002) describes online store design factors that affect consumer choice of stores. Factors are categorized into three types: motivation factors, hygiene factors, and media richness. Among top ten factors, six are motivation factors (e.g. online order, search function, easy to sign up, home delivery, credit card payment, shopping cart feature), two are hygiene factors (security and consistent style), and two are media richness factors (e.g. product organization and navigational links).

Y.-H. Chen, Hsu, and Lin (2010) presents a list of website attributes in three areas that influence shopper purchase intention. Among them are technology, shopping, and product. The study considers the following website attributes: security, privacy, and usability as technology factors; convenience, trust, and delivery as shopping factors; and product value and merchandising as product factors. El Hedhli, Chebat, and Sirgy (2013) describes six factors of traditional shopping malls that influence shopping well being that strengthens mall loyalty and positive word of mouth. Six factors include functionality, convenience, safety, leisure, atmospherics, and self-identification. Based on six factors, Johnson, Kim, Mun, and Lee (2015) has proposed 8 store attributes that influence shopper satisfaction: product, service, location, facility, design, atmosphere, price, and leisure. Aghekyan-Simonian, Forsythe, Suk Kwon, and Chattaraman (2012) studies how brand image and online store image affect purchase intention of apparel products by adapting measurements from Vázquez, del Rio, and Iglesias (2002) and Yun and Good (2007). El Hedhli, Zourrig, and Park (2017) shows that stores' merchandise

assortments, services quality, and prices have positive influence on mall patronage. Davari, Iyer, and Rokonuzzaman (2016) examines how product assortment, product quality, price transparency, and website convenience affect service quality and lead to online retail patronage. Kautish and Sharma (2019) also studies product assortment in online retailing.

In live streaming context, several prior works have studied live stream attributes and their influence on customer intentions. Wongkitrungrueng and Assarut (2020) shows seller characteristics have influence on customer trust and engagement. Cai, Wohn, Mittal, and Sureshbabu (2018) also studies attributes related to seller physical attractiveness and how products information that are conveyed through seller interactivity can motivate shopping. Hou, Guan, Li, and Chong Alain Yee (2019) studies how factors such as seller interactivity, seller humor, and seller sex appeal have association with customer intentions to watch and spend money. Sun, Shao, Li, Guo, and Nie (2019) shows that seller's abilities to show products to customers, to directly respond to customer questions, and to personally help guide customers in shopping have positive influence on shopping engagement and purchase intention. Wongkitrungrueng et al. (2020) studies user response characteristics in terms of engagement metrics with the sellers and describes selling approaches and strategies employed by sellers in live streaming. In their study, several factors that directly or indirectly affect customer intention to watch or intention to purchase are summarized. These factors include product information, product interactivity, communication quality, enjoyment, trend setting, and social presence.

As stated above, many prior works show that several factors of live stream motivate shoppers to engage in shopping behaviors. Several factors with the same meaning can be grouped together. (See **Table 2** for summary) Factors related to sellers include seller image, seller interactivity, seller pleasantness, seller humor, and seller sex appeal. Factors related to products include product assortment, product quality, and product pricing and promotion. Factors related to technology and operational processes include privacy and security, convenience, layout, delivery, and product returns.

Table 2. Factors of shopping that motivate shoppers to shop

	Liang and Lai (2002)	Y.-H. Chen et al. (2010)	Aghekyan-Simonian et al. (2012), Vázquez et al. (2002), Yun and Good (2007)	El Hedhli et al. (2013), El Hedhli et al. (2017)	Johnson et al. (2015)	Davari et al. (2016)	Wongkitrungrueng and Assarut (2020)	Cai et al. (2018)	Hou et al. (2019)	Kautish and Sharma (2019)	Sun et al. (2019)
Seller Image			X				X	X			
Seller Interactivity				X	X	X	X	X	X	X	X
Seller Presentation							X	X		X	X
Seller Shopping Guidance							X				X
Seller Humor							X		X		
Seller Sex Appeal								X	X		
Product Assortment				X	X	X				X	

Product Quality			X	X	X	X				X	
Product Trendiness				X			X				
Product Brand Name				X							
Product Pricing/ Discount		X			X						
Privacy and Security	X	X	X	X		X					
Convenience and Accessibility	X	X	X	X		X		X			
Website Layout or Store Layout	X	X	X	X						X	
Delivery	X	X								X	
Product Return										X	

2.2 Trust in Seller & Trust in Product

In e-commerce, trust is defined as the beliefs between parties based on different characteristics such as goodness, fairness, honesty, competence, predictability, benevolence, integrity, and many others (McKnight & Chervany, 2001). There are two major types of trusts: cognitive and affective trusts (Hajli, Sims, Zadeh, & Richard, 2017; Wongkitrungrueng & Assarut, 2020). Cognitive trust is a belief given by customer to the exchange party based on characteristics such as ability, consistency, expertise, and performance. Affective trust, on the other hand, is based on the emotional characteristics such as care and concerns. In e-commerce context without face-to-face communication between customer and exchange party, customers may perceive increased risks and reduced trusts in online exchanges (Steinbrück, Schaumburg, Duda, & Krüger, 2002). S. Kim and Park (2013) identifies attributes of social commerce that influence trust including reputation, size, information quality, transaction safety, communication, economic feasibility, and word-of-mouth referrals. Komiak and Benbasat (2004) identifies entities in online/offline shopping context that influence trust such as the salesperson, the website, the company, the products, and the information about the company and products. In the context of live streaming shopping, the relevant entities to consider in this study are the salesperson and the products.

With regards to trust in seller or salesperson, several studies have explored customer trust in salesperson and their effect on customer behaviors. Trust in seller is defined as the customer beliefs that the seller is competent and can be securely relied on to serve customer long-term interests (Crosby, Evans, & Cowles, 1990). J. E. Swan, Bowers, and Richardson (1999) suggests that customer trust towards salesperson fosters successful sales relationship through positive customer attitudes, intentions, and behaviors. Twing-Kwong, Gerald Albaum, and Fullgrabe (2013) finds that customer satisfaction with salesperson at various offline stores leads to increased levels of both cognitive and affective trust. Bateman and Valentine (2015) finds that salesperson customer orientation positively influences trust in salesperson, which in turn positively influences purchase intention.

Various prior studies have also explored customer trust in product. Trust in product is defined as the customer beliefs that the product will meet their expectations (Wongkitrungrueng & Assarut, 2020). Customers begin to gain trust in the product by searching for product information to consider making initial purchase. Trust in product continues to increase or decrease after the product has been purchase and used (Kennedy, Ferrell, & LeClair, 2001). Chinomona, Okoumba, and Pooe (2013) suggests that product quality increases customer trust and purchase intention. In terms of product information influencing trust in product, L.-S. Huang (2015) finds that self-disclosure of online product evaluations blogs increases cognitive trust and affective trust, which in turn positively influences product attitudes.

Trusts in product and seller have been examined by prior work and summarized in **Table 3**.

Table 3. Trusts of shoppers in prior work

	Crosby et al. (1990)	Chinomona et al. (2013)	S. Kim and Park (2013)	L.-S. Huang (2015)	Hajli et al. (2017)	Wongkitrungrueng and Assarut (2020)	Leong, Hew, Ooi, and Chong (2020)
Trust in product		X		X		X	
Trust in seller/firm	X		X			X	X
Trust in platform					X		

2.3 Customer Intentions to Watch & Purchase

Many studies have examined the topics of customer behaviors in shopping. In both online and offline context, customer intention to purchase has been studied extensively (Aghekyan-Simonian et al., 2012; Davari et al., 2016; Johnson et al., 2015). In live streaming shopping context, Cai et al. (2018) and Sun et al. (2019) have studied factors of live streaming shopping that influence customer intention to purchase. Wongkitrungrueng and Assarut (2020) and Hou et al. (2019) have explored factors of live streaming that influence customer engagement including the intention to watch and make purchase or spend money, respectively.

Intentions of customers to watch and purchase in live streaming shopping are influenced by live streaming shopping attributes through enhanced trusts in product and seller. (See **Table 4** for summary)

Table 4. Intentions of shoppers in prior work

	Y.-H. Chen et al. (2010)	Aghekyan-Simonian et al. (2012)	Johnson et al. (2015)	Davari et al. (2016)	Cai et al. (2018)	Wongkitrungrueng and Assarut (2020)	Hou et al. (2019)	Sun et al. (2019)
Intention to watch						X	X	
Intention to purchase/ spend money/ retail patronage		X	X	X	X	X	X	X

In this study, we focus on assessing the live stream attributes that can represent the quality for the live streaming fashion clothing sellers and their products. Therefore, factors related to technology of live streaming platform providers or factors related to general live stream

operational processes will not be considered. This leaves three main types of factors to be considered: fashion product-related factors, seller-related factors, and product pricing factor. Fashion product-related factors include fashion product assortment, product quality, product trendiness, and product brand name. Seller-related factors include seller image, seller interactivity, seller humor, and seller sex appeal. **Figure 1** shows live stream attributes model that influence shoppers to watch and purchase from the live stream through enhanced trusts in product and seller.

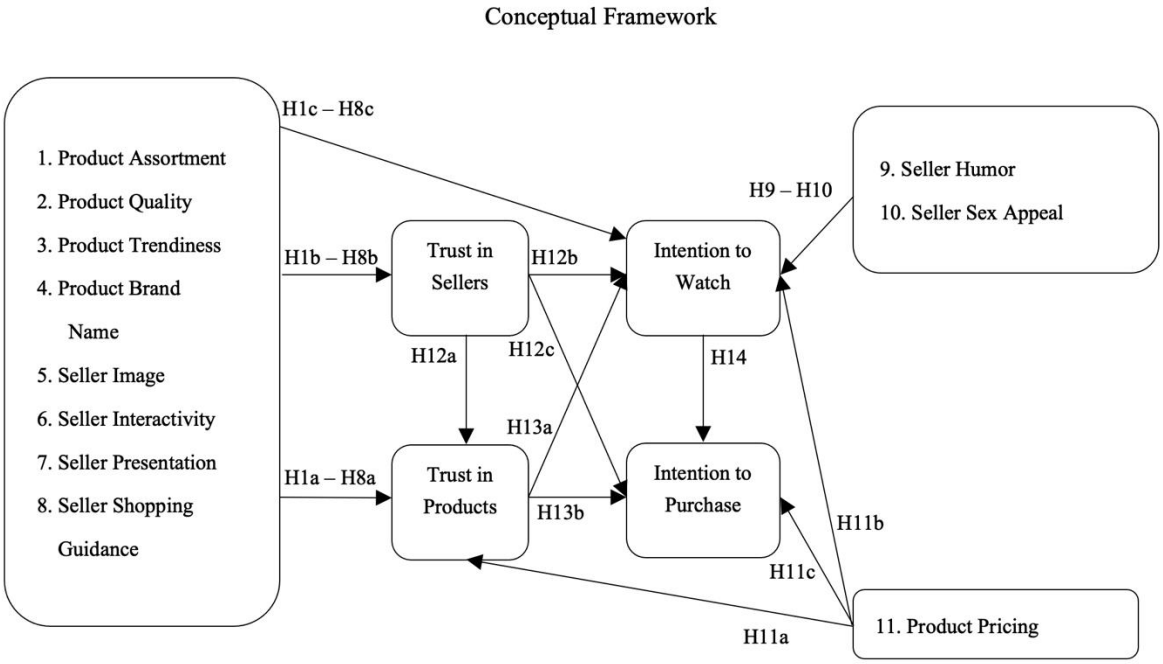

Figure 1. Live stream attributes model leading to customer intentions through enhanced trusts

2.4 Live Stream Attributes Model

2.4.1 Product assortment

Assortment of product refers to availability of products in various qualities, styles, and sizes sold by retailers (Bauer, Kotouc, & Rudolph, 2012). Trust in retailer depends on its competencies and one of which is the ability to provide assortments of products to satisfy varying customer needs. In an online shopping environment, product assortment provides value to

shoppers in terms of product variety and depth and breadth of selections which make online shopping efficient and affect consumer purchase intention (Kautish & Sharma, 2019). Rubio, Villaseñor, and Yagüe (2017) finds that perceived image of assortment has positive effect on trust in retailer and also loyalty towards retailer.

In contrary, however, Iyengar and Lepper (2000) finds that too many product choices negatively influence purchase behavior. Gourville and Soman (2005) finds that product assortment can have negative or positive impact on consumer choice of product depending on the dimension of assortment variance. On one hand, assortments varying along a single product dimension help meet the varying needs of different customers and positively impact consumer choice, on the other hand, assortments varying along multiple dimensions creates confusion and increases risks of regret of choosing the less desired product, which negatively impact consumer choice.

In fashion, Donnelly, Gee, and Silva (2020) finds that reducing fashion product assortment in department stores leads to decrease in purchase intention. Therefore:

H1a/b/c. Fashion product assortment has a positive influence on trust in product/trust in seller/intention to watch.

2.4.2 Product quality

Quality of product refers to the superiority or excellence of a product (Zeithaml, 1988). Perceived product quality may depend on several factors such as physical properties of the product, product brand image, packaging, and pricing (Konuk, 2018). Chinomona et al. (2013) finds that perceived product quality positively influences customer trust and purchase intention for electronic gadgets. Davari et al. (2016) also identifies product quality as one of the online store factors that influences perceived service quality which in turn influences customer intention to shop. Additionally, stores that offer products of low quality, lack of authenticity, and poor condition to the customers would result in less trust toward the stores (Jarvenpaa, Tractinsky, & Vitale, 2000). Therefore:

H2a/b/c. Fashion product quality has a positive influence on trust in product/trust in seller/intention to watch.

2.4.3 Product trendiness

Trendiness of fashion products refers to the novelty and uniqueness of the products (Workman & Kidd, 2000). While high-trendiness fashion products are fashion items that are novel and unique which are sought by fashion leaders, low-trendiness fashion products are those that are usually basic and more commonly available which are often adopted by fashion followers (Jang Ju, Baek, & Choo Ho, 2018; Workman & Kidd, 2000).

In shopping for fashionable goods, shoppers buy new and fashionable goods to look cool and visibly fashionable. Ladhari, Gonthier, and Lajante (2019) finds that 25% of young online female shoppers are interested and attracted to new trends products. Melewar, Foroudi, Gupta, Kitchen Philip, and Foroudi Mohammad (2017) suggests that trendiness and innovation are related to brand trust, credibility, and loyalty, which lead to greater market share. Therefore:

H3a/b/c. Fashion product trendiness has a positive influence on trust in product/trust in seller/intention to watch.

2.4.4 Product brand name

Product brand name can be defined in terms of customer-oriented definition as the beliefs or attachments customers have about the brand (Wood, 2000). In e-commerce, brand name is among several factors that influence brand trust and customers end to do business with the web stores they trust. Web stores that are perceived to be favorable or reputable brands on the Web are associated with higher levels of brand trust (Ha, 2004). El Hedhli et al. (2017) suggests that consumers tend to shop for branded products because they represent high status for shoppers and raise self-esteem. Thus, shopping mall tends to house wide range of branded stores. Ladhari et al. (2019) also finds that shoppers see brand value as implying higher trust towards well-known brands. Therefore:

H4a/b/c. Product brand name has a positive influence on trust in product/trust in seller/intention to watch.

2.4.5 Seller image

Seller image refers to the customer perception of the seller and the impression of what they expect from the seller. S. Chen and Dhillon (2003) finds that online shoppers are concerned with vendor's legitimacy and product authenticity. By perceiving that the internet vendor is competent, has integrity, and is benevolent, the shopper gains trust, which affects customer purchase intention. Aghekyan-Simonian et al. (2012) points out that product brand image and online store image reduces risk of online shopping which increases purchase intention. Product brand image is particularly important in online shopping for product category that requires more sensory information to make purchase decision such as clothing. Leeraphong and Sukrat (2018) finds that seller reputation is among seller attributes that directly or indirectly affect customer purchase intention in live streaming. Seller that receives a lot of likes, a lot of shares, have many friends or followers, or are being watched by many viewers are perceived to be reputable and may influence viewers to make impulse purchases. Therefore:

H5a/b/c. Seller image has a positive influence on trust in product/trust in seller/intention to watch.

2.4.6 Seller interactivity

Seller interactivity refers to the ability of seller to communicate with shoppers. This is different from web interactivity which refers to the ability of shoppers to access content on the Web (Ballantine Paul, 2005). By enabling shoppers to ask questions or interact with seller, customer gains utilitarian value of live streaming shopping which enhances trust in the seller and trust in the product, and in turn affect engagement with the seller (Wongkitrungrueng & Assarut, 2020). Sun et al. (2019) shows that meta-voicing affordance, which refers to the factor that customers can have direct communication with seller such as getting immediate answers to their questions or requests, affects consumer purchase intentions. X. Wang and Wu (2019) also finds

that user engagement mechanisms of the live streaming platforms including product interactivity, communication immediacy, and peer cues can indirectly affect consumer purchase intention. That is, customers gain product knowledge through interaction with the seller, feel more immersed in the communication that mimic offline environment, and receive better understanding of the product through comments and interactions made by other shoppers in the same live stream. Hou et al. (2019) also finds that streamers interacting with viewers also affect the viewer intention to continue watching. Therefore:

H6a/b/c. Seller interactivity has a positive influence on trust in product/trust in seller/intention to watch.

2.4.7 Seller presentation

Seller presentation refers to the ability of seller to present products to shoppers. Presentation of product allows access to product information that enables consumers to make purchase decision (Thomas, V, & Monica, 2018). In online apparel shopping, J. Kim, Fiore, and Lee (2007) finds that variations in product style, texture, and fabric create perceived risks and the ability of online retailers to present product information helps enhance store image which leads to customer patronage intention towards online store. Sun et al. (2019) shows that visibility affordance, which refers to the factor that sellers could give product presentation to viewer through live stream and visibly convey product information, affect consumer purchase intentions. Therefore:

H7a/b/c. Seller presentation has a positive influence on trust in product/trust in seller/intention to watch.

2.4.8 Seller shopping guidance

Seller shopping guidance refers to an aspect of customer service that knowledgeable salesperson helps guide shoppers to find desired products (Darian, Tucci, & Wiman, 2001). Y. j. Lee and Dubinsky (2017) suggests that some online customers prefer to be assisted by

salesperson, to hear salesperson's opinions, and tend to buy products recommended by salesperson. They further suggest that the desired to get salesperson opinions are more relevant in products that require special knowledge. D. Y. Lee and Dawes (2005) examines Chinese buyer's trust in supplier's salesperson and finds that knowledge and expertise of salesperson leads to trust in the supplier. Sun et al. (2019) shows that guidance affordance refers to the factor that sellers can provide personalized product recommendations to customers right on the live stream, affect consumer purchase intentions. Therefore:

H8a/b/c. Seller shopping guidance has a positive influence on trust in product/trust in seller/intention to watch.

2.4.9 Seller humor

Chang and Chang (2014) finds that humorous advertisement positively influences brand awareness and enhances customer attitude and purchase intentions. Imlawi and Gregg (2014) examines the use of humor in social network to increase engagement and finds that humor positively influences participant engagement. Barry and Graça (2018) shows that videos with humorous content receives significantly more favorable attitudes than videos with serious content. Hou et al. (2019) finds that streamers with sense of humor affect the viewer intention to continue watching and spend money on. Therefore:

H9. Seller humor has a significant positive influence on the intention to watch.

2.4.10 Seller sex appeal

Cai et al. (2018) studies consumer hedonic and utilitarian motivations that affect shopping intentions in live streaming shopping. In their study, physical attractiveness of the streamers and liking the seller would motivate customers to watch live stream. Hou et al. (2019) also finds that streamers with sex appeals affect the viewer intention to continue watching and spend money on. Therefore:

H10. Seller sex appeal has a significant positive influence on the intention to watch.

2.4.11 Product pricing

Price consciousness in online shopping has been well-studied and plays an important role in how shoppers behave (Grewal, Munger, Iyer, & Levy, 2003). In a situation where prices are high and shoppers are unable to adequately examine products online such as for apparels product, shoppers tend to shop for well known product brands and with well known retailers (Forsythe & Shi, 2003). Johnson et al. (2015) finds that price is the significant predictor of shopping enjoyment which affects store loyalty of apparel customers. Leeraphong and Sukrat (2018) finds that pricing advantage may influence viewers to make impulse purchases because viewers perceive the situation as an opportunity to get cheaper price than they could find elsewhere. Therefore:

H11a. Product pricing has a positive influence on trust in product.

H11b. Product pricing has a positive influence on intention to watch.

H11c. Product pricing has a positive influence on intention to purchase.

2.4.12 Trust in seller

As L.-S. Huang (2015) shows that product evaluation blogs increase trust in product, it can also be considered that products carried by trusted sellers could be more trusted. Cui, Lin, and Qu (2018) and Miguens and Vázquez (2017) both suggest that trust in online website links to online loyalty. Escobar-Rodríguez and Bonsón-Fernández (2017) states that perceived value and trust in fashion e-commerce website affect customer purchase intention. Shareef et al. (2019) suggest that operational performance and trust in online shopping may affect customer purchase intention. Therefore:

H12a. Trust in seller has a positive influence on Trust in product.

H12b. Trust in seller has a positive influence on intention to watch.

H12c. Trust in seller has a positive influence on intention to purchase.

2.4.13 Trust in product

Customers who are satisfied with the product will trust the product and will lead them to purchase the product (Chinomona et al., 2013). Therefore:

H13a. Trust in product has a positive influence on intention to watch.

H13b. Trust in product has a positive influence on intention to purchase.

2.4.14 Intention to watch and intention to purchase

As customers continue to explore more information about the product while watching a live stream, they exhibit a type of search behavior called exploration oriented. Janiszewski (1998) describes exploration oriented search behavior as the behavior where shoppers do not search for particular products but simply just browsing. While shoppers explore and receive more information about the product, they could be induced into making purchases (Babin, Darden, & Griffin, 1994). Therefore:

H14. The intention to watch has a positive influence on intention to purchase.

CHAPTER 3

METHODOLOGY

The research methodology consists of **three phases** as follow:

Phase 1: Qualitative study to explore the live streaming shopping attributes including product factors, seller factors, and other shopping factors such as promotion and atmosphere that affect customer intention to watch and to purchase fashion clothes in live streaming. The results from this part of our study will be used to redefine the conceptual framework that was summarized from the prior studies and guide us in developing the questonaire for the quantitative study in phase 2.

Phase 2: Quantitative study to identify live streaming shopping attributes that represent the quality rating of live stream in shopping for fashion clothing based on the redefined framework from Phase 1 which affect customer viewing and purchase intentions. The results from this quantitative study will help in the design and development of the live streaming aggregator website in phase 3.

Phase 3:

- Development of an aggregator website to evaluate and recommend fashion clothing sellers on live streaming based on the live streaming shopping rating criteria that influence customer viewing and purchase intentions.
- Technology Acceptance Model (TAM) to assess the technology acceptance and commercialization model.

Details of research work for each step can be described as follow:

PHASE 1: Qualitative Study

3.1 Explore Live Stream Factors Affecting Shopper Intentions

We will conduct the qualitative study to explore the live streaming shopping attributes including product factors, seller factors, and other shopping factors that affect customer intention

to watch and to purchase fashion clothes in live streaming. The research question is “What are the factors that affect shopper intentions to watch and to purchase fashion clothes in live streaming?” The study aims to gain insight into the patterns of shoppers and to understand the pain points or desires of shoppers in live streaming shopping. Such factors would influence the intentions of shoppers to watch and to purchase fashion clothes in live streaming. The results of this study will be used to guide the development of questionnaires in the second phase.

3.1.1 Means-End Chains (MEC) Theory

The interviewing process and its analysis of the research conducted in this qualitative study uses a laddering interview technique called Means-End Chains (MEC) theory. In this technique, the product users are asked about the product attributes and why they are important so that there would be linkages between the attributes and the consumer values. Reynolds and Gutman (1988) describes the technique in detail. Information from the interviews is extracted to form ladders where each ladder begins with a product attribute and followed with a sequence of functional consequences, psychosocial consequences, and consumer values. Functional consequences refer to the qualities of the live stream that shoppers anticipate immediately when engaging with the live stream, while psychosocial consequences refer to the states of emotions and social outcomes experienced by the shoppers (Wagner, 2007). The analysis would result in an implication matrix and in hierarchical value map (HVM). An implication matrix contains the frequency of the linkages between two elements in the sequence appearing in the interviews. The resulting HVM shows a depiction of implication matrix and can be used for interpretation. As a method to explore and analyze shopping motivations, Wagner (2007) has used the qualitative MEC to study consumer shopping behaviors in traditional shopping malls. In that study, attributes related to personnel, products, pricing, and store are identified. The consequences of those attributes in HVM are then used identify four dominant motivational patterns. These patterns allow retailers to better correspond to the consumer values based on the shopping attributes that drive those values.

3.1.2 Research Methods

Interviewees in this study consisted of 30 FB Live streaming shoppers in Thailand. The sample size of 20 to 25 people is recommended for this type of qualitative research and very few new insights are found beyond this point (Borgardt, 2020). In order to better understand shopping behavior of FB Live streaming customers, 8 FB Live streaming sellers are also interviewed on their thoughts and opinions of their respective group of shoppers.

Selection inclusion criteria and exclusion criteria in selecting interviewees:

Interviewees will consist of two groups:

Group 1: 30 live streaming shoppers in Thailand, and

Group 2: 8 live streaming sellers in Thailand.

To ensure that the Group 1 interviewees cover different types of shoppers, selected interviewees will be chosen based on varying gender, age, and average spending per clothing item. Those within the same group will cover different geographical locations based on the province of their current residence.

Other inclusion criteria for the Group 1 interviewees include:

- Currently reside in Thailand
- Have watched or purchased clothing via live streaming in the past 12 months

Exclusion criteria for the Group 1 interviewees include:

- Not meeting the inclusion criteria
- Not able to participate in the interview until its completion
- Not able to arrange time for the interview within the period of the data collection

Similarly, to ensure that the Group 2 interviewees cover different types of sellers, selected interviewees will be chosen based on the various sizes of their audience from small to large and the degree of their experience.

Other inclusion criteria for the Group 2 interviewees include:

- Currently reside in Thailand

- Have experienced in selling fashion clothes via live streaming in the past 12 months

Exclusion criteria for the Group 2 interviewees include:

- Not meeting the inclusion criteria
- Not able to participate in the interview until its completion
- Not able to arrange time for the interview within the period of the data collection

Details about the approach to contact and to reach interviewees:

To reach live streaming shoppers, the interviewee solicitation is either advertised on Facebook or individually invited through personal contacts. To ensure that participation is completely voluntary, the potential interviewees who see advertisement on Facebook can choose by their own free will to apply as participant in the study. The Facebook advertisement will display the following messages:

- Recruiting for interviewees about consumer behavior in shopping for clothes on Facebook live streaming
- 30-60 minute phone interview
- Each interviewee will receive a True Money card valued at ฿300 at the end of the interview
- Only applicants who meet criteria and able to make time arrangement for a phone interview will be chosen as interviewees on a first-come first-serve basis
- Main criteria for Group 1 (shoppers) is having watched or purchased clothing via Facebook live streaming in the past 12 months, and main criteria for Group 2 (sellers) is having experience in selling clothes via live streaming at least 10 sessions in the past 12 months
- Participation opening date and end date
- A link to an application form

The application form will be a web-based form that allows potential interviewees to submit the following information:

For Group 1 (shoppers):

- Nickname (optional)
- Phone number (required)
- Gender (required)
- Age (required)
- Average spending per clothing item on Facebook live stream (required)
- Province of current residence (required)
- Criteria checklist: Have watched or purchased clothing via live streaming in the past 12 months (required)
- Consent checklist: If I am selected to participate in the interview, I allow researcher to contact me initially via phone to arrange the interview. I allow phone calls to be made from 9.00-17.00 during Mondays to Fridays. If researcher cannot reach me to schedule the interview within three days, I allow researcher to cancel my application. If I am not selected to participate in the interview, I allow researcher to contact me via sms to inform me of the decision. I understand that no compensation will be given if I am not selected to participate in the interview.

For Group 2 (sellers):

- Nickname (optional)
- Phone number (required)
- Gender (required)
- Average price per clothing item that the seller sells on Facebook live stream (required)
- Province of current residence (required)
- Criteria checklist: Have experienced in selling clothes via live streaming in the past 12 months (required)
- Consent checklist: If I am selected to participate in the interview, I allow researcher to contact me via phone to arrange the interview. I allow phone calls to be made from 9.00-17.00 during Mondays to Fridays. If researcher cannot reach me to

schedule the interview within three days, I allow researcher to cancel my application. If I am not selected to participate in the interview, I allow researcher to contact me via sms to inform me of the decision. I understand that no compensation will be given if I am not selected to participate in the interview.

Potential interviewees who applied and passed the criteria will be chosen based on the diversity that our research requires and contacted via email and/or phone to arrange for an interview time. Other applicants will be thanked and informed that they are not selected to participate in the study via sms.

In the case that the number of interviewees of Group 2 (sellers) who meet criteria have not been reached via Facebook advertisement, we will contact live streaming sellers directly in their facebook pages. We will send the same message as on the advertisement to their Facebook messenger inboxes. The potential interviewees can choose by their own free will to apply as participants in the study.

To ensure that the interviewees are completely voluntary after they apply for the interview and got accepted to participate, we will send them a letter of research description to inform them that they can opt out of the study at any time without any negative consequences.

And because we want to encourage our interviewees to participate, we will offer each interviewee a True Money code valued at ฿300 for the interview. In the case that the interviewees do not complete the interview (exclusion criteria) or opt out of the study along the way, their data will not be used in the study and they will be offered compensation for their time as follow:

- In the case that the interviewees have spent 30 minutes or more, they will receive True Money code valued at ฿300
- In the case that the interviewees have not given any phone interview yet or have spent less than 30 minutes on a phone interview, they will receive no compensation

Details of Semi-structure In-depth Interview Questions:

An in-depth interview will be carried out with questions based on the shopping motivation literature related to shopping attributes including factors related to seller and product in the context of live streaming shopping. The interview will be conducted either face-to-face or over the telephone.

Interview questions will be structured as follow:

For Group 1 (shoppers)

(1) Interviewee general information:
    a. Gender
    b. Age
    c. Career/Career prior to retirement
    d. Province of current residence
(2) Shopping experience with Facebook Live
    a. Average spending per clothing item in Facebook live streaming
    b. Average spending per month on clothing items via Facebook live streaming
(3) Shopping behaviors
    a. Decision making process to watch a Facebook live stream that sells clothing items
    b. Decision making process to make purchase of a clothing item from a Facebook live stream
    c. Thoughts on the live streaming attributes that influence the shopping for clothing items on Facebook live stream including but not limited to factors related to seller, product, price, promotion, atmosphere, technology, or any other shopping aspects.
    d. Thoughts related to how live streaming shopping attributes influence trust in the seller and trust in the product, and how they in turn influence the intentions to watch and make purchase
    e. Any additional comments regarding the live streaming shopping for clothing items on Facebook

For Group 2 (sellers)

(1) Interviewee general information:
    a. Gender
    b. Age
    c. Province of current residence
    d. Experience in selling on Facebook live streaming
(2) Thoughts on consumer willingness to spend on shopping for clothes on Facebook live streaming
    a. Average customer spending per clothing item in Facebook live streaming
    b. Average customer spending per month on clothing items via Facebook live streaming
(3) Thoughts on customer shopping behaviors
    a. Thoughts on how customers make decision to watch a Facebook live stream that sells clothing items
    b. Thoughts on how customers make decision to purchase a clothing item from a Facebook live stream
    c. Thoughts on how customers consider the live streaming attributes that influence their behavior in shopping for clothing items on Facebook live stream including but not limited to factors related to seller, product, price, promotion, technology, or any other shopping aspects.
    d. Thoughts on how customers consider the live streaming attributes influencing trust in the seller and trust in the product, and how the trusts in turn influence the intentions to watch and make purchase
    e. Any additional comments regarding how customers behave in the live streaming shopping for clothing items on Facebook

The laddering technique will be used to understand consumer preferences starting from the attributes of live streams and lead up to the resulting consequences and values. Some of the questions may include: What attribute of the live stream make you decide to watch/purchase or

not watch/purchase? Why is it important that the attribute make you watch/purchase or not watch/purchase? Several successive ‘what do you mean’ and ‘why is it important’ questions will be asked to understand the ultimate values of respondents.

Each interview will last around 30 minutes to one hour. The interview transcripts will be analyzed to find different patterns of shoppers and segmented to see how shoppers with different patterns have different shopping behaviors. Focus will be on keywords that are categorized based on shopping attributes.

PHASE 2: Quantitative Study

As anticipated, the results from the phase 1 qualitative part of our study give us new findings that could be **used** to redefine the conceptual framework that was summarized from the prior studies and guide us in developing the questionnaire for the quantitative study in phase 2.

3.2 Redefine Conceptual Framework

Findings in the phase 1 study of this research have revealed that the list of attributes that are relevant in motivating shoppers to shop fashion clothes in live streaming may include not only the attributes mentioned in the original framework of this study, but also some of the other attributes that have not been considered earlier.

In the original proposed framework, there were a total of 11 live streaming shopping attributes: six seller-related attributes (seller image, seller interactivity, seller presentation, seller shopping guidance, seller humor, and seller sex appeal), four product-related attributes (product assortment, product quality, product trendiness, and product brand name), and product pricing attribute. However, our findings in the qualitative part of our study expand this list to include 9 more attributes: seller politeness, seller verbal attractiveness, seller pacing, product personal appeal, price transparency, background ambiance, broadcast timing announcement, the number of viewers, and the content of seller FB page (Chandrruangphen, Assarut, & Sinthupinyo, 2021). These additional attributes have also been discussed before in the prior literature involving their effects on consumer trust and shopping behaviors.

Due to the changes in the framework, the sequence number of the original hypotheses and the newly added hypotheses will be renumbered for the purposes of clarity as shown in Figure 2. the revised conceptual framework.

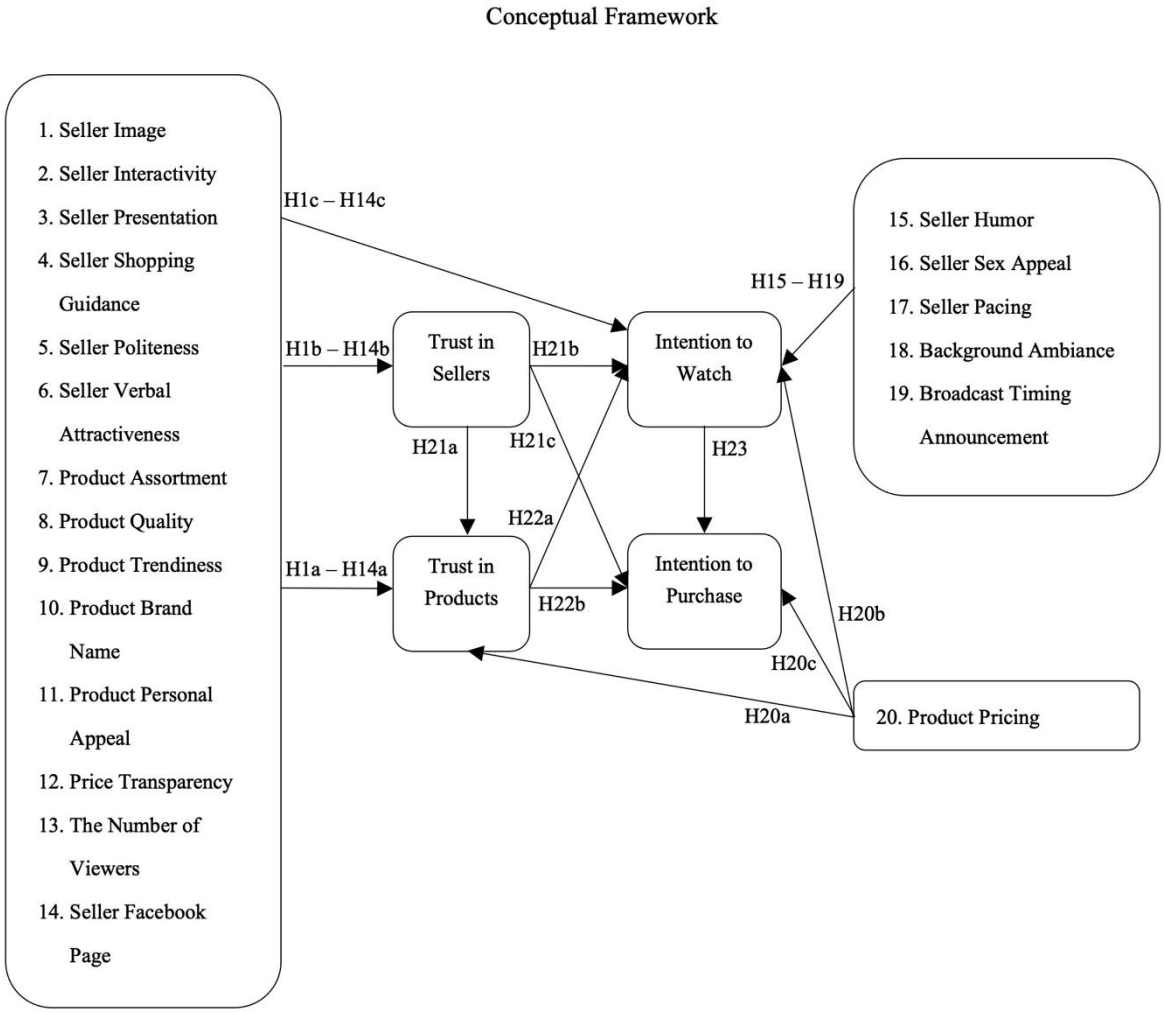

Figure 2. Revised live streaming attributes model leading to customer intentions through trust

Original hypotheses regarding *seller image, seller interactivity, seller presentation, seller shopping guidance*, *fashion product assortment, product quality, product trendiness, product brand name*, *seller humor, seller sex appeal, product pricing, trust in seller, trust in product, the intention to watch, and the intention to purchase* will be renumbered as:

H1a/b/c. Seller image has a positive influence on trust in product/trust in seller/intention to watch.

H2a/b/c. Seller interactivity has a positive influence on trust in product/trust in seller/intention to watch.

H3a/b/c. Seller presentation has a positive influence on trust in product/trust in seller/intention to watch.

H4a/b/c. Seller shopping guidance has a positive influence on trust in product/trust in seller/intention to watch.

H7a/b/c. Fashion product assortment has a positive influence on trust in product/trust in seller/intention to watch.

H8a/b/c. Fashion product quality has a positive influence on trust in product/trust in seller/intention to watch.

H9a/b/c. Fashion product trendiness has a positive influence on trust in product/trust in seller/intention to watch.

H10a/b/c. Product brand name has a positive influence on trust in product/trust in seller/intention to watch.

H15. Seller humor has a positive influence on intention to watch.

H16. Seller sex appeal has a positive influence on intention to watch.

H20a/b/c. Product pricing has a positive influence on trust in product/intention to watch/intention to purchase.

H21a/b/c. Trust in seller has a positive influence on trust in product/intention to watch/intention to purchase.

H22a/b. Trust in product has a positive influence on intention to watch/intention to purchase.

H23. The intention to watch has a positive influence on intention to purchase.

The additional 9 more attributes and their related hypotheses are as follow:

1. Seller politeness

Politeness is a measure of how much the shopper thinks the seller is a polite person. It is an important attribute of a seller because it shows how friendly and approachable the seller is.

Customers feel that it is easy to watch the seller who is polite, and they feel that if there are any problem with the ordering process, they would not be intimidated to approach seller (Chandrruangphen et al., 2021). Nicholson, Compeau, and Sethi (2001) also finds that buyers exhibit more trust towards salespersons who are likable, friendly, and polite. Bateman and Valentine (2015) suggests that one of the qualities of a salesperson to be trusted is to be friendly and approachable. Shoppers are motivated to shop with live streaming sellers who are friendly and have good interpersonal skills (Cai et al., 2018). Therefore:

H5a/b/c. Seller politeness has a positive influence on trust in product/trust in seller/intention to watch.

2. Verbal attractiveness

The verbal attractiveness of seller is a measure of how well the seller can talk and keep viewers or shoppers engaged, interested, and not bored. This is different from seller being humorous because a seller can tell interesting stories that are not humorous but are interesting and can keep the audience engaged. Seller can also talk in a style that is perceived as cute and attractive without being funny. Fraser, Kim, Thornsberry, Klemmer, and Dontcheva (2019) has shown that live streamers in creative live streams could keep their audience engaged be socializing with them. Streamers chat with the audience casually, know some of their audience by names, and keep them engaged. Hennig-Thurau (2004) suggests that ability of salespersons to socialize with the customers in the services industry is important in building relationship and have strong influence on the success of the business. Therefore:

H6a/b/c. Seller verbal attractiveness has a positive influence on trust in product/trust in seller/intention to watch.

3. Product personal appeal

Product personal appeal is a measure of how clothing items carried by the seller appeal to the unique fashion taste of the shoppers. As for product personal appeal, Ladhari et al. (2019) and Bento, Martinez, and Martinez (2018) suggest that women who shop fashion clothes follow brands that resonate with their fashion style. This is different from fashionability or product trendiness where latest fashion trend is valued, but clothing style can be unique and long lasting such as classic styles or vintage styles. Ferraro, Sands, and Brace-Govan (2016) finds that most second-hand clothing shoppers are motivated by fashion. They want to create their own personal unique fashion styles. Additionally, Cervellon, Carey, and Harms (2012) finds that second-hand shoppers, who dress in vintage styles, are motivated to find pieces of clothing that are unique to their styles at a good price. Customers like and trust judgement of customer service representstives who have unique personal style and fashion taste (McColl, Canning, McBride, Nobbs, & Shearer, 2013). Customers also find that they prefer to watch live streaming sellers who carry clothing items that cater to their personal appeal because it is more likely that they would see something that interested them (Chandrruangphen et al., 2021). Thus, live streaming sellers who carry clothing items that exhibit unique clothing styles matching shoppers' personal taste can influence customers to trust them and then shop with them. Therefore:

H11a/b/c. Product personal appeal has a positive influence on trust in product/trust in seller/intention to watch.

4. Pricing transparency

Pricing transparency is a measure of how pricing information is being communicated clearly and fully to the shoppers. It is an important attribute of a live streaming shopping. Customers rely on total price being clearly explained, especially in a live stream, because customers could enter to watch at any moments and might not understand total fees involving the order such as delivery fees. Customers need that information to plan how many items they would order to minimize the total fees (Chandrruangphen et al., 2021). Because customers have a habit

of comparing prices across online stores before they decide to make online purchase, they require that product price together with other potential extra costs such as shipping and handling fees to be transparent to them. Davari et al. (2016) views that price transparency influences how customers perceive the quality of online stores. Thus, live streaming sellers who display pricing information clearly can influence customers to perceive them as high quality seller and trust them. Therefore:

H12a/b/c. Pricing transparency has a positive influence on trust in product/trust in seller/intention to watch.

5. Number of viewers

The number of live stream viewers is a measure of how many viewers are watching the live stream. Shoppers feel that a large number of viewers indicates a type of social proof that signifies that a particular live streaming seller must be selling something good or selling something at a good price, and also the seller must be trustworthy as many other customers are buying from him (Chandrruangphen et al., 2021). When shoppers see a live stream with high number of viewers, they feel curious and would click to view to the live stream to find out. This type of customer behavior is also shown in other prior work. M. Wang and Li (2020) shows that the number of viewers have positive influence on the audience tendency to write comments in live streaming shows for both video games and talent shows. R. Zhou, Khemmarat, Gao, Wan, and Zhang (2016) finds that Youtube videos being searched by users tend to have the effect of rich-get-richer phenomena where videos with a lot of views get even more views than other videos. However, this does not mean that higher live streaming video views always lead to consumer tendency to watch the video. Hilvert-Bruce, Neill, Sjöblom, and Hamari (2018) finds that users who are motivated by social engagement to watch live streams are more inclined to watch smaller live stream channels with less than 500 viewers than larger channels. This implies that a moderate number of live stream viewers would be required to socially prove the credibility of the live stream but too many viewers would lessen the ability of the streamer to effectively socialize with the viewers. Therefore:

H13a/b/c. The number of viewers has a positive influence on trust in product/trust in seller/intention to watch.

6. Seller FB page

The quality of *seller FB page* is a measure of how well the page provides information about the seller, the products, and the selling activities. According to Chandrruangphen et al. (2021), customers look at the seller FB page to find out about the recently updated products to learn about the types of products the seller carries and also how often the seller gets the new batch of products. If the types of clothing match their fashion taste, the shoppers would be more willing to engage in live streaming shopping with the seller. Moreover, customers look at the seller FB page to ensure that they are buying from a reputable seller by reading comments from other buyers and also by reading how seller responses to those comments. The photos of packages being shipped out, the delivery receipts, and the number of page likes are all information that customers look for to ensure that they are buying from honest seller. Ruiz-Mafe, Martí-Parreño, and Sanz-Blas (2014) finds that users who perceive the FB fanpage of a brand being useful and who have high trust towards the brand will develop higher brand loyalty. Hinson, Boateng, Renner, and Kosiba John Paul (2019) suggests that customers that trust the brand will engage with the brand and also have positive attitudes on its FB fanpage. Therefore,

H14a/b/c. Seller Facebook page has a positive influence on product trust/seller trust/intention to watch.

7. Seller pacing

Seller pacing is a measure of the appropriate speed in which the seller moves from one item to the next while balancing the time needed for shoppers to make purchase decision and not too long to make the live stream boring. If seller stays on a certain item for too long, the shoppers would feel bored and may leave the live stream (Chandrruangphen et al., 2021). Similar to how Milgrom (2000) designs an auction process to ensure that the biddings moving at a reasonable pace and the auction finishes on time, the live streaming shopping process also needs to ensure

that the item presentations get moving at a reasonable pace and the whole live stream session is finished at a reasonable time period and not become boring. Therefore,

H17. Seller pacing has a positive influence on intention to watch.

8. Background ambiance

Live streaming's *background ambiance* is a measure of the how shoppers perceive the environment seen in the background. Similar to how traditional shopping malls have mall design and atmosphere including displays, layouts, colors, materials, and music to make up the mall environment, the shopping live streams also have set backgrounds and music to make up the live stream environment. El Hedhli et al. (2017) suggests that shoppers who have positive experience with the mall's environment will have favorable perceptions and expectations about the mall which could lead to the willingness to patronize the mall. Albayrak, Caber, and Çömen (2016) shows that the lighting and ambiance in the shopping mall is an important part of the shopping values that attract tourists. Chebat, Michon, Haj-Salem, and Oliveira (2014) suggests that renovating a shopping mall to improve the ambiance could indirectly lead to increased shopper's spending through increased shopping values and shopping satisfaction. Both utilitarian values and hedonic values increase because pleasant shopping environment stimulates shoppers to spend more time and explore the mall further. Therefore,

H18. Background ambiance has a positive influence on intention to watch.

9. Broadcast timing announcement

Broadcast timing announcement is a measure of how appropriately the seller announce the live stream schedule to the viewer ahead of time. It is important for shoppers to know when the seller would broadcast the live stream because they may need to manage their time to come watch the live stream (Chandrruangphen et al., 2021). This is similar to how traditional stores have opening and closing time published to allow shoppers to manage their schedule to visit the stores. Therefore,

H19. Broadcast timing announcement has a positive influence on intention to watch.

As seen above in this section, Figure 2 draws on the prior literature and adapted from the trust model in Wongkitrungrueng and Assarut (2020) to present a revised conceptual framework showing live streaming attributes that influence shopping intentions through trust.

We will conduct the quantitative study to test the hypothesis. As of the revised framework and the updated list of hypothesis, we define the measurements for fashion product-related attributes (product assortment, product quality, product trendiness, product brand name, product pricing, and product personal appeal), fashion seller-related attributes (seller image, seller interactivity, seller presentation, seller guidance, seller politeness, seller verbal attractiveness, seller humor, seller sex appeal, and seller pacing), other live streaming attributes (price transparency, background ambiance, broadcast timing announcement, number of viewers, and seller's FB page), trusts in product and seller, and viewing and purchase intentions.

We then design the research instrument and define the population sample to collect the data. The attributes that give positive influence on the desired outcomes would then be used as the rating criteria of live streams in the live streaming website to help shoppers evaluate live streams in fashion shopping.

3.2.1 Research Methods

The chosen variable measurement is adapted from previous studies to fit the context of live streaming shopping for fashionable clothes. A 8-item measure of fashion product assortment was adapted from Davari et al. (2016) and Kautish and Sharma (2019). A 7-item measure of fashion product quality was adapted from Davari et al. (2016) and El Hedhli et al. (2017). A 3-item measure of fashion product trendiness and a 3-item measure of fashion product brand name were adapted from El Hedhli et al. (2017). A 4-item measure of fashion product pricing was adapted from Johnson et al. (2015) and El Hedhli et al. (2017). A 3-item measures of fashion product personal appeal was created from qualitative part of this study, Chandrruangphen et al. (2021).

A 15-item measure of seller image were adapted from Cai et al. (2018) and Aghekyan-Simonian et al. (2012), which in turn adapted from Vázquez et al. (2002). A 7-item measure of seller interactivity was adapted from Hou et al. (2019). A 4-item measure of seller presentation and 4-item measure of seller shopping guidance were adapted from Sun et al. (2019). A 5-item measure of seller politeness was adapted from Bateman and Valentine (2015) and Cai et al. (2018). A 4-item measure of seller verbal attractiveness was created from qualitative part of this study, Chandrruangphen et al. (2021). A 7-item measure of seller humor was adapted from Hou et al. (2019) and Wongkitrungrueng and Assarut (2020). A 6-item measure of seller sex appeal was adapted from Hou et al. (2019) and Cai et al. (2018). A 2-item measure of seller pacing was created from qualitative part of this study, Chandrruangphen et al. (2021).

A 4-item measure of price transparency was adapted from Davari et al. (2016). A 4-item measure of background ambiance was adapted from El Hedhli et al. (2017). A 3-item measure of broadcast timing announcement, a 2-item measure of number of viewers, and a 5-item measure of seller's FB page are created from qualitative part of this study, Chandrruangphen et al. (2021).

A 3-item measure of product trust, and 4-item measure of seller trust were borrowed from Wongkitrungrueng and Assarut (2020). Finally, a 3-item measure of Intention to Watch was borrowed from Hou et al. (2019) and a 3-item measure of Intention to Purchase was borrowed from Sun et al. (2019). Details of the construct and the questions are shown in **Table 5**.

Table 5. Construct and questions of live stream attributes for fashion shopping

Construct	Questions	References
Fashion product assortment	• Seller has a wide variety of fashion products to choose from • Current fashions and new products are easily available at this seller • Seller is a "one-stop-shop" for my shopping • The choice of products of this seller is sufficient	Davari et al. (2016), Kautish and Sharma (2019)

	• This seller carries a wide selection of products to choose • This seller serves the majority of my online shopping needs • Seller always have products in stock • During my shopping with seller, I noticed stock-outs of products that were of my interest (reverse coded)	
Fashion product quality	• Seller offers quality fashion products • Seller offers reliable fashion products • Seller offers fashion products that last • Products sold through seller seem genuine to me • Products sold through seller appear to be authentic • The products sold through seller are of high quality • Seller carries high quality products	Davari et al. (2016), El Hedhli et al. (2017)
Fashion product trendiness	• Products sold through seller tend to be up-to-date and on-trend • Seller carries outdated products (reversed coded) • Seller carries new style products	El Hedhli et al. (2017)
Fashion product brand name	• Seller stocks "brand name" merchandise • Seller carries good brand names products • The products sold through seller are very well-known brands	El Hedhli et al. (2017)
Fashion product pricing	• Most of the fashion products offered by the seller reflect a good price for the value • Seller offers good discounts	Johnson et al. (2015), El Hedhli et al. (2017)

	• Seller has a great deal of value for the money I would spend • Seller has good prices	
Fashion product personal appeal	• The fashion style of this seller appeals to me • Most of the fashion products offered by the seller reflect my fashion style • Seller offers fashion products matching my fashion style	Chandrruangphen et al. (2021)
Seller image	• Seller is seen as continuously improving features • Seller is seen as trustworthy • Seller is seen as offering good value-for-money • Seller is seen as being of excellent quality • Seller is seen as being in fashion • Seller is seen as being used by friends • Seller is seen as a reputed seller • Seller is seen as a leading seller • The shopping with the seller is a prestige symbol • Seller recommended by famous people • Seller you particularly like/find attractive • Seller in keeping with your lifestyle • Seller is likeable • Seller is approachable • Seller is very warm	Aghekyan-Simonian et al. (2012), Vázquez et al. (2002), Cai et al. (2018)

Seller interactivity	• Seller is effective in gathering viewers' feedback • Seller facilitates two-way communication between herself/himself and viewers • Seller makes me feel she/he wanted to listen to her/his viewers • Seller gives viewers the opportunity to talk to her/him • Seller responds to my questions very quickly • I am able to obtain the information I wanted without any delay • I feels I was getting instantaneous information	Hou et al. (2019)
Seller presentation	• Seller gives me details of the product • Seller makes product attributes visible to me • Seller makes information about how to use products visible to me • Seller helps me visualize products like in the real world	Sun et al. (2019)
Seller shopping guidance	• Seller provides me with information on alternative products • Seller helps me establish my product needs without any restrictions • Seller helps me identify product attributes that fit my needs • Seller provides me with product customization based on my requirements	Sun et al. (2019)
Seller politeness	• Seller is friendly • Seller is approachable • Seller is polite	Bateman and Valentine (2015), Cai et al. (2018)

	• Seller is likeable • Seller is very warm	
Seller verbal attractiveness	• I enjoy listening to seller talks • Listening to seller talks is fun • Seller is an attractive speaker • Listening to seller talks is interesting	Chandrruangphen et al. (2021)
Seller humor	• Seller is funny • Seller is humorous • Seller is amusing • Shopping with seller is entertaining • Shopping with seller is a way of relieving stress • I enjoy shopping with seller • I forget my problems while shopping with seller	Hou et al. (2019), Wongkitrungruen g and Assarut (2020)
Seller sex appeal	• I think the seller is sexy • I think the seller is good looking • I think the seller clothing is revealing • I think the seller has sexual suggestive behavior • The streamer was quite handsome/pretty • The streamer was attractive physically	Hou et al. (2019), Cai et al. (2018)
Seller pacing	• Seller moves through items at an appropriate speed • Seller does not spend too much time on any item	Chandrruangphen et al. (2021)

Price transparency	• Seller does not have any “hidden costs” in the displayed price • I do not have to worry about being charged additional amounts when I purchase a product from this seller • Seller clearly mentions what charges will be added to the final price • The manner in which the seller prices its products is transparent	Davari et al. (2016)
Background ambiance	• The atmosphere of this live stream is depressing-cheerful • The atmosphere of this live stream is dull/entertaining • The atmosphere of this live stream is boring/stimulating • The atmosphere of this live stream is drab/colorful	El Hedhli et al. (2017)
Broadcast timing announcement	• Seller sufficiently preannounces the time of their live stream • I have time to preplan to watch the live stream • I have time to clear my schedule to watch the live stream	Chandrruangphen et al. (2021)
Number of viewers	• The number of viewers of this live stream is small-large • I think the number of viewers of this live stream is appropriate	Chandrruangphen et al. (2021)
Seller’s FB page	• I think other customers posted favorable comments on seller’s FB page • I think seller responds well in the comments posted on seller’s FB page • I think seller often shows evidence of recent orders being shipped on seller’s FB page • I think seller often updates new product information on seller’s	Chandrruangphen et al. (2021)

	FB page ● I think seller's FB page has sufficient number of followers ● I think seller's FB page has sufficient movements	
Trust in product	● I think the products I order from live stream will be as I imagined. ● I believe that I will be able to use products like those demonstrated on live stream. ● I trust that the products I receive will be the same as those shown on live stream.	Wongkitrungruen g and Assarut (2020)
Trust in seller	● I believe in the information that the seller provides through live streaming. ● I can trust sellers that use live streaming. ● I believe that sellers who use live streaming are trustworthy. ● I do not think that sellers who use live streaming would take advantage of me.	Wongkitrungruen g and Assarut (2020)
Intention to watch	● I intend to continue watching the seller live stream in the future ● I will always try to watch the seller live stream in my daily life ● I plan to continue to watch the seller live stream frequently	Hou et al. (2019)
Intention to purchase	● I will consider the seller as my first shopping choice. ● I intend to purchase products or services through the seller ● I expect that I will purchase products or services through the seller	Sun et al. (2019)

Instrument Design

First of all, the respondents are required to answer the screening question to ensure they have experience watching or making purchase through live streaming. If the respondents pass the screening question, they will be asked to proceed with the questionnaire. Otherwise, the respondents will be screened out. The questionnaire is divided into three parts. The first part collected demographic data of the respondent. The second part included fifteen items to measure the seller image, seven items to measure seller interactivity, four items to measure seller presentation, four items to measure seller shopping guidance, seven items to measure seller humor, six items to measure seller sex appeal, eight items to measure fashion product assortment, seven items to measure fashion product quality, three items to measure fashion product trendiness, three items to measure fashion product brand name, and four items to measure fashion product pricing. The third part included three items to measure trust in product, four items to measure trust in seller, three items to measure the intention to watch live streaming shopping and three items to measure the intention to purchase. Among this, the second and third parts of the questionnaire adopted a seven-scale Likert scale, with 1 representing total disagreement and 7 representing total agreement.

Since all the respondents will be Thais, all the questions are developed in English and then translated from English to Thai for the questionnaire. The questionnaire in Thai is shown in **Figure 3** and the measurement scales in English is shown in **Figure 4.**

Figure 3. The questionnaire in Thai

แบบสำรวจ

ปัจจัยการซื้อเสื้อผ้าแฟชั่นผ่านไลฟ์สด

แบบสำรวจฉบับนี้เป็นส่วนหนึ่งของการศึกษาใน หลักสูตรปริญญาเอก สาขาธุรกิจเทคโนโลยีและการจัดการนวัตกรรม จุฬาลงกรณ์มหาวิทยาลัย โดยมีวัตถุประสงค์เพื่อเข้าใจพฤติกรรมและตอบสนองความต้องการของ "ผู้ที่ซื้อเสื้อผ้าแฟชั่นผ่านไลฟ์สด" ผู้วิจัยขอความอนุเคราะห์ในการตอบแบบสำรวจนี้เพื่อประโยชน์สูงสุดของการวิจัย ขอรับรองว่า ข้อมูลที่ได้รับจากท่านจะถือเป็นความลับ และไม่นำไปเปิดเผยถึงแหล่งที่มาของข้อมูลใดๆ ผู้วิจัยหวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณมา ณ โอกาสนี้

ท่านเคยรับชมไลฟ์สดขายเสื้อผ้าแฟชั่นภายใน 12 เดือนที่ผ่านมาหรือไม่ □ เคย □ ไม่เคย

<u>ถ้าท่านไม่เคยชม การทำแบบสอบถามนี้ไม่ใช่สำหรับท่าน</u>

สถานที่เก็บข้อมูล.....

วันที่.....

ส่วนที่ 1 ข้อมูลประชากรศาสตร์

1.1 เพศ (1) ชาย (2) หญิง (3) อื่นๆ

1.2 อายุ (1) น้อยกว่าหรือเท่ากับ 17 ปี (2) 18-20 ปี (3) 21-25 ปี (4) 26-30 ปี
(5) 31-35 ปี (6) 36-40 ปี (7) 41-45 ปี (8) 46-50 ปี (9) มากกว่า 50 ปี
(10) ไม่ต้องการตอบ

1.3 สถานะ (1) โสด (2) แต่งงาน (3) หย่า (4) หม้าย (5) อื่นๆ โปรดระบุ.....

1.4 ระดับการศึกษาสูงสุด (1) ต่ำกว่าระดับปริญญาตรี (2) ปริญญาตรี (3) ปริญญาโท
(4) ปริญญาเอกขึ้นไป (5) อื่นๆ โปรดระบุ.....

1.5 รายได้ต่อเดือน (1) น้อยกว่า 15,000 (2) 15,001-20,000 (3) 20,001-30,000
(4) 30,001-40,000 (5) 40,001-70,000 (6) 70,001-100,000 (7) มากกว่า 100,000
(8) ไม่ต้องการตอบ

1.6 ประกอบอาชีพ (1) ข้าราชการ (2) พนักงานรัฐวิสาหกิจ (3) พนักงานบริษัท
(4) ธุรกิจส่วนตัว (5) ค้าขาย (6) รับจ้าง/ลูกจ้าง (7) นิสิต/นักศึกษา
(8) เกษตรกรรม/ปศุสัตว์/ประมง (9) เกษียณ/ว่างงาน (10) อื่นๆ โปรดระบุ.....

1.7 รหัสไปรษณีย์ .....

ส่วนที่ 2 คุณสมบัติของไลฟ์สดที่ท่านเคยชมและคุณค่าที่ได้จากการช้อปปิ้ง

ท่านเห็นด้วยกับข้อความต่างๆเหล่านี้มากน้อยอย่างไรบ้าง

7 = เห็นด้วยอย่างยิ่ง 6 = เห็นด้วย 5 = เห็นด้วยนิดหน่อย 4 = เห็นเป็นกลาง

3 = ไม่เห็นด้วยนิดหน่อย 2 = ไม่เห็นด้วย 1 = ไม่เห็นด้วยอย่างยิ่ง

โปรดทำเครื่องหมาย √ ในช่องที่ตรงกับความคิดเห็นของท่านมากที่สุด

1. ภาพลักษณ์ของนักขาย	**ระดับความคิดเห็น**						
1.1 ผู้ขายดูมีการปรับปรุงคุณภาพให้ดีขึ้นอย่างต่อเนื่อง	7	6	5	4	3	2	1
1.2 ผู้ขายดูน่าเชื่อถือ	7	6	5	4	3	2	1
1.3 ผู้ขายดูให้ข้อเสนอที่คุ้มค่ากับราคา	7	6	5	4	3	2	1
1.4 ผู้ขายดูเป็นคนที่มีคุณภาพดีเยี่ยม	7	6	5	4	3	2	1
1.5 ผู้ขายดูเป็นคนอินเทรนด์แฟชั่น	7	6	5	4	3	2	1
1.6 ผู้ขายดูเป็นคนที่เพื่อนๆของฉันก็มาใช้บริการด้วย	7	6	5	4	3	2	1
1.7 ผู้ขายดูเป็นคนที่มีชื่อเสียง	7	6	5	4	3	2	1
1.8 ผู้ขายดูเป็นนักขายอันดับต้นๆ	7	6	5	4	3	2	1
1.9 การซื้อสินค้าจากผู้ขายนี้เป็นสัญลักษณ์ของความมีเกียรติและศักดิ์ศรี	7	6	5	4	3	2	1
1.10 ผู้ขายถูกแนะนำโดยคนที่มีชื่อเสียง	7	6	5	4	3	2	1
1.11 ผู้ขายเป็นคนที่ฉันรู้สึกชอบและเป็นคนน่าสนใจ	7	6	5	4	3	2	1
1.12 ผู้ขายเป็นคนที่เหมาะกับรูปแบบการใช้ชีวิตของฉัน	7	6	5	4	3	2	1
1.13 ผู้ขายดูเป็นคนน่ารัก	7	6	5	4	3	2	1

1.14 ผู้ขายดูเป็นคนน่าเข้าหา	7	6	5	4	3	2	1
1.15 ผู้ขายดูเป็นคนอบอุ่น	7	6	5	4	3	2	1
2. การเป็นคนมีปฏิสัมพันธ์ของนักขาย	**ระดับความคิดเห็น**						
2.1 ผู้ขายมีประสิทธิภาพในการรวบรวมความคิดเห็นของผู้ชม	7	6	5	4	3	2	1
2.2 ผู้ขายเอื้ออำนวยต่อการสื่อสารโต้ตอบระหว่างตัวผู้ขายกับผู้ชม	7	6	5	4	3	2	1
2.3 ผู้ขายทำให้ฉันรู้สึกว่าตัวผู้ขายต้องการที่จะฟังความคิดเห็นของผู้ชม	7	6	5	4	3	2	1
2.4 ผู้ขายเปิดโอกาสให้ผู้ชมได้พูดคุยและซักถาม	7	6	5	4	3	2	1
2.5 ผู้ขายตอบคำถามของฉันอย่างรวดเร็วมาก	7	6	5	4	3	2	1
2.6 ฉันสามารถได้รับข้อมูลที่ฉันต้องการอย่างไม่ล่าช้า	7	6	5	4	3	2	1
2.7 ฉันรู้สึกว่าฉันได้รับข้อมูลทันที	7	6	5	4	3	2	1
3. การนำเสนอของนักขาย	**ระดับความคิดเห็น**						
3.1 ผู้ขายให้รายละเอียดของสินค้าครบถ้วน	7	6	5	4	3	2	1
3.2 ผู้ขายทำให้ฉันเห็นคุณลักษณะของสินค้า	7	6	5	4	3	2	1
3.3 ผู้ขายทำให้ฉันเห็นถึงวิธีการใช้สินค้า	7	6	5	4	3	2	1
3.4 ผู้ขายทำให้ฉันเห็นภาพสินค้าเสมือนโลกจริง	7	6	5	4	3	2	1
4. การช่วยแนะนำแนวทางการช้อปปิ้ง	**ระดับความคิดเห็น**						
4.1 ผู้ขายแนะนำสินค้าตัวเลือกอื่นให้ฉัน	7	6	5	4	3	2	1
4.2 ผู้ขายช่วยฉันระบุความต้องการเกี่ยวกับสินค้าได้โดยไม่มีข้อจำกัด	7	6	5	4	3	2	1
4.3 ผู้ขายช่วยฉันระบุคุณลักษณะของสินค้าได้ตรงความต้องการของฉัน	7	6	5	4	3	2	1
4.4 ผู้ขายให้สินค้าที่เหมาะสมกับความต้องการของฉัน	7	6	5	4	3	2	1
5. ความสุภาพของนักขาย	**ระดับความคิดเห็น**						
5.1 ฉันคิดว่าผู้ขายมีความเป็นมิตร	7	6	5	4	3	2	1
5.2 ฉันคิดว่าผู้ขายเป็นคนเข้าถึงได้ง่าย	7	6	5	4	3	2	1
5.3 ฉันคิดว่าผู้ขายเป็นคนสุภาพ	7	6	5	4	3	2	1
5.4 ฉันคิดว่าผู้ขายเป็นคนน่าคบหา	7	6	5	4	3	2	1

5.5 ฉันคิดว่าผู้ขายเป็นคนอบอุ่น	7	6	5	4	3	2	1
6. ทักษะการพูดที่น่าฟังของนักขาย	**ระดับความคิดเห็น**						
6.1 ฉันชอบฟังสิ่งที่ผู้ขายพูด	7	6	5	4	3	2	1
6.2 ฉันคิดว่าผู้ขายเป็นคนคุยสนุก	7	6	5	4	3	2	1
6.3 ฉันคิดว่าผู้ขายพูดได้น่าฟัง	7	6	5	4	3	2	1
6.4 ฉันคิดว่าผู้ขายพูดได้น่าสนใจ	7	6	5	4	3	2	1
7. การเป็นคนมีอารมณ์ขันของนักขาย	**ระดับความคิดเห็น**						
7.1 ฉันคิดว่าผู้ขายเป็นคนตลก	7	6	5	4	3	2	1
7.2 ฉันคิดว่าผู้ขายมีอารมณ์ขัน	7	6	5	4	3	2	1
7.3 ฉันคิดว่าผู้ขายมีความน่าขบขัน	7	6	5	4	3	2	1
7.4 การเลือกซื้อสินค้ากับผู้ขายเป็นความบันเทิง	7	6	5	4	3	2	1
7.5 การเลือกซื้อสินค้ากับผู้ขายเป็นการระบายความเครียด	7	6	5	4	3	2	1
7.6 ฉันรู้สึกสนุกกับการเลือกซื้อสินค้ากับผู้ขาย	7	6	5	4	3	2	1
7.7 ฉันลืมปัญหาของฉันในขณะเลือกซื้อสินค้ากับผู้ขาย	7	6	5	4	3	2	1
8. การเป็นคนมีเสน่ห์ทางเพศของนักขาย	**ระดับความคิดเห็น**						
8.1 ฉันคิดว่าผู้ขายเซ็กซี่	7	6	5	4	3	2	1
8.2 ฉันคิดว่าผู้ขายดูดี	7	6	5	4	3	2	1
8.3 ฉันคิดว่าผู้ขายใส่เสื้อผ้าเปิดแบบวาบหวิว	7	6	5	4	3	2	1
8.4 ฉันคิดว่าผู้ขายมีพฤติกรรมชี้นำทางเพศ	7	6	5	4	3	2	1
8.5 ฉันคิดว่าผู้ขายหล่อหรือสวย	7	6	5	4	3	2	1
8.6 ฉันคิดว่าผู้ขายมีความน่าดึงดูดทางกายภาพ	7	6	5	4	3	2	1
9. จังหวะการขายของนักขาย	**ระดับความคิดเห็น**						
9.1 ฉันคิดว่าผู้ขายใช้เวลาเหมาะสมในการนำเสนอสินค้าแต่ละชิ้น	7	6	5	4	3	2	1
9.2 ฉันคิดว่าผู้ขายไม่แช่อยู่กับสินค้าแต่ละชิ้นนานเกินไป	7	6	5	4	3	2	1

10. ความหลากหลายของสินค้าแฟชั่น	**ระดับความคิดเห็น**						
10.1 ผู้ขายมีสินค้าแฟชั่นหลากหลายให้เลือก	7	6	5	4	3	2	1
10.2 แฟชั่นทันสมัยและสินค้าใหม่ๆสามารถหาซื้อได้โดยง่ายจากผู้ขายคนนี้	7	6	5	4	3	2	1
10.3 ผู้ขายเป็นมีสินค้าครบวงจร สำหรับการเลือกซื้อสินค้าของฉัน	7	6	5	4	3	2	1
10.4 ผู้ขายมีสินค้าให้เลือกเพียงพอ	7	6	5	4	3	2	1
10.5 ผู้ขายมีสินค้าให้เลือกมากมาย	7	6	5	4	3	2	1
10.6 ผู้ขายตอบสนองความต้องการในการเลือกซื้อสินค้าออนไลน์ของฉัน	7	6	5	4	3	2	1
10.7 ผู้ขายมักมีสินค้าพร้อมส่ง	7	6	5	4	3	2	1
10.8 ขณะที่ฉันเลือกซื้อ ฉันเห็นว่าสินค้าที่ฉันต้องการนั้นมักของหมด (reverse coded)	7	6	5	4	3	2	1
11. คุณภาพของสินค้าแฟชั่น	**ระดับความคิดเห็น**						
11.1 ผู้ขายนำเสนอสินค้าแฟชั่นที่มีคุณภาพ	7	6	5	4	3	2	1
11.2 ผู้ขายนำเสนอสินค้าแฟชั่นที่น่าเชื่อถือได้	7	6	5	4	3	2	1
11.3 ผู้ขายนำเสนอสินค้าแฟชั่นที่คงทนใช้ได้นาน	7	6	5	4	3	2	1
11.4 สินค้ามีคุณสมบัติแท้จริงตรงตามที่นำเสนอ	7	6	5	4	3	2	1
11.5 สินค้าที่นำเสนอดูเหมือนของแท้	7	6	5	4	3	2	1
11.6 สินค้าที่ขายมีคุณภาพสูง	7	6	5	4	3	2	1
11.7 ผู้ขายนำเสนอสินค้าที่มีคุณภาพต่ำ (reverse coded)	7	6	5	4	3	2	1
12. ความทันสมัยของสินค้าแฟชั่น	**ระดับความคิดเห็น**						
12.1 สินค้าที่นำเสนอมีความทันสมัย อินเทรนด์	7	6	5	4	3	2	1
12.2 ผู้ขายนำเสนอสินค้าที่ล้าสมัย (reverse coded)	7	6	5	4	3	2	1
12.3 ผู้ขายนำเสนอสินค้าที่มีรูปแบบใหม่	7	6	5	4	3	2	1
13. แบรน์เนมของสินค้าแฟชั่น	**ระดับความคิดเห็น**						
13.1 ผู้ขายมีสินค้าที่มียี่ห้อในสต๊อก	7	6	5	4	3	2	1
13.2 ผู้ขายนำเสนอสินค้าที่มียี่ห้อ	7	6	5	4	3	2	1
13.3 สินค้าที่นำเสนอมียี่ห้อที่เป็นที่รู้จัก	7	6	5	4	3	2	1

14. ราคาของสินค้าแฟชั่น	**ระดับความคิดเห็น**						
14.1 สินค้าแฟชั่นส่วนใหญ่ที่นำเสนอโดยผู้ขายสะท้อนให้เห็นถึงราคาที่ดีและคุ้มค่า	7	6	5	4	3	2	1
14.2 ผู้ขายให้ข้อเสนอส่วนลดที่ดี	7	6	5	4	3	2	1
14.3 ผู้ขายให้ข้อเสนอที่คุ้มค่ากับราคาที่ซื้อ	7	6	5	4	3	2	1
14.4 ผู้ขายให้ราคาที่ดี	7	6	5	4	3	2	1
15. รูปแบบแฟชั่นของสินค้าแฟชั่น	**ระดับความคิดเห็น**						
15.1 รูปแบบแฟชั่นของสินค้าที่ผู้ขายนำเสนอดึงดูดใจฉัน	7	6	5	4	3	2	1
15.2 สินค้าแฟชั่นส่วนใหญ่ที่นำเสนอโดยผู้ขายสะท้อนได้ตรงกับรูปแบบแฟชั่นของฉัน	7	6	5	4	3	2	1
15.3 ผู้ขายนำเสนอสินค้าแฟชั่นที่เข้ากับรูปแบบแฟชั่นของฉัน	7	6	5	4	3	2	1
16. ความโปร่งใสของราคา	**ระดับความคิดเห็น**						
16.1 ผู้ขายไม่มี ค่าธรรมเนียมแอบแฝง ในราคาที่แสดง	7	6	5	4	3	2	1
16.2 ฉันไม่ต้องกังวลว่าจะมีการเรียกเก็บค่าธรรมเนียมเพิ่มเติมหลังสั่งซื้อสินค้าแล้ว	7	6	5	4	3	2	1
16.3 ผู้ขายระบุชัดเจนว่าจะมีค่าธรรมเนียมใดบ้างในราคาที่เรียกเก็บสุดท้าย	7	6	5	4	3	2	1
16.4 ลักษณะที่ผู้ขายกำหนดราคาสินค้าของตนมีความโปร่งใส	7	6	5	4	3	2	1
17. บรรยากาศของการไลฟ์สด	**ระดับความคิดเห็น**						
17.1 บรรยากาศของการไลฟ์สดนี้มีความร่าเริง (7) – น่าหดหู่ (1)	7	6	5	4	3	2	1
17.2 บรรยากาศของการไลฟ์สดนี้มีความสนุกสนาน (7) – น่าเบื่อ (1)	7	6	5	4	3	2	1
17.3 บรรยากาศของการไลฟ์สดนี้มีความเร้าใจ (7) – ซบเซา (1)	7	6	5	4	3	2	1
17.4 บรรยากาศของการไลฟ์สดนี้มีสีสัน (7) – จืดชืด (1)	7	6	5	4	3	2	1
18. การแจ้งเวลาในการไลฟ์สด	**ระดับความคิดเห็น**						
18.1 ผู้ขายมีการแจ้งเวลาล่วงหน้าพอสมควรก่อนการไลฟ์สด	7	6	5	4	3	2	1
18.2 ฉันมีเวลาพอสมควรที่จะจัดเวลาเพื่อมาดูไลฟ์สด	7	6	5	4	3	2	1
18.3 ฉันมีเวลาพอสมควรที่จะเคลียร์ธุระเพื่อมาดูไลฟ์สด	7	6	5	4	3	2	1
19. จำนวนผู้ชม	**ระดับความคิดเห็น**						

19.1 จำนวนผู้ชมในไลฟ์สดนี้มีจำนวนมาก (7) – น้อย (1)	7	6	5	4	3	2	1
19.2 ฉันคิดว่าจำนวนผู้ชมในไลฟ์สดนี้มีความเหมาะสม	7	6	5	4	3	2	1
20. หน้า FB เพจของนักขาย	**ระดับความคิดเห็น**						
20.1 ฉันคิดว่าลูกค้าคนอื่นๆ โพสต์ความคิดเห็นที่ดีบนหน้า FB ของผู้ขาย	7	6	5	4	3	2	1
20.2 ฉันคิดว่าผู้ขายโต้ตอบได้ดีในความคิดเห็นที่โพสต์บนหน้า FB ของผู้ขาย	7	6	5	4	3	2	1
20.3 ฉันคิดว่าผู้ขายมักจะแสดงให้เห็นว่ามีการจัดส่งสินค้าจริงในหน้า FB ของผู้ขาย	7	6	5	4	3	2	1
20.4 ฉันคิดว่าผู้ขายมักจะอัปเดตข้อมูลสินค้าใหม่ๆบนหน้า FB ของผู้ขาย	7	6	5	4	3	2	1
20.5 ฉันคิดว่าหน้า FB ของผู้ขายมีจำนวนผู้ติดตามเพียงพอ	7	6	5	4	3	2	1
20.6 ฉันคิดว่าหน้า FB ของผู้ขายมีการเคลื่อนไหวอย่าสม่ำเสมอ	7	6	5	4	3	2	1

ส่วนที่ 3 การซื้อผ่านไลฟ์สด และ ความตั้งใจที่จะซื้อในอนาคต

ท่านเห็นด้วยกับข้อความต่างๆเหล่านี้มากน้อยอย่างไรบ้าง

7 = เห็นด้วยอย่างยิ่ง 6 = เห็นด้วย 5 = เห็นด้วยนิดหน่อย 4 = เห็นเป็นกลาง

3 = ไม่เห็นด้วยนิดหน่อย 2 = ไม่เห็นด้วย 1 = ไม่เห็นด้วยอย่างยิ่ง

โปรดทำเครื่องหมาย √ ในช่องที่ตรงกับความคิดเห็นของท่านมากที่สุด

1. ความไว้ใจในผู้ขาย	**ระดับความคิดเห็น**						
1.1 ฉันเชื่อในข้อมูลที่ผู้ขายให้ผ่านการไลฟ์สด	7	6	5	4	3	2	1
1.2 ฉันสามารถไว้ใจผู้ขายที่ใช้ไลฟ์สดได้	7	6	5	4	3	2	1
1.3 ฉันเชื่อว่าผู้ขายที่ใช้ไลฟ์สดนั้นเชื่อถือได้	7	6	5	4	3	2	1
1.4 ฉันไม่คิดว่าผู้ขายที่ใช้ไลฟ์สดจะเอาเปรียบฉัน	7	6	5	4	3	2	1
2. ความไว้ใจในสินค้า	**ระดับความคิดเห็น**						
2.1 ฉันคิดว่าสินค้าที่ฉันสั่งซื้อจากไลฟ์สดจะเป็นไปตามที่ฉันจินตนาการไว้	7	6	5	4	3	2	1
2.2 ฉันเชื่อว่าฉันจะสามารถใช้สินค้าได้เหมือนที่แสดงในไลฟ์สด	7	6	5	4	3	2	1
2.3 ฉันเชื่อว่าสินค้าที่ฉันได้รับจะเหมือนกับสินค้าที่แสดงในไลฟ์สด	7	6	5	4	3	2	1

3. ความตั้งใจที่จะชม	**ระดับความคิดเห็น**						
3.1 ฉันตั้งใจจะดูไลฟ์สดของผู้ขายต่อไปในอนาคต	7	6	5	4	3	2	1
3.2 ฉันจะพยายามดูไลฟ์สดของผู้ขายอยู่เสมอในชีวิตประจำวัน	7	6	5	4	3	2	1
3.3 ฉันวางแผนที่จะดูไลฟ์สดของผู้ขายต่อไป บ่อยๆ	7	6	5	4	3	2	1
4. ความตั้งใจที่จะซื้อ	**ระดับความคิดเห็น**						
4.1 ฉันจะพิจารณาผู้ขายเป็นตัวเลือกแรกๆในการซื้อสินค้าของฉัน	7	6	5	4	3	2	1
4.2 ฉันตั้งใจจะซื้อสินค้าจากผู้ขาย	7	6	5	4	3	2	1
4.3 ฉันคาดหวังว่าฉันจะซื้อสินค้าจากผู้ขาย	7	6	5	4	3	2	1

ขอขอบคุณในความร่วมมือมา ณ โอกาสนี้เป็นอย่างสูง

Figure 4. The measurement scales for the questionnaire in English

(Remark: the items with * are those that were dropped from the analysis)

Measurement scales	
Seller Image	
SIMA1*	1. Seller is seen as continuously improving features
SIMA2	2. Seller is seen as trustworthy
SIMA3	3. Seller is seen as offering good value-for-money
SIMA4	4. Seller is seen as being of excellent quality
SIMA5*	5. Seller is seen as being in fashion
SIMA6*	6. Seller is seen as being used by friends
SIMA7*	7. Seller is seen as a reputed seller
SIMA8*	8. Seller is seen as a leading seller
SIMA9*	9. The shopping with the seller is a prestige symbol
SIMA10*	10. Seller recommended by famous people
SIMA11	11. Seller you particularly like/find attractive
SIMA12	12. Seller in keeping with your lifestyle

SIMA13 13. Seller is likeable

SIMA14 14. Seller is approachable

SIMA15 15. Seller is very warm

Seller Interactivity

SINT1 16. Seller is effective in gathering viewers' feedback

SINT2 17. Seller facilitates two-way communication between herself/himself and viewers

SINT3 18. Seller makes me feel she/he wanted to listen to her/his viewers

SINT4 19. Seller gives viewers the opportunity to talk to her/him

SINT5 20. Seller responds to my questions very quickly

SINT6 21. I am able to obtain the information I wanted without any delay

SINT7 22. I feels I was getting instantaneous information

Seller Presentation

SPRE1 23. Seller gives me details of the product

SPRE2 24. Seller makes product attributes visible to me

SPRE3 25. Seller makes information about how to use products visible to me

SPRE4 26. Seller helps me visualize products like in the real world

Seller Shopping Guidance

SSG1 27. Seller provides me with information on alternative products

SSG2 28. Seller helps me establish my product needs without any restrictions

SSG3 29. Seller helps me identify product attributes that fit my needs

SSG4 30. Seller provides me with product customization based on my requirements

Seller Politeness

SPOL1 31. Seller is friendly

SPOL2 32. Seller is approachable

SPOL3 33. Seller is polite

SPOL4 34. Seller is likeable

SPOL5 35. Seller is very warm

Seller Verbal Attractiveness

SVA1 36. I enjoy listening to seller talks

SVA2 37. Listening to seller talks is fun

SVA3 38. Seller is an attractive speaker

SVA4 39. Listening to seller talks is interesting

Seller Humor

SHUM1 40. Seller is funny

SHUM2 41. Seller is humorous

SHUM3 42. Seller is amusing

SHUM4 43. Shopping with seller is entertaining

SHUM5 44. Shopping with seller is a way of relieving stress

SHUM6 45. I enjoy shopping with seller

SHUM7 46. I forget my problems while shopping with seller

Seller Sex Appeal

SSA1 47. I think the seller is sexy

SSA2 48. I think the seller is good looking

SSA3 49. I think the seller clothing is revealing

SSA4 50. I think the seller has sexual suggestive behavior

SSA5 51. The streamer was quite handsome/pretty

SSA6 52. The streamer was attractive physically

Seller Pacing

SPAC1 52. Seller moves through items at an appropriate speed

SPAC2 53. Seller does not spend too much time on any item

Fashion Product Assortment

FPAS1 54. Seller has a wide variety of fashion products to choose from

FPAS2 55. Current fashions and new products are easily available at this seller

FPAS3 56. Seller is a “one-stop-shop” for my shopping

FPAS4 57. The choice of products of this seller is sufficient

FPAS5 58. This seller carries a wide selection of products to choose

FPAS6 59. This seller serves the majority of my online shopping needs

FPAS7 60. Seller always have products in stock

FPAS8* 61. During my shopping with seller, I noticed stock-outs of products that were of my interest (reverse coded)

Fashion Product Quality

FPQU1 62. Seller offers quality fashion products

FPQU2 63. Seller offers reliable fashion products

FPQU3 64. Seller offers fashion products that last

FPQU4 65. Products sold through seller seem genuine to me

FPQU5* 66. Products sold through seller appear to be authentic

FPQU6 67. The products sold through seller are of high quality

FPQU7* 68. Seller carries low quality products (reverse coded)

Fashion Product Trendiness

FPTR1 69. Products sold through seller tend to be up-to-date and on-trend

FPTR2* 70. Seller carries outdated products (reversed coded)

FPTR3 71. Seller carries new style products

Fashion Product Brand Name

FPBN1 72. Seller stocks "brand name" merchandise

FPBN2 73. Seller carries good brand names products

FPBN3 74. The products sold through seller are very well-known brands

Pricing

FPPR1 75. Most of the fashion products offered by the seller reflect a good price for the value

FPPR2 76. Seller offers good discounts

FPPR3 77. Seller has a great deal of value for the money I would spend

FPPR4 78. Seller has good prices

Fashion Product Personal Appeal

FPPA1 79. The fashion style of this seller appeals to me

FPPA2 80. Most of the fashion products offered by the seller reflect my fashion style

FPPA3 81. Seller offers fashion products matching my fashion style

Price Transparency

PTRA1 82. Seller does not have any “hidden costs” in the displayed price

PTRA2 83. I do not have to worry about being charged additional amounts when I purchase a product from this seller

PTRA3 84. Seller clearly mentions what charges will be added to the final price

PTRA4 85. The manner in which the seller prices its products is transparent

Background Ambiance

BAMB1 86. The atmosphere of this live stream is depressing-cheerful

BAMB2 87. The atmosphere of this live stream is dull/entertaining

BAMB3 88. The atmosphere of this live stream is boring/stimulating

BAMB4 89. The atmosphere of this live stream is drab/colorful

Broadcast Timing Announcement

BTAN1 90. Seller sufficiently preannounces the time of their live stream

BTAN2 91. I have time to preplan to watch the live stream

BTAN3 92. I have time to clear my schedule to watch the live stream

Number of Viewers

NVIE1 93. The number of viewers of this live stream is small-large

NVIE2 94. I think the number of viewers of this live stream is appropriate

Seller Facebook Page

SFBP1 95. I think other customers posted favorable comments on seller's FB page

SFBP2 96. I think seller responds well in the comments posted on seller's FB page

SFBP3 97. I think seller often shows evidence of recent orders being shipped on seller's FB page

SFBP4 98. I think seller often updates new product information on seller's FB page

SFBP5 99. I think seller's FB page has sufficient number of followers

SFBP6 100. I think seller's FB page has sufficient movements

Trust In Seller

TISE1 101. I believe in the information that the seller provides through live streaming.

TISE2 102. I can trust sellers that use live streaming.

TISE3 103. I believe that sellers who use live streaming are trustworthy.

TISE4 104. I do not think that sellers who use live streaming would take advantage of me.

Trust In Product

TIPR1	105. I think the products I order from live stream will be as I imagined.
TIPR2	106. I believe that I will be able to use products like those demonstrated on live stream.
TIPR3	107. I trust that the products I receive will be the same as those shown on live stream
Intention to Watch	
ITWA1	108. I intend to continue watching the seller live stream in the future
ITWA2	109. I will always try to watch the seller live stream in my daily life
ITWA3	110. I plan to continue to watch the seller live stream frequently
Intention to Purchase	
ITP1	111. I will consider the seller as my first shopping choice.
ITP2	112. I intend to purchase products or services through the seller
ITP3	113. I expect that I will purchase products or services through the seller

Sample Selection

Data will be collected through an Internet-based survey or paper-based survey in Bangkok, Thailand. To reach live streaming shoppers, the questionnaire will be advertised on facebook for several days at an appropriate time after the Phase 2 part of this study has been approved by the IRB review committee. Because we encourage our respondents to complete the questionnaire, we will offer to donate 20 THB for each completed questionnaire to a Foundation For Children (FFC) as a virtuous incentive in this study.

The population includes all the shoppers that have watched or purchased fashion clothing via live streaming at least once in the past twelve months. The number of the population cannot be determined. In a study of similar population, Wongkitrungrueng and Assarut (2020) has shown the effective sample size using PLS-SEM could be between 100 and 246, where the minimum is based on 10 times the largest construct (Barclay, Higgins, & Thompson, 1995) and the recommended average size is based on 246 (Shah & Goldstein, 2006). Therefore, our minimum sample size will be between 120 and 246.

The survey will be administered by purposive sampling. To ensure that all respondents had experience in watching or purchasing fashionable clothes on live streaming, only those who watched or purchased at least once in the past twelve months are included in the samples.

Method of Analysis

As a method of analysis, Partial least squares structural equation modeling (PLS-SEM) will be used. We will use SmartPLS to run PLS-SEM. Prior studies have shown PLS to work well for sample size of smaller than 500 (Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014) and have adopted PLS for its research (Sun et al., 2019; Wongkitrungrueng & Assarut, 2020). The reliability of the individual items will assess Individual item loadings to be greater than 0.7 (Chin, 1998). The internal consistency of each construct will be based on composite reliability and Cronbach's alpha values greater than 0.9. (Bagozzi & Yi, 1988; Nunnally & Bernstein, 1994). The convergent validity of each construct will be based on AVE of greater than 0.5 (Fornell & Larcker, 1981). The discriminant validity of each construct will be tested for correlation value of its own construct to be higher than its correlation with other construct. (Fornell & Larcker, 1981). As for the structural model, coefficient of determination (R2) will be tested for effective predictive power. Path coefficients and hypotheses will be summarized in the results. In the event that there may be the need to evaluate indirect effect between live stream attributes and customer intentions, multiple mediation analysis from Nitzl, Roldan, and Cepeda (2016) may be used.

PHASE 3:

Website Development & Technology Acceptance Test

3.3 Development of Live Streaming Rating Website (LSRW)

In order to show the benefits of the study through service innovation potential, this phase demonstrates how live stream rating criteria can be used to develop a LSRW to help users shop in live streams. In order to do this, a LSRW prototype containing live streams must be developed. First, we briefly describe how LSRW will be developed, what components it consists of, and its related research. Then, we explain how the website can use the live stream rating criteria related to sellers and products to help shoppers evaluate live streams. Additionally, we propose a method to recommend live streams for fashion clothing shopping based on live stream ratings and seller information. Lastly, we determine technology acceptance factors and commercialization model.

Live streaming website will be developed based on the concept of an aggregator site, which is a web platform that integrates data across multiple sources into one location. Prior research do not yet have any studies specifically for live streaming shopping aggregator site for fashion clothing, but a number of studies have involved something related to shopping or streaming video content. Mikians, Gyarmati, Erramilli, and Laoutaris (2012) studies price aggregator that helps shoppers navigate best pricing options to shop. Ong (2011) studies comparison shopping sites and user attitudes towards them. Logan (2011) studies online streaming videos in the digital media aggregator regarding user attitudes towards them as compared with the traditional televisions. While prior research has focused on the aggregator for shopping and streaming videos, little has been seen in the aggregator that involves live streaming video content for the purpose of shopping.

A live streaming shopping aggregator site for fashion clothing is a service that scans across one or more live streaming shopping sites to make it easier for shoppers to find live streams that suit their fashion shopping needs. It does not host the live streams but instead provides links to the live streaming service provider sites such as Facebook Live, Shopee Live,

and Lazada Live. However, the scope of this prototype will focus only on the content to be drawn from Facebook Live. To simplify the prototype, only a subset of the live streams will be drawn.

The components of the aggregator include user interface, content retrieval, and recommendation system as shown in prior studies (Kavanaugh et al., 2014; Zhang, Wang, & Vassileva, 2013). As for the case of live streaming shopping aggregator site for fashion clothing, there would also be three components. First, user interface would allow shoppers to browse, search, and filter for the desired live streams to watch. Second, content retrieval component would retrieve live stream content and descriptions for the live streaming service provider platform. Lastly, the recommendation system would give personalized list of recommended live streams to shoppers.

Our website prototype will consist of two main functions. The seller rating function and the seller information display. The user interface will show available live streaming videos with additional information showing the ratings of live streams. **Figure 5** shows the proposed user interface displaying information of available live streams. **Figure 6** shows the proposed user interface displaying seller rating function.

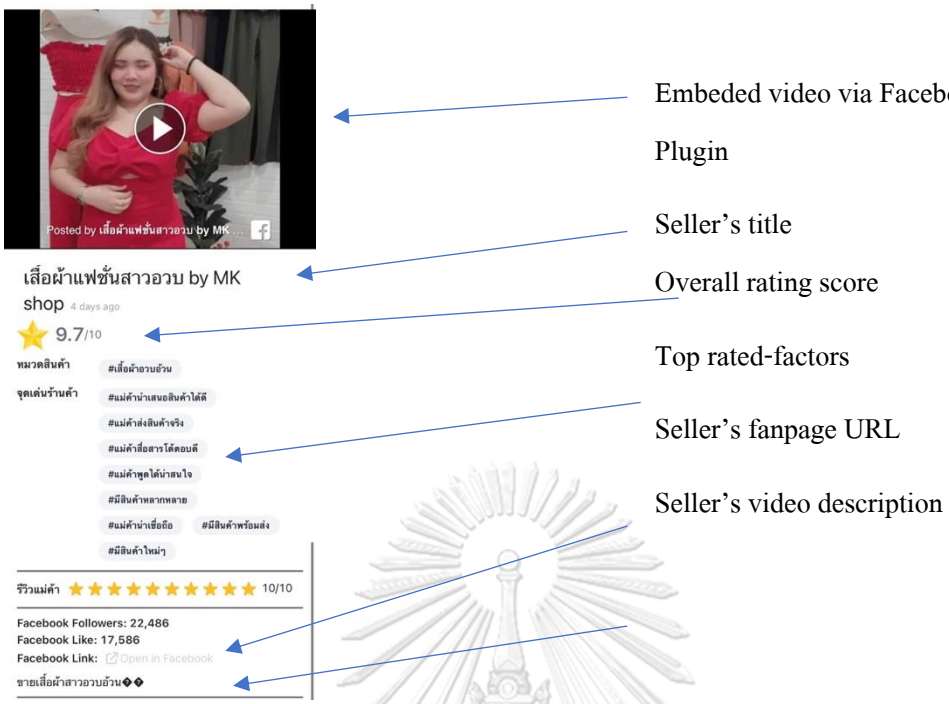

Figure 5. Proposed user interface displaying information of available live streams

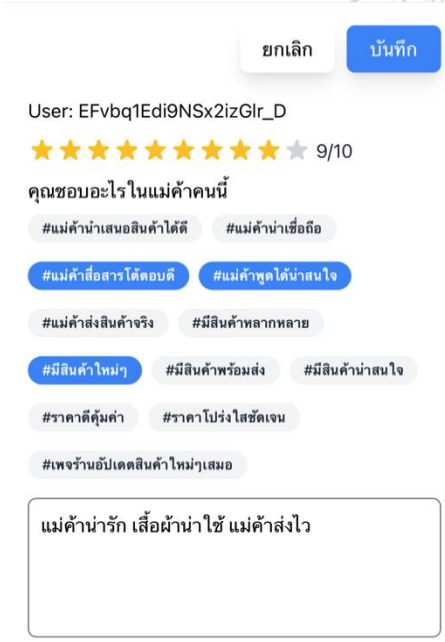

Figure 6. Proposed user interface displaying seller rating function

As shown in **Figure 5**, the proposed user interface displays information about each live stream including title describing the live stream, a screenshot of a live stream, a link to the fanpage of the live stream, and another link to the live streaming video. Additionally, our proposed user interface extends information including the overall rating of the live stream and the top factors that would influence shoppers intention to watch and purchase. As shown in **Figure 6**, shoppers are given the opportunity to rate the live stream and choose the top reasons for liking the live stream.

The website development architecture is shown in **Figure 7.** First, LSRW collects the data of live streaming videos from Facebook groups where users share posts of live streaming videos. The data is collected using group owner's token via the Facebook API and any personal identity will be discarded or anonymized in compliance with Meta Platform Terms (2022) for developers. For each Facebook post, the data consists of live streaming video title, video description, video URL, and seller's fanpage URL. The data will be imported to the database. When an active shopper uses web browser to visit LSRW, the website would display user interface with list of live streams with descriptions and ratings. Users will be able to evaluate live streams and filter their preferences based on the factors that they are interested in. LSRW may recommend live streams with similar ratings to users who have previously rated the other live streams.

With regards to the prototype to be used in our study, the dataset of the application will include at least 1,000 live streaming videos. LSRW users will see information about the videos and the sellers. The video thumbnail is implemented via the Facebook's Social Plug-in based on the procedures of Facebook Embedded Video & Live Video Player (2022) which allows videos whose owners indicate as public to be embedded on other websites. The initial ratings of live streams will be artificial and will be pre-configured by the researcher to some reasonable values.

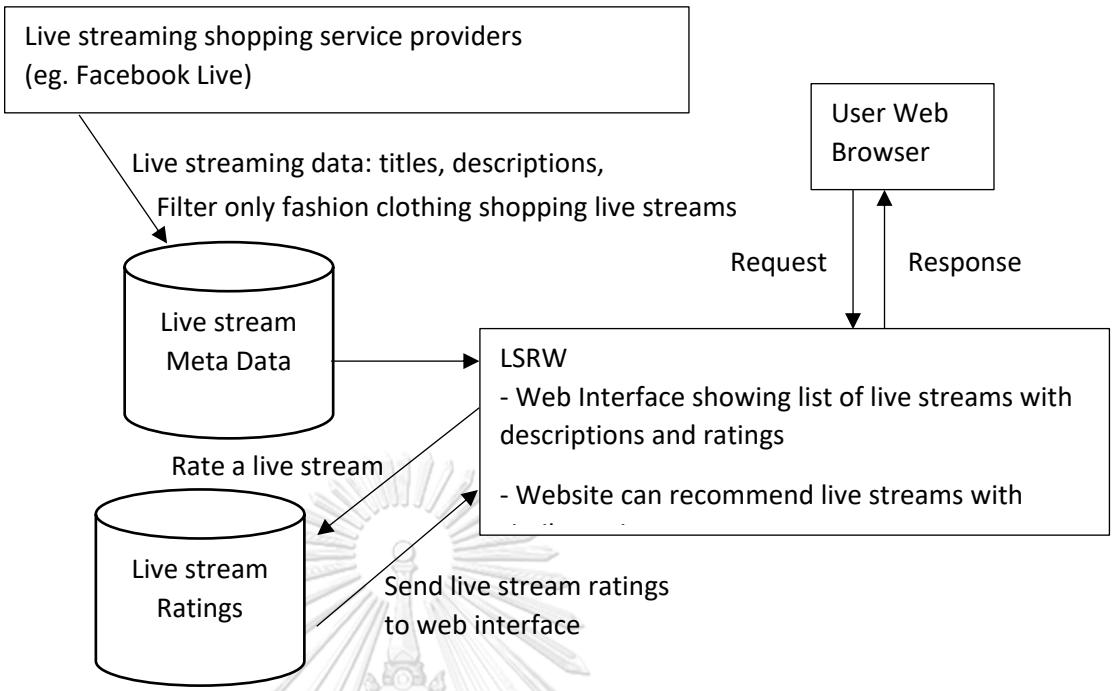

Figure 7. System architecture of the Live Streaming Rating Website (LSRW)

With regards to the recommendation technique, the collaborative filtering is used by the system. Three types of data will be used in recommendation:

1. Data of users sharing live streaming videos on Facebook. The data format of this dataset is (seller's fanpage URL, anonymized userID). The seller's fanpage URL is the URL of seller's public fanpage that sells fashion clothing. The anonymized userID is a generic userID representing users who share live streaming videos using running numbers such as user1, user2, and so on.

2. Data of live streaming seller Facebook page. The data format of this dataset is (seller's fanpage URL, seller's video description). The seller's video description will contains keywords about the types of clothing that seller sells. The data are used to categorized clothing types based on set of keywords such as เสื้อผ้านำเข้า, เกาหลี, ญี่ปุ่น, สตรีท, วินเทจ, ฮาวาย, ผ้าไหม, ผ้าฝ้าย, ชุดไทย, พื้นเมือง, เสื้อผ้าอวบอ้วน, เสื้อผ้ามุสลิม, เสื้อผ้าเด็ก, เสื้อผ้ามือ2, เสื้อผ้าราคาโรงงาน, ยีนส์, กระโปรง, เสื้อยืด, ชุดทำงาน, เสื้อสูท, เดรส, ชุดออกงาน, ชุดว่ายน้ำ, ชุดนอน, งานแบรนด์, งานป้าย translated as Imported Cloth, Korean, Japan, Street, Vintage, Hawaii, Silk, Cotton, Thai Dress, Traditional Dress, Large Size Cloth, Muslim Cloth, Children

Cloth, Second Hand Cloth, Wholesale Price, Jeans, Skirts, T-shirts, Work Dress, Suits, Women Dress, Evening Dress, Swimwear, Bedtime Dress, Brandname Cloth, Pricetagged Cloth.

3. Data of customer rating on our website. The format of this dataset is (WebsiteUserID, seller's fanpage URL, rating, tags) where WebsiteUserID represents the user of LSRW who has signed up to use the website, the rating values consist of 1,2,3,4,5,6,7,8,9,10 and tags values are values such as แม่ค้านำเสนอสินค้าได้ดี, แม่ค้าน่าเชื่อถือ, แม่ค้าสื่อสารโต้ตอบดี, แม่ค้าพูดได้น่าสนใจ, แม่ค้าส่งสินค้าจริง, มีสินค้าหลากหลาย, มีสินค้าใหม่ๆ, มีสินค้าพร้อมส่ง, มีสินค้าน่าสนใจ, สินค้าคุณภาพดี, ราคาดีคุ้มค่า, ราคาโปร่งใสชัดเจน, เพจร้านอัปเดตสินค้าใหม่ๆเสมอ translated as Seller presents information about the products well, Seller is seen as trustworthy, Seller facilitates two-way communication well, Listening to seller talks is interesting, Seller is seen as truly delivering the order, Seller has a wide variety of fashion products to choose from, Current fashions and new products are easily available at this seller, Seller always have products in stock, The fashion style of this seller appeals to me, Quality of the product is good, Products offer reflect a good price for the value, Product pricing is transparent, Seller often updates new product information on seller's FB page. It is important to note that the tag values will be determined based on the results of the studies in Phase 1 and Phase 2 of this research which will correspond to the shopping attributes that significantly affect the customer trusts and intentions.

The collaborative filtering technique is based on the implementation of the python code by Jeong (2021) which is based the following procedure:

1. The system stores rating data of users of LSRW, which conceptually looks like an example table in **Table 6**. The rating values are hypothetical to demonstrate the procedure.
2. The system then computes item similarity indices based on cosine similarity for all the (seller, user) pairs. The example of the live streaming similarity indices for 5 nearest neighbors appears in **Table 7** and their corresponding distances shown in **Table 8**. The first neighbor is the item itself and the subsequent items are those having distance nearest to the item. In the example, the live streaming sellers who are most similar to seller1 are seller10, seller8, seller9, and seller3, in that order.

3. The system then computes the predicted ratings of all the unrated live streams for each user based on the following formula:

   $R(s, u) = (\sum_j S(s, j)R(j, u))/ \sum_j S(s, j)$

   In this formula, R(s, u) is the predicted rating of live streaming seller s by user u. R(j, u) is the actual rating of live streaming seller j by user u. S(s, j) is the similarity of live streaming seller s and j. This similarity value is defined as 1-distance between sellers s and j, thus the farther the pair the large the value. Lastly, the division by $\sum_j S(s, j)$ makes sure that the formula is the weighted average of the sum of the actual ratings. The example of the predicted ratings for user u1, u2, and u3 are shown in **Table 9**. Based on the resulting predicted ratings for any user u, the system recommends those with the highest predicted ratings.

	u1	u2	u3	u4	u5	…	u10
s1	-	-	2	10	-	…	10
s2	10	-	-	10	-	…	3
s3	-	8	9	10	-	…	-
s4	10	-	9	-	10	…	2
s5	-	10	7	-	10	…	-
s6	7	10	8	-	9	…	10
s7	-	-	-	-	5	…	-
s8	-	2	10	-	4	…	2
s9	-	-	-	10	1	…	-
s10	-	-	-	10	10	…	10

Table 6. The example of live streaming rating data table used by LSRW recommendation system

s1	s10	s8	s9	s3
s2	s9	s1	s10	s3
s3	s8	s1	s9	s10
s4	s8	s6	s5	s10
s5	s6	s8	s4	s7
…				
s10	s1	s8	s9	s7

Table 7. The example of nearest neighnours based on cosine similarity indices

0.000000000	0. 139403310	0.258272660	0.274455860	0.307155903
0.000000000	0.382176102	0.415321485	0.423829276	0.546170176
0.000000000	0.274008582	0.307155903	0.380512680	0.405336007
0.000000000	0.368768495	0.387764932	0.466936835	0.494582338
0.000000000	0.294807538	0.457272656	0.466936835	0.466997112
…				
0.000000000	0.139403310	0.341726059	0.383200516	0.393715477

Table 8. The example of distances to the nearest neighbors data used by LSRW recommendation system

	u1	u2	u3
s1	9.167443443153635	6.340633277545947	2
s2	10	7.238056681892566	7.024607408449965
s3	8.98909701980256	8	9
s4	10	7.326377456147105	9
s5	8.361735872648747	10	7
s6	7	10	8
s7	8.99776313345624	6.7639056693318675	7.329928654328998
s8	8.95712845654527	2	10
s9	9.313927873898354	6.510214281706723	6.647697727463228
s10	9.020098933721458	6.984394947182152	7.113112577069133

Table 9. The example of predicted ratings for users u1, u2, and u3

3.4 Recommendation System Technical Evaluation

In our recommendation system performance evaluation, the testing dataset comes from the data collected in the initial LSRW development via the Facebook API in which any personally identifiable information is anonymized into generic values such as user1, user2, and so on in compliance with Meta Platform Terms (2022) for developers. In order to transform customer sharing data into initial rating data suited for recommendation system usage, we consider that users who have shared a live streaming are interested in that particular live stream and would have given it a maximum of 10-stars rating. Such initial dataset comprises of 10,524 ratings associated with 6,647 users and 1,718 sellers. Posts of users who have shared videos of at least two sellers are considered to be relevance and meaningful in building seller's similarity index in the recommendation system. Therefore, given that condition, the remaining overall dataset to be used in the evaluation has a size of 5,672 ratings, 1,795 users, and 1,072 sellers.

With regards to the technique to evaluate the recommendation system, precision(K) and recall(K) will be applied to measure the effectiveness of the recommendation system. In

precision(K), the top-K recommendations will be evaluated as how many items are relevant for a particular user. And in recall(K), they will be evaluated as how many relevant items among all the relevant items are retrieved. Therefore, we follow procedure similar to that of Cremonesi, Koren, and Turrin (2010), whose work evaluates movies ratings dataset to determine the performance of recommendation system based on top-K recommendations. Accordingly, we create the test set T by randomly sub-sampling 1.4% of the overall dataset. The remaining of the dataset is considered training set M. The resulting test set T has a size of 79 ratings and the training set M has a size of 5,593 ratings. To ensure that every user has at least one rating data in M, the rating data in T that is taken from the last remaining rating data of any user will be resampled. The overall recall and precision will be computed based on the following procedure that is adapted from Cremonesi et al. (2010):

(i) For each live streaming seller s in T associated with user u, we compute the top-K recommendation list for u

(ii) We determine if seller s is in the top-K recommendation list, if it is in the list then it is a hit. Otherwise, it is a miss.

(iii) We compute the overall recall and precision using the functions:

recall(K) = no. of hits / |T|

precision(K) = no. of hits / (K · |T|) = recall(K) / K

where |T| is the size of the test set T. It is important to note that the actual recall and precision in reality would be higher because this evaluation procedure considers any unrated live streaming seller by any user u to be a miss.

3.5 Technology Acceptance Test

After we develop LSRW prototype based on the proposed design, we will test for technology acceptance. Traditional Technology Acceptance Model (TAM) has long been used to test the acceptance of technology and many extended versions of TAM have been proposed and used in the past. In recent studies of the acceptance of web or mobile applications, several factors have been considered in addition to the traditional factors of perceived usefulness (PU) and perceived ease of use (PEOU).

Perceived usefulness is often broken down into information aspects and performance aspects (Chopdar, Korfiatis, Sivakumar, & Lytras, 2018; S. C. Kim, Yoon, & Han, 2016; Moqbel, Charoensukmongkol, & Bakay, 2013; M. Zhou et al., 2019).

Perceived information usefulness or information quality is used in smart phone app usage study to indicates that users find the app to be useful because it helps them get better knowledge and understanding of information (S. C. Kim et al., 2016). Information quality is used in the extended TAM study of telehealth usage by M. Zhou et al. (2019) because it suggests that users find the app useful if it helps them get useful information about hospitals, doctors, diseases, and treatments. Chi (2018) has used this factor in the usage study of apparel e-commerce website to indicate that the information is up-to-date, accurate, comprehensive, and presented on a website in a useful way. Therefore:

H1. Users' perceived information usefulness of LSRW positively affects their attitude toward LSRW.

Perceived performance usefulness or performance expectancy is used in the mobile shopping app study by Chopdar et al. (2018) to indicate that users find the app usage to get their shopping task done efficiently and raised their productivity. Therefore:

H2. Users' perceived performance usefulness of LSRW positively affects their attitude toward LSRW.

Perceived ease of use is still used by many recent studies to study technology usage such as in telehealth by M. Zhou et al. (2019), in hotel application by Y.-C. Huang, Chang, Yu, and Chen (2019), and in augmented reality technology for online shopping by Pantano, Rese, and Baier (2017). However, it sometimes replaced with opposite terms such as perceived complexity or technology barrier as a key factor affecting the acceptance of technology. This has to do with efforts needed by users to understand and able to use the technology. Jiang, Wang, and Yuen (2021) has used perceived complexity in their usage study of augmented reality shopping app.

Okumus, Bilgihan, and Ozturk (2016) used the terms technical barriers in their smartphone app in the similar way as perceived complexity. Therefore:

H3. Users' perceived ease of use of LSRW positively affects their attitude toward LSRW.

Perceived enjoyment is one of the key additions to the extended TAM model. This factor is sometimes called perceived entertainment usefulness and is similar to hedonic motivation where users find the app usage to be enjoyable. It has been used in the studies of mobile app usages by S. C. Kim et al. (2016) and in the study of smart phone diet application by Okumus et al. (2016). In the recent studies of the app usage for hotel users (Y.-C. Huang et al., 2019) and for online shopping using augmented reality (Pantano et al., 2017), the enjoyment factor has also been included in the extended TAM. Therefore:

H4. Users' perceived enjoyment of LSRW positively affects their attitude toward LSRW.

Perceived relative advantage is another important factor affecting the intention of users to use an alternative technology where existing technology already exists. In our study, users could directly use standard Facebook search functionalities to search for live streaming videos to watch, but our live streaming rating website could be seen as an alternative technology for users to use. In the study of Jiang et al. (2021), users find that the use of augmented reality shopping technology as an alternative to regular product display enhances their shopping experience and helps them to make shopping decisions easier. Therefore:

H5. Users' perceived relative advantage of LSRW positively affects their attitude toward LSRW.

Attitudes and Behavioral intentions have traditionally been used to study the usage of technology and are still being used today in recent studies. In many recent usage studies of e-commerce applications, if customers have favorable attitudes towards the adoption of certain technology, then they will have significant positive intentions to use the technology (Chi, 2018; Jiang et al., 2021; Pantano et al., 2017). Therefore:

H6. Users' attitudes toward LSRW positively affects their use intention

Thus, the extended TAM for the technology acceptance of live streaming shopping rating website is shown in **Figure 8**.

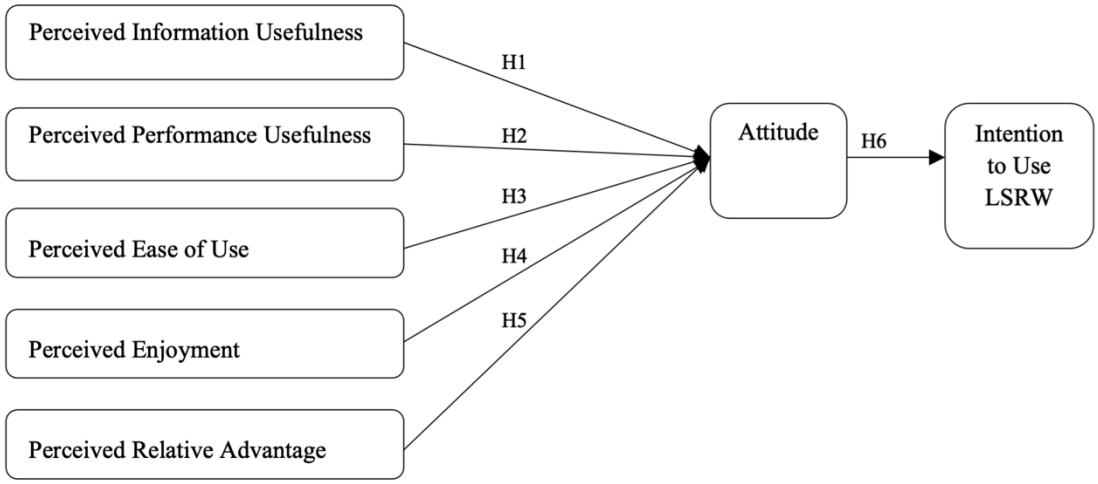

Figure 8. Extended-TAM framework of Live Streaming Rating Website (LSRW)

This part of the study, therefore, aims to determine the acceptance of LSRW through the use of extended TAM framework. Additionally, it will also recommend the commercialization model of LSRW.

3.5.1 Research Methods

The chosen variable measurement is adapted from previous studies of extended TAM framework to fit the context of live streaming rating platform for fashionable clothes shopping. A 3-item measure of perceived information usefulness was adapted from S. C. Kim et al. (2016). A 4-item measure of perceived performance usefulness was adapted from Chopdar et al. (2018). A 4-item measure of perceived ease of use was adapted from Pantano et al. (2017). A 3-item measure of perceived enjoyment was adapted from Okumus et al. (2016). A 5-item measure of perceived relative advantage was adapted from Jiang et al. (2021). Lastly, a 6-item measure of

attitude and a 4-item measure of intention to use LSRW were also adapted from Jiang et al. (2021). Details of the constructs and the questions are shown in **Table 10**.

Table 10. Construct and questions of extended TAM for LSRW

Construct	Questions	References
Perceived information usefulness	● Using this website improves my seeking for information about live streaming shopping for fashion clothes. ● Using this website makes it easier to seek information about live streaming shopping for fashion clothes. ● I find this website useful in seeking information about live streaming shopping for fashion clothes.	S. C. Kim et al. (2016)
Perceived performance usefulness	● I find this website useful in my shopping for fashion clothes. ● Using this website helps me do shopping for fashion clothes more quickly. ● Using this website increases my productivity in shopping for fashion clothes. ● Using this website increases my chances of achieving things that are important to my shopping for fashion clothes.	Chopdar et al. (2018)
Perceived ease of use	● I found this website to be very easy to use. ● This website was intuitive to use. ● It was easy to learn how to use this website. ● Using this website was easy.	Pantano et al. (2017)
Perceived enjoyment	● I think it is fun to use this website. ● This website brings enjoyment. ● I use this website to kill time.	Okumus et al. (2016)
Perceived relative advantage	This live streaming rating website would be better than regular live streaming website or app because: ● It would improve my experience in live streaming shopping for fashion clothes.	Jiang et al. (2021)

	• It would make it easier for me to make a purchase decision. • I would complete the process of live streaming shopping for fashion clothes more efficiently. • It would be more beneficial to me. • It would be the best way for me to experience live streaming shopping for fashion clothes.	
Attitude	• I think I will be filled with affection and satisfaction for this website. • I think this website is so interesting that it makes I want to know more. • I think using this website will make a lot of sense. • I think using this website is a good idea. • I think other people should also use this website. • I think this website is a good experiential online shopping technology.	Jiang et al. (2021)
Intention to use LSRW	• If this website is available, the next time I do live streaming shopping for fashion clothes I plan to use it. • If this website is available, I will use it as my first choice when I do live streaming shopping for fashion clothes. • If this website is available, I would recommend it to my friends. • If this website is available, I have positive things to say about it to my friends.	Jiang et al. (2021)

Instrument Design

First of all, the participants are required to answer the screening question to ensure they have experience watching or making purchase through live streaming. If the participants pass the screening question, they will be asked to proceed with the questionnaire. Otherwise, the

respondents will be screened out. The questionnaire is divided into three parts. The first part collected demographic data of the respondent. The second part included nineteen items to measure the perceived information usefulness, perceived performance usefulness, perceived ease of use, perceived enjoyment, and perceived relative advantage. The third part included ten items to measure attitude of the website usage and intention to use LSRW. Additionally, participants will also be asked to type out answers to these three open-ended questions:

- What do you like most about this website?
- What do you like least about this website?
- What could this website do better to increase your intention to use it?

Among all three parts, the second and third parts of the questionnaire adopted a seven-scale Likert scale, with 1 representing total disagreement and 7 representing total agreement.

Since all the respondents will be Thais, all the questions are developed in English and then translated from English to Thai for the questionnaire. The questionnaire in Thai is shown in **Figure 9** and the measurement scales in English is shown in **Figure 10.**

Figure 9. The extended TAM questionnaire in Thai

แบบสำรวจ

ทดสอบการยอมรับนวัตกรรมเว็บไซต์รีวิวแม่ค้าขายเสื้อผ้าแฟชั่นผ่านไลฟ์สด

แบบสำรวจฉบับนี้เป็นส่วนหนึ่งของการศึกษาใน หลักสูตรปริญญาเอก สาขาธุรกิจเทคโนโลยีและการจัดการนวัตกรรม จุฬาลงกรณ์มหาวิทยาลัย โดยมีวัตถุประสงค์เพื่อทดสอบการยอมรับของ "เว็บรีวิวแม่ค้าขายเสื้อผ้าแฟชั่นผ่านไลฟ์สด" ผู้วิจัยขอความอนุเคราะห์ในการตอบแบบสำรวจนี้เพื่อประโยชน์สูงสุดของการวิจัย ขอรับรองว่า ข้อมูลที่ได้รับจากท่านจะถือเป็นความลับ และไม่นำไปเปิดเผยถึงแหล่งที่มาของข้อมูลใดๆ ผู้วิจัยหวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณมา ณ โอกาสนี้

ท่านเคยรับชมไลฟ์สดขายเสื้อผ้าแฟชั่นภายใน 12 เดือนที่ผ่านมาหรือไม่ □ เคย □ ไม่เคย

<u>ถ้าท่านไม่เคยชม การทำแบบสอบถามนี้ไม่ใช่สำหรับท่าน</u>

สถานที่เก็บข้อมูล.....วันที่.....

ส่วนที่ 1 ข้อมูลประชากรศาสตร์

1.1 เพศ (1) ชาย (2) หญิง (3) อื่นๆ

1.2 อายุ (1) น้อยกว่าหรือเท่ากับ 17 ปี (2) 18-20 ปี (3) 21-25 ปี (4) 26-30 ปี
(5) 31-35 ปี (6) 36-40 ปี (7) 41-45 ปี (8) 46-50 ปี (9) มากกว่า 50 ปี
(10) ไม่ต้องการตอบ

1.3 สถานะ (1) โสด (2) แต่งงาน (3) หย่า (4) หม้าย (5) อื่นๆ โปรดระบุ.....

1.4 ระดับการศึกษาสูงสุด (1) ต่ำกว่าระดับปริญญาตรี (2) ปริญญาตรี (3) ปริญญาโท
(4) ปริญญาเอกขึ้นไป (5) อื่นๆ โปรดระบุ.....

1.5 รายได้ต่อเดือน (1) น้อยกว่า 15,000 (2) 15,001-20,000 (3) 20,001-30,000 (4) 30,001-40,000
(5) 40,001-70,000 (6) 70,001-100,000 (7) มากกว่า 100,000 (8) ไม่ต้องการตอบ

1.6 ประกอบอาชีพ (1) ข้าราชการ (2) พนักงานรัฐวิสาหกิจ (3) พนักงานบริษัท
(4) ธุรกิจส่วนตัว (5) ค้าขาย (6) รับจ้าง/ลูกจ้าง (7) นิสิต/นักศึกษา
(8) เกษตรกรรม/ปศุสัตว์/ประมง (9) เกษียณ/ว่างงาน (10) อื่นๆ โปรดระบุ.....

1.7 รหัสไปรษณีย์ .....

ส่วนที่ 2 การรับรู้ถึงคุณค่าของเว็บรีวิวแม่ค้าขายเสื้อผ้าแฟชั่นผ่านไลฟ์สด

ท่านเห็นด้วยกับข้อความต่างๆเหล่านี้มากน้อยอย่างไรบ้าง

7 = เห็นด้วยอย่างยิ่ง 6 = เห็นด้วย 5 = เห็นด้วยนิดหน่อย 4 = เห็นเป็นกลาง
3 = ไม่เห็นด้วยนิดหน่อย 2 = ไม่เห็นด้วย 1 = ไม่เห็นด้วยอย่างยิ่ง

โปรดทำเครื่องหมาย √ ในช่องที่ตรงกับความคิดเห็นของท่านมากที่สุด

1. ความเป็นประโยชน์ในด้านข้อมูล	**ระดับความคิดเห็น**						
1.1 การใช้เว็บไซต์นี้ช่วยเพิ่มประสิทธิภาพการค้นหาข้อมูลไลฟ์สดขายเสื้อผ้าแฟชั่น	7	6	5	4	3	2	1
1.2 การใช้เว็บไซต์นี้ทำให้การค้นหาข้อมูลไลฟ์สดขายเสื้อผ้าแฟชั่นทำได้ง่าย	7	6	5	4	3	2	1
1.3 ฉันคิดว่าเว็บไซต์นี้มีประโยชน์ในการหาข้อมูลไลฟ์สดขายเสื้อผ้าแฟชั่น	7	6	5	4	3	2	1

2. ความเป็นประโยชน์ในด้านประสิทธิภาพ	**ระดับความคิดเห็น**						
2.1 ฉันคิดว่าเว็บไซต์นี้มีประโยชน์ในการช็อปปิ้งเสื้อผ้าแฟชั่นของฉัน	7	6	5	4	3	2	1
2.2 การใช้เว็บไซต์นี้ช่วยให้ฉันช็อปปิ้งเสื้อผ้าแฟชั่นได้รวดเร็วขึ้น	7	6	5	4	3	2	1
2.3 การใช้เว็บไซต์นี้ช่วยเพิ่มประสิทธิภาพการช็อปปิ้งเสื้อผ้าแฟชั่นของฉัน	7	6	5	4	3	2	1
2.4 การใช้เว็บไซต์นี้ช่วยเพิ่มโอกาสในการบรรลุสิ่งที่สำคัญในการช็อปปิ้งเสื้อผ้าแฟชั่นสำหรับฉัน	7	6	5	4	3	2	1
3. ความง่ายต่อการใช้งาน	**ระดับความคิดเห็น**						
3.1 ฉันคิดว่าเว็บไซต์นี้ใช้งานง่ายมาก	7	6	5	4	3	2	1
3.2 เว็บไซต์นี้ใช้ง่าย	7	6	5	4	3	2	1
3.3 การเรียนรู้วิธีใช้เว็บไซต์นี้เป็นเรื่องง่าย	7	6	5	4	3	2	1
3.4 การใช้เว็บไซต์นี้เป็นเรื่องง่าย	7	6	5	4	3	2	1
4. ความสนุกเพลิดเพลิน	**ระดับความคิดเห็น**						
4.1 ฉันคิดว่ามันสนุกที่จะใช้เว็บไซต์นี้	7	6	5	4	3	2	1
4.2 เว็บไซต์นี้ทำให้ฉันรู้สึกบันเทิง	7	6	5	4	3	2	1
4.3 ฉันใช้เวลาว่างไปกับเว็บไซต์นี้	7	6	5	4	3	2	1
5. ข้อดีของเว็บไซต์นี้เมื่อเทียบกับเว็บหรือแอปดูไลฟ์สดทั่วไป	**ระดับความคิดเห็น**						
ฉันคิดว่าเว็บรีวิวแม่ค้าไลฟ์สดขายเสื้อผ้าแฟชั่นนี้ดีกว่าเว็บไซต์หรือแอปดูไลฟ์สดทั่วไปเพราะ							
5.1 ช่วยเพิ่มประสบการณ์ที่ดีในการช็อปปิ้งเสื้อผ้าแฟชั่นผ่านไลฟ์สดของฉัน	7	6	5	4	3	2	1
5.2 ช่วยให้ฉันตัดสินใจซื้อได้ง่ายขึ้น	7	6	5	4	3	2	1
5.3 ช่วยฉันซื้อเสื้อผ้าแฟชั่นผ่านไลฟ์สดให้เสร็จลุล่วงได้อย่างมีประสิทธิภาพมากขึ้น	7	6	5	4	3	2	1
5.4 มันเป็นประโยชน์กับฉันมากกว่า	7	6	5	4	3	2	1
5.5 มันเป็นวิธีที่ดีที่สุดในประสบการณ์การช็อปปิ้งเสื้อผ้าแฟชั่นผ่านไลฟ์สด	7	6	5	4	3	2	1

ส่วนที่ 3 ทัศนคติและความตั้งใจที่จะใช้เว็บรีวิวแม่ค้าขายเสื้อผ้าแฟชั่นผ่านไลฟ์สด

ท่านเห็นด้วยกับข้อความต่างๆเหล่านี้มากน้อยอย่างไรบ้าง

7 = เห็นด้วยอย่างยิ่ง 6 = เห็นด้วย 5 = เห็นด้วยนิดหน่อย 4 = เห็นเป็นกลาง

3 = ไม่เห็นด้วยนิดหน่อย 2 = ไม่เห็นด้วย 1 = ไม่เห็นด้วยอย่างยิ่ง

โปรดทำเครื่องหมาย √ ในช่องที่ตรงกับความคิดเห็นของท่านมากที่สุด

1. ทัศนคติต่อเว็บไซต์นี้	**ระดับความคิดเห็น**						
1.1 ฉันรู้สึกเต็มไปด้วยความรักและความพึงพอใจในตัวเว็บไซต์นี้	7	6	5	4	3	2	1
1.2 ฉันคิดว่าเว็บไซต์นี้น่าสนใจมากจนทำให้อยากทราบข้อมูลเพิ่มเติม	7	6	5	4	3	2	1
1.3 ฉันคิดว่าเว็บไซต์นี้มีเหตุผลที่ทำให้น่าใช้มาก	7	6	5	4	3	2	1
1.4 ฉันคิดว่าการใช้เว็บไซต์นี้เป็นความคิดที่ดี	7	6	5	4	3	2	1
1.5 ฉันคิดว่าคนอื่นควรได้ใช้เว็บไซต์นี้ด้วย	7	6	5	4	3	2	1
1.6 ฉันคิดว่าเว็บไซต์นี้เป็นเทคโนโลยีที่ทำให้การช็อปปิ้งเสื้อผ้าแฟชั่นผ่านไลฟ์สดเป็นประสบการณ์ที่ดี	7	6	5	4	3	2	1
2. ความตั้งใจที่จะใช้เว็บไซต์นี้	**ระดับความคิดเห็น**						
2.1 หากมีเว็บไซต์นี้ ฉันตั้งใจที่จะใช้มันในการช็อปปิ้งเสื้อผ้าแฟชั่นผ่านไลฟ์สดในครั้งถัดไป	7	6	5	4	3	2	1
2.2 หากมีเว็บไซต์นี้ ฉันวางแผนที่จะใช้มันในการช็อปปิ้งเสื้อผ้าแฟชั่นผ่านไลฟ์สด	7	6	5	4	3	2	1
2.3 หากมีเว็บไซต์นี้ ฉันจะใช้มันเป็นทางเลือกแรกในการซื้อเสื้อผ้าแฟชั่นผ่านไลฟ์สด	7	6	5	4	3	2	1
2.4 หากมีเว็บไซต์นี้ ฉันจะแนะนำมันให้เพื่อนของฉัน	7	6	5	4	3	2	1
2.5 หากมีเว็บไซต์นี้ ฉันมีเรื่องดีๆเกี่ยวกับมันที่จะเล่าให้เพื่อนๆฟัง	7	6	5	4	3	2	1

3. คุณชอบอะไรเกี่ยวกับเว็บไซต์นี้มากที่สุด?
คำตอบ

4. คุณชอบอะไรเกี่ยวกับเว็บไซต์นี้น้อยที่สุด?
คำตอบ

5. มีอะไรที่เว็บไซต์นี้ควรทำได้ดีกว่านี้ เพื่อทำให้คุณอยากที่จะใช้มัน
คำตอบ

– –

ขอขอบคุณในความร่วมมือมา ณ โอกาสนี้เป็นอย่างสูง

Figure 10. The measurement scales for the extended TAM questionnaire in English

Measurement scales	
Perceived Information Usefulness	
PIU1	1. Using this website improves my seeking for information about live streaming shopping for fashion clothes.
PIU2	2. Using this website makes it easier to seek information about live streaming shopping for fashion clothes.
PIU3	3. I find this website useful in seeking information about live streaming shopping for fashion clothes.
Perceived Performance Usefulness	
PPU1	1. I find this website useful in my shopping for fashion clothes.
PPU2	2. Using this website helps me do shopping for fashion clothes more quickly.

PPU3 3. Using this website increases my productivity in shopping for fashion clothes.

PPU4 4. Using this website increases my chances of achieving things that are important to my shopping for fashion clothes.

Perceived Ease of Use

PEOU1 1. I found this website to be very easy to use.

PEOU2 2. This website was intuitive to use.

PEOU3 3. It was easy to learn how to use this website.

PEOU4 4. Using this website was easy.

Perceived Enjoyment

PE1 1. I think it is fun to use this website.

PE2 2. This website brings enjoyment.

PE3 3. I use this website to kill time.

Perceived Relative Advantage

This live streaming rating website would be better than regular live streaming website or app because:

PRA1 1. It would improve my experience in live streaming shopping for fashion clothes.

PRA2 2. It would make it easier for me to make a purchase decision.

PRA3 3. I would complete the process of live streaming shopping for fashion clothes more efficiently.

PRA4 4. It would be more beneficial to me.

PRA5 5. It would be the best way for me to experience live streaming shopping for fashion clothes.

Attitude

ATT1 1. I think I will be filled with affection and satisfaction for this website.

ATT2 2. I think this website is so interesting that it makes I want to know more.

ATT3 3. I think using this website will make a lot of sense.

ATT4 4. I think using this website is a good idea.

ATT5 5. I think other people should also use this website.

ATT6 6. I think this website is a good experiential online shopping technology.

Intention to use LSRW

INT1 1. If this website is available, the next time I do live streaming shopping for fashion clothes I plan

to use it.

INT2 2. If this website is available, I will use it as my first choice when I do live streaming shopping for fashion clothes.

INT3 3. If this website is available, I would recommend it to my friends.

INT4 4. If this website is available, I have positive things to say about it to my friends.

Open-ended questions

1. What do you like most about this website?

2. What do you like least about this website?

3. What could this website do better to increase your intention to use it?

Sample Selection

The study will be performed on participants using purposive sampling method to ensure that participants have experience in using Facebook to shop fashion clothes via live streaming within the past 12 months. The minimum number of participants is 30 since it is the minimum number to have normal distribution. The preferred number of participants is 60-100 since PLS-SEM analysis requires at least 10 times the largest construct, which is 6 times 10 or 60 in our study (Barclay et al., 1995). To reach live streaming shoppers, the research participant recruitment will be advertised on Facebook for several days at an appropriate time after this part of the study has been approved by the IRB review committee. Potential participants would click on an advertisement and reach the google form where the 3-step instruction is described on the form as follow:

a. Participant will be asked to click on a video link to watch the introductory 2-minute video clip that explains the features of the website to familiarize themselves with its user interface, environment, and its functionalities.
b. Participant will be asked to click on a link to the website where each participant will test the website by simulating a shopping task for one clothing item.
c. Participant will be asked to click on a next step in the form to start a questionnaire based on their shopping experience.

The questionnaire consists of 29 questions using a seven-point Likert-scale and 3 open-ended questions. The estimated time to complete the entire process is 15-20 minutes. Because we encourage our participants to complete the user study process, we will offer to donate 20 THB for each completed questionnaire to a Foundation For Children (FFC) as a virtuous incentive in this study.

Method of Analysis

To analyze the results of all aspects of the framework, namely, perceived information usefulness, perceived performance usefulness, perceived ease of use, perceived enjoyment, perceived relative advantage, attitude of the usage, and intention to use LSRW, the resulting values for items in each of the aspects will be evaluated and interpreted by computing the probability that the measurement values being greater than 3.5 using normal probability function $p(x>3.5)$. The probability values greater than 0.80 will be considered acceptable.

If the number of the participants reaches more than 60, then the smartPLS will be used to perform PLS-SEM analysis to determine the results of path coefficients and hypotheses. This is because the minimum of samples needed for PLS-SEM analysis is based on 10 times the largest construct, which is 6 times 10 or 60 in our study (Barclay et al., 1995).

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Qualitative Study of Live Stream Factors Affecting Shopper Intentions

4.1.1 Interviewee characteristics

The Facebook advertisement to recruit interviewees was launched for 20 days. There were 58 submitted applications, of which all of them were consumers and none were sellers. Therefore, 30 of them were selected to cover varying gender, age, location, and spending level.

The composition of the interviewees was balanced with 15 males (50%) and 15 females (50%). Among females, the numbers of interviewees from age groups 20 to 25, 26 to 35, 36 and above were 5, 5, and 5 respectively. Among males, the numbers of interviewees from age groups 20 to 25, 26 to 35, 36 and above were 5, 8, and 2 respectively. Most interviewees spend an average of 200-500 THB on a piece of cloth (33%) followed by 500-1,000 THB (23%). Detailed demographics information of the 30 customers being interviewed is shown in **Table 11.**

Table 11. Demographics information of the 30 customer interviewees

Customer Interviewee	Gender	Age	Province	Job	Spending per item (THB)
1	Female	20	Chonburi	University student	200-500
2	Female	21	Bangkok	University student	200-600
3	Female	21	Upcountry	University student	70-200
4	Female	23	Ayutthaya	University student	300-1000
5	Female	24	Bangkok	Salesperson	100-200
6	Female	25	Bangkok	Housekeeper	200-500
7	Female	27	Chiang Rai	State employee	100-300
8	Female	30	Nakorn Sri Thammarat	State employee	300-500
9	Female	32	Chiang Mai	University employee	500-1000
10	Female	34	Si Sa Ket	Business owner	100-200

11	Female	34	Bangkok	Office worker	300-1000
12	Female	38	Songkla	Teacher	200-500
13	Female	45	Phrae	Accountant	500-1000
14	Female	47	Lampang	Teacher	500-1000
15	Female	51	Lampang	State employee	200-1000
16	Female	60	Chiang Mai	Retired	500-1500
17	Male	20	Lampang	University student	500-1000
18	Male	21	Nakorn Sri Thammarat	University student	100-300
19	Male	21	Buriram	University student	200-500
20	Male	25	Songkla	State employee	500-1000
21	Male	27	Khon Kaen	State employee	200-500
22	Male	28	Khon Kaen	Nutritionist	500-1000
23	Male	29	Udon Thani	Teacher	100-400
24	Male	29	Phetchabun	State employee	200-500
25	Male	30	Phitsanulok	Assistant researcher	200-500
26	Male	30	Lopburi	Airplane pilot	200-500
27	Male	31	Bangkok	Fitness trainer	200-500
28	Male	32	Nakhon Sawan	Freelance	100-200
29	Male	37	Uttaradit	State employee	100-300
30	Male	37	Phrae	Business owner	500-1000

Up on receiving no interviewees who were sellers using Facebook advertisement, the alternative approach was used. A list of 60 live streaming seller accounts was collected and the interview solicitation message was sent out to each of them. There were 8 sellers who responded back and agreed to give an interview in the study. Most seller interviewees have audience of more than 500 viewers per session (75%), have more than 20,000 page-followers, and price their

clothes at less than 300 THB a piece (75%). Background information of the 8 live streaming sellers being interviewed is shown in **Table 12.**

Table 12. Demographics information of the 8 seller interviewees

Seller	Gender	Age	Province	No. of viewers per session	Page Likes	Page Followers	Price per item (THB)	Live selling experience
1	Female	32	Nonthaburi	5,000-33,000	104,756	124,335	590-690	4 years
2	Male	26	Samut Sakhon	2,000-9,000	93,208	129,895	150-300	4 years
3	Female	28	Bangkok	1,000-6,000	133,410	140,534	50-200	5 months
4	Female	24	Bangkok	500-3,000	15,071	20,071	80-100	3 years
5	Female	33	Khon Kaen	700-2,000	18,595	26,116	189-249	3 years
6	Female	23	Bangkok	700-4,000	50,339	62,266	50-100	1 year
7	Female	26	Bangkok	200-500	3,324	3,430	60-100	3 months
8	Male	26	Bangkok	100-400	218	228	500-2,000	3 years

4.1.2 Interview Data Coding

In order to analyze the interviews data using MEC techniques, the coding for elements was performed on each interview segment that represented a ladder. Each element would

correspond to one these levels: live streaming attributes, functional consequences, psychosocial consequences, and values. The complete content code is shown in **Table 13**.

Table 13. Content code for interview data elements in four levels.

Attributes			
1	Product assortment (Broad choices)	13	Seller image
2	Product quality	14	Seller good looking/sex appeal
3	Product trendiness	15	Seller humor
4	Product brandname	16	Seller politeness
5	Product style (personally appealing)	17	Seller verbal attractiveness
6	Product pricing is cheap	18	Seller pacing
7	Price is not too expensive/reasonable	19	Background ambiance is fun
8	Price is clear	20	Number of viewers is high
9	Promotion	21	Seller facebook page
10	Seller presentation	22	Seller broadcast announcement
11	Seller interactivity	23	Delivery is fast
12	Seller guidance		

Functional Consequences			
24	Get clear clothing information	38	Size fits well
25	Fun or interesting to watch	39	Attentive to customers
26	Inexpensive shopping	40	Pleasing to watch
27	Reduce risk of fraud	41	See new interesting products
28	Comfortable to wear	42	Make product more appealing
29	Beautiful to wear	43	Can manage time to watch
30	Long lasting	44	Feel seller is friendly
31	Get to know who seller is	45	Get questions answered
32	Get to know seller's products	46	Learn about how to dress well
33	Other customers' experience with the seller	47	Seller is known by many people

34	Find preferred product	48	See many people watching and buying
35	Being recognized by seller	49	Feel product must be good
36	Get to use product soonest	50	Product can really be used
37	Update product trends		

Psychological Consequences			
51	Enjoyment	56	Self confidence
52	Feel money well spent	57	Easier to make purchase decision
53	Excitement	58	Able to save money
54	Trust seller	59	Feel time well spent
55	Trust product	60	Relieve stress

Values			
61	Contentment	63	Personal relationship
62	Happiness		

Using the content code, each interview session is coded and represented as a series of paths. An example of data representation for customer interviewee 1 is shown in **Table 14**, where each row begins with a shopping attribute leading up to functional consequences, psychological consequences, or values.

Table 14. Content code data representation for customer interviewee 1

Interviewee 1			
10	24	38	55
20	49	52	54
17	25	51	61
6	26	52	61
4	56		
2	28	56	62
1	25		
9	52		
21	31	54	

4.1.3 Interview Data Analysis using LadderUX Software

After the coding was completed, the online software tool LadderUX was used to aid the data analysis. The interview data content code was input into the software as depicted in **Figure 11**.

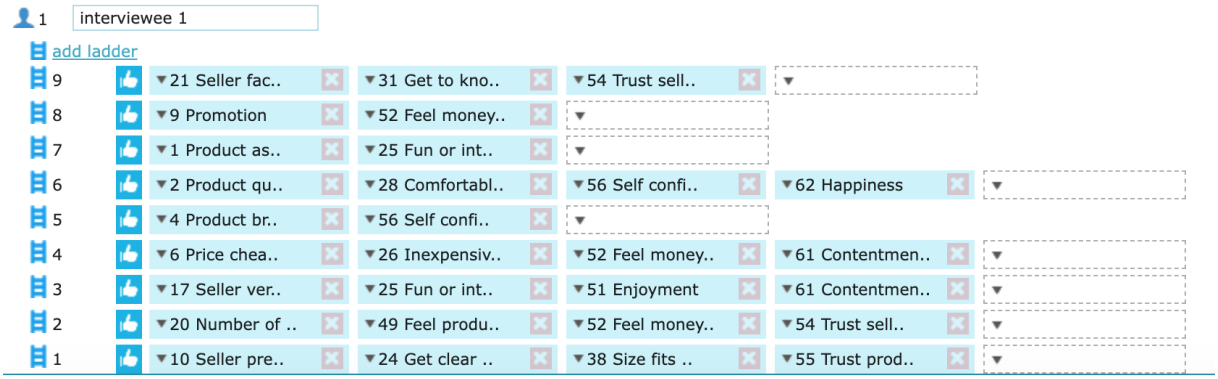

Figure 11. Content code input data onto LadderUX

The software generated an implication matrix where each entry indicated the number of times an element was directly or indirectly mentioned by the interviewee to be related to another element. A cut-off point of 3 was used as recommended by prior research (Borgardt, 2020; Wagner, 2007). That is, the number of associations (N) must be mentioned at least three times to be considered relevant and such association would appear on the hierarchical value map (HVM).

The notation of association frequency shows direct association frequency to the left of the point and the indirect association frequency to the right. For example, an association of 19.5 between product assortment and finding the preferred product would indicate that there were 19 instances where interviewees mentioned that product assortment was important for them because it directly helped them find preferred products. And it would also indicate that there were 5 instances where interviewees mentioned some other elements in between these two elements. And also, for the sake of clarity and simplicity, HVM diagram would only show indirect links when there exist both direct and indirect links between the two elements.

4.1.4 Finding Shopping Attributes & Motivational Patterns Using HVM Diagrams

The formatting guidelines of the HVM diagrams, as shown in **Figure 12**, are based on similar prior work (Wagner, 2007). Elements are differentiated based on their types (e.g. attributes, functional consequences, psychosocial consequences, and values) using grey scales. Elements that were mentioned more frequently appear in boxes with thicker borders. Lastly, relation links between elements that are associated more frequently appear in thicker arrows. The levels of thickness are formatted in three levels. Elements that were mentioned up to 9 times have weakest borders, 10 to 19 times have thicker borders, and 20 or more times have thickest borders. Relation links that are associated up to 4 times appear in weakest arrows, 5 to 9 times appear in thicker arrows, and 10 or more times appear in thickest arrows.

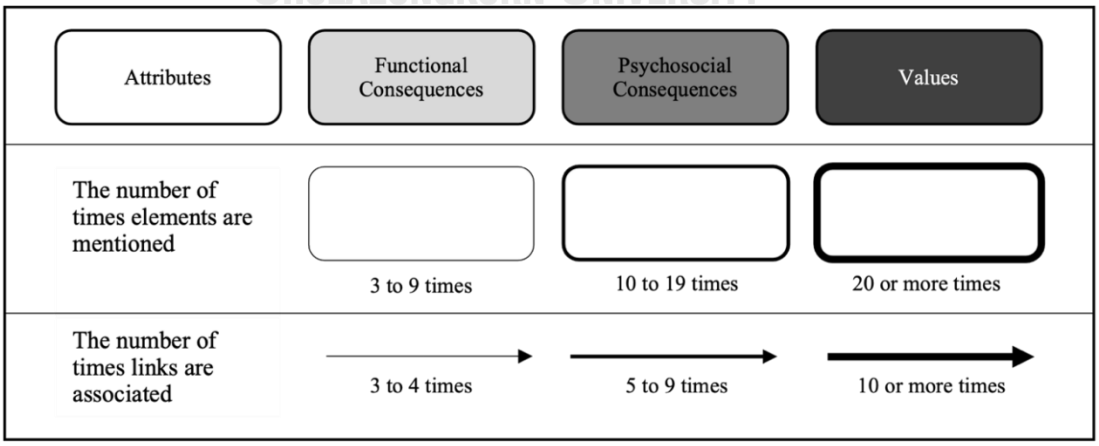

Figure 12. Symbols used in HVMs

For the sake of clarity, this study displays the results in five separate HVM diagrams. The value N for each element denotes the number of times the element was mentioned by the interviewees. The following results were based on the interview data of 30 customers. **Figure 13** shows HVM that is based on five product attributes: product assortment, product quality, product trendiness, product brand name, and product style.

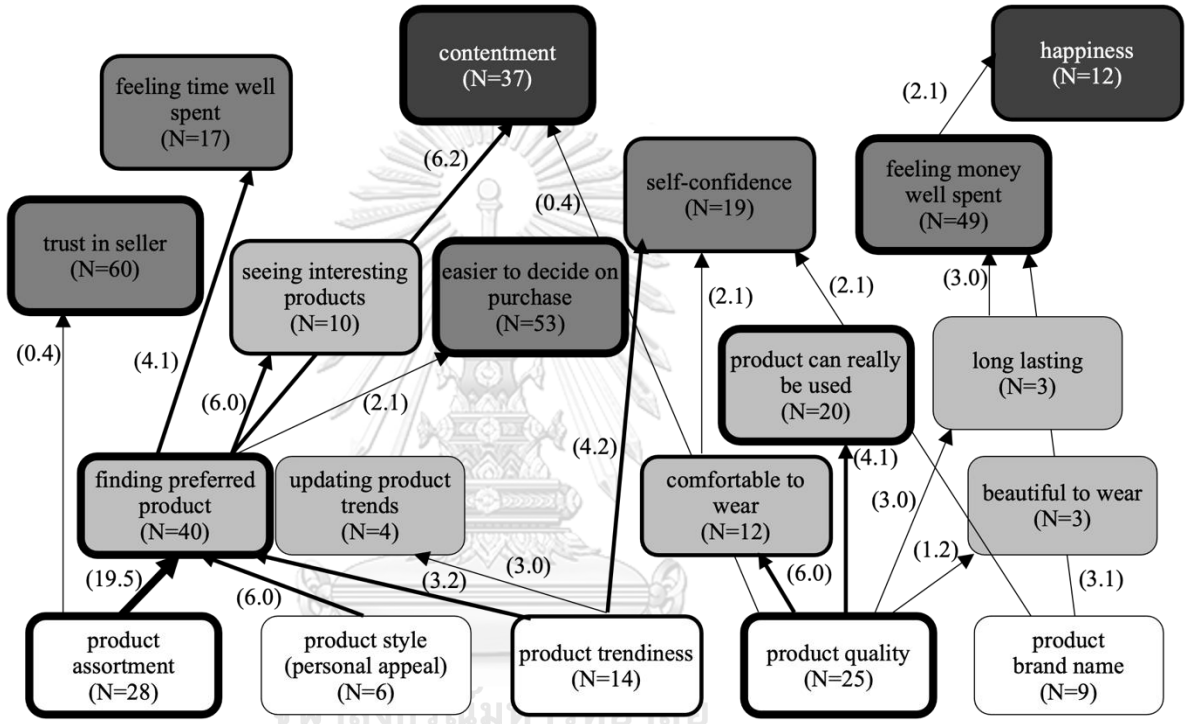

Figure 13. HVM based on product attributes

In this HVM diagram, four motivational patterns appear: frictionless shopping, fashion orientation, quality seeking, and value seeking. Frictionless shopping is defined as consumers' smooth experience of the shopping process (Wagner, 2007). This first motivational factor relies on the elements that can enable consumers to find the right products with ease. Interviewees of this pattern are motivated to shop from sellers who carry a large selection of clothes due to chances that several items would match their preferences and their time spent would be worthwhile. This motivational pattern subsumes functional consequence of seeing new interesting clothes and some of which could be fashionable as this factor also relies on the trendiness aspect of the product. Ladhari et al. (2019) defines fashion orientation as consumers' attraction to new

fashion. This second motivational pattern relies solely on the trendiness aspect of the product where users find that watching live streaming helps them update fashion trends. Wagner (2007) defines quality seeking as consumers' preference towards quality of the product. Consumers with quality seeking motivational patterns mainly care about the quality of the product and are often times less price sensitive. For this third factor, the quality of clothes refers to the clothes being comfortable to wear and look beautiful when worn which boosts a person's self-confidence. Lastly, the fourth factor, the value seeking is defined as consumers' being satisfied with the good prices for the given quality. The prices do not have to be the absolute lowest prices, but they should be acceptable prices that consumers would feel that their money is well spent. Value seeking strongly relies on the products having good quality and also relies a little bit on product brand name. This is due to the facts that some interviewees believe that clothes with well-known brands tend to also be of good quality. Next, ***Figure 14*** *shows HVM that is based on the attributes regarding good price, cheap price, clear price presentation, and promotion.*

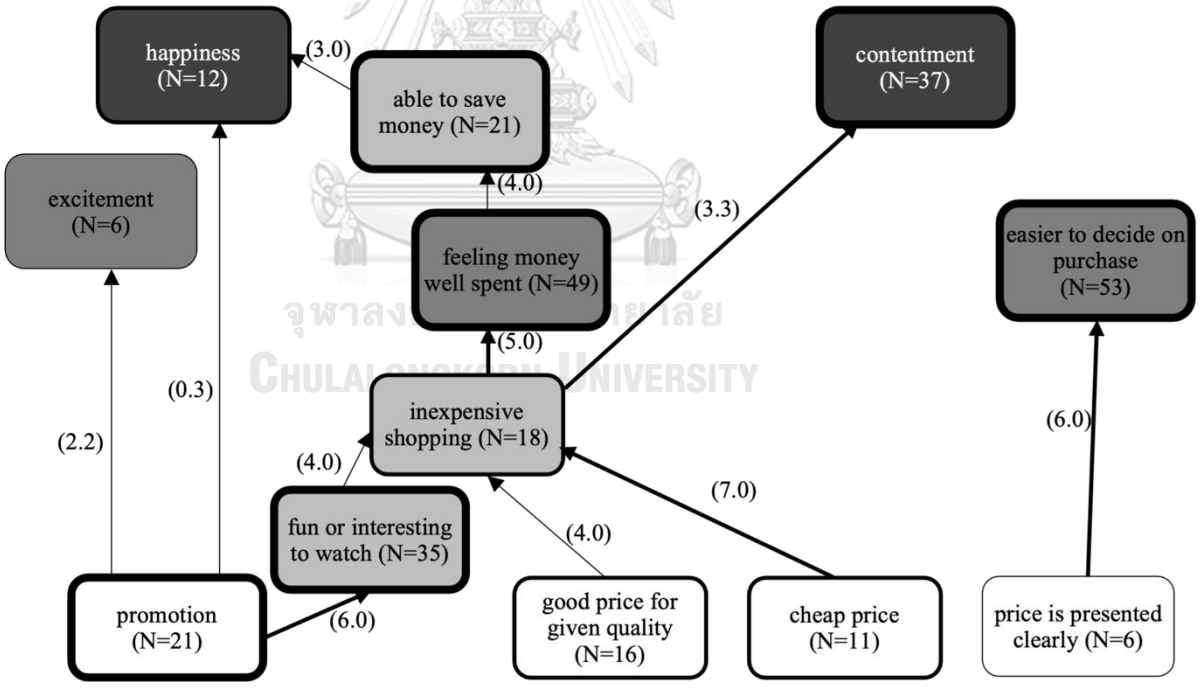

Figure 14. HVM based on price and promotion attributes

In this HVM diagram, two motivational patterns emerge: value seeking and shopping enjoyment. Firstly, consumers with value seeking mainly rely on price being either cheap or

good given the quality. They focus on achieving best value for their money. By saving money, they feel that they have accomplished their shopping objectives and feel happy. Additionally, because they are mainly concerned with price, they also rely on the clear visibility of price. Several interviewees mentioned that they would like to know total price including all the delivery fees before confirming any purchase because they want to plan the order so as to minimize the fees. Secondly, shopping enjoyment is defined as consumers' enjoyment of shopping without the necessary plan to purchase (Ladhari et al., 2019). Shopping enjoyment provides for the emotional value of the shopping experience. In this case, interviewees find that promotional activities that involve competing against other shoppers to win free prizes or getting great discounts give them excitement and keep them engaged because it is fun. Shoppers who are motivated by enjoyment do not necessarily feel compelled to purchase anything, but they could do so if they happen to win the game. Next, Figure 15 and Figure 16 show two HVMs that are based on the attributes regarding sellers. **Figure 15** is based on seller presentation, seller interactivity, and seller guidance, while **Figure 16** is based on seller image, seller politeness, seller pacing, seller physical attractiveness, seller humor, and seller verbal attractiveness.

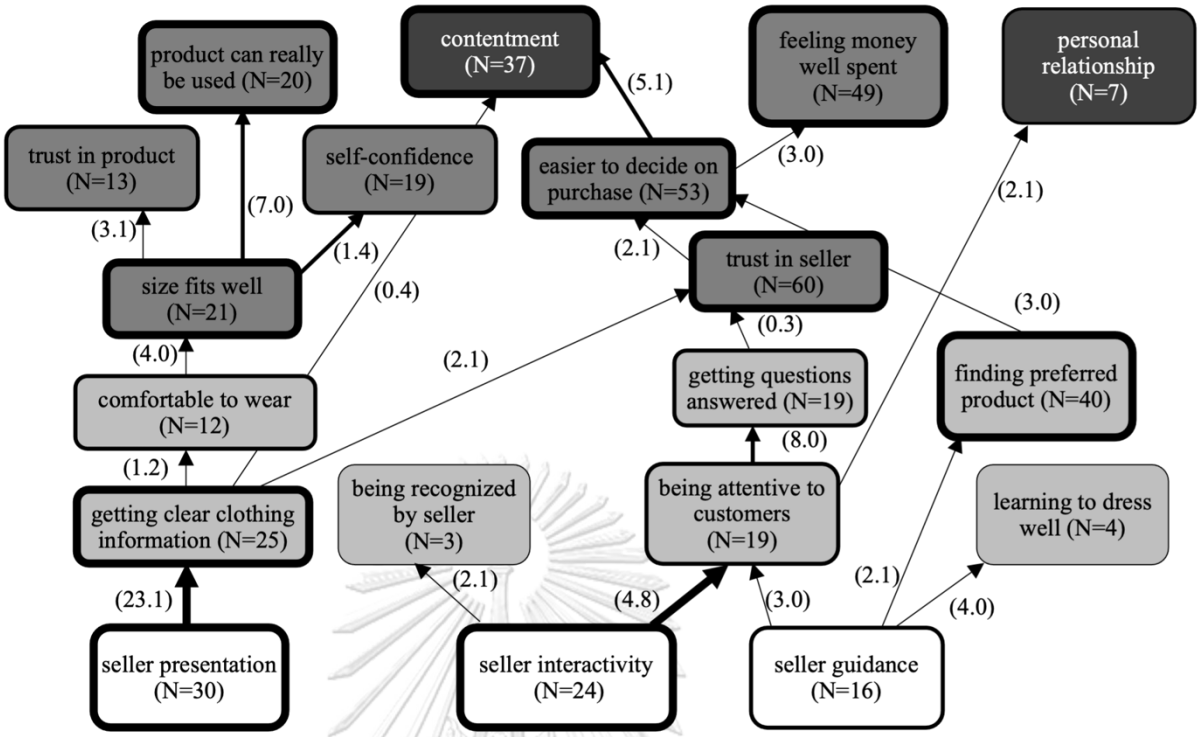

Figure 15. HVM based on seller presentation, seller interactivity, and seller guidance

In HVM in **Figure 15**, there seems to be one familiar motivational pattern and one new pattern appearing: frictionless shopping and product selection support. Frictionless shopping is characterized by the desire of shoppers to get clear information about the clothing in order to ensure that it can be worn comfortably, and the sizing is right. That is, shoppers are concerned with getting the right cloth that fits the body well and can really be worn. Essentially, this pattern heavily relies on the ability of seller to give clothing presentation. Moreover, consumers with frictionless shopping motivation have moderate desire to get answers from seller in order to have sufficient information to make purchase decision. Some interviewees indicated that they ask questions mostly to clarify the details of the clothing so they can decide to purchase. If they find that sellers do not pay attention to them, they may leave the live stream because they do not want to wait as it wastes their time. Sellers who are attentive to their comments and questions, sometimes earn their trust and they can make decision easier. As for the second motivational pattern, product selection support is defined as consumers' preference for choice making assistance (Sebald & Jacob, 2019). Product selection support relies on the ability of seller to give shopping guidance that enables shoppers to learn how to dress well and to easier decide on which

to purchase. It is important to note that the association of this motivational pattern is weak perhaps because the nature of live streaming caters to large group of audience and sellers are unable to provide significant shopping guidance to individual shoppers. Some interviewees mentioned that sellers usually share with them about the occasions to wear certain clothes and how different clothing pieces could be nicely matched together. These types of guidance help shoppers find the right clothing for themselves.

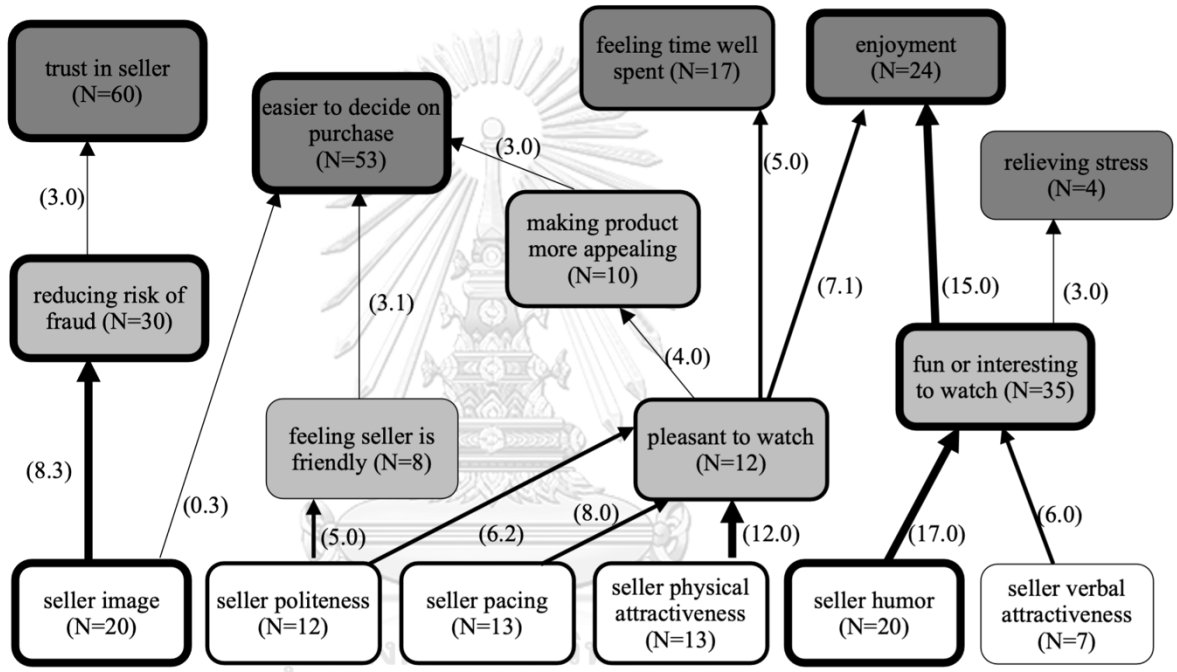

Figure 16. HVM based on the remaining seller attributes

In HVM related to seller attributes in **Figure 16**, both motivational patterns that emerge seem familiar: frictionless shopping and shopping enjoyment. In this cognitive map, frictionless shopping is characterized by being able to trust seller in terms of honesty and the ease of continuously watching the live stream. There is a strong association between seller image and the impact it has on fraud risk. Many interviewees mentioned that they tend to trust sellers whose image is clean and nothing bad has been said about them by other shoppers. They also mentioned that they would avoid buying from sellers with bad reputation. There are also several more moderate to strong associations between the ease of watching and three attributes namely seller

politeness, seller pacing, and seller physical attractiveness. These links indicate that shoppers find sellers who are polite and good looking to be a welcoming sight. They also feel that sellers with these qualities make products look more appealing to buy. They also find that sellers should not stay on any particular item for too long as it becomes boring and difficult for them to stay watching. Sellers should move along to the subsequent products at reasonable pace. As for the third motivational pattern, shopping enjoyment has to do with experiencing fun, having a good time, and relieving stress. Seller humor has very strong association with making the live streaming experience fun and interesting to watch. Interviewees mentioned that they tend to stay engaged with sellers who have bright and colorful personalities or able to tell them interesting stories. It is important to note that, according the implication matrix, shoppers who are motivated by shopping enjoyment may also find sellers who are good looking to be an important attribute because there is a strong indirect linkage of (0.7) from physical attractiveness to enjoyment. The same cannot be said for the attributes of seller politeness and seller pacing because there is no indirect or direct linkages from them to enjoyment. Next, **Figure 17** shows the last HVM related to other remaining attributes.

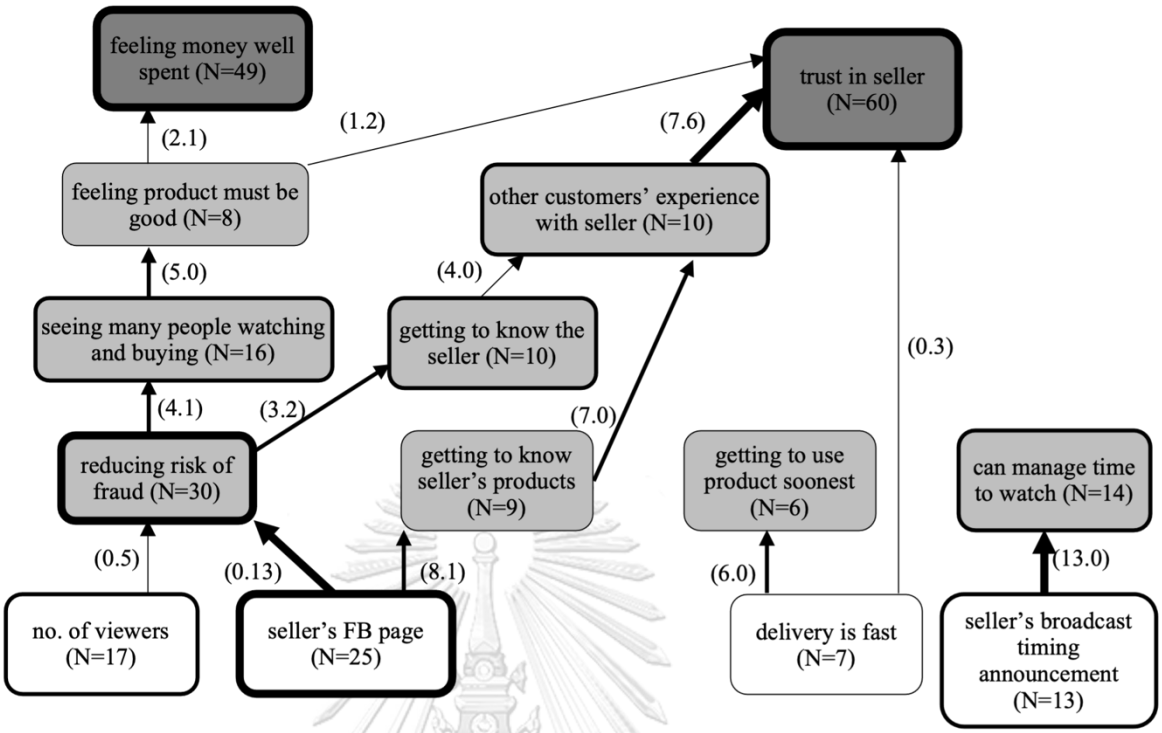

Figure 17. HVM based on other attributes

In the last HVM related to other attributes, a single motivational pattern emerges which is frictionless shopping. One of the key aspects of successful shopping is fraud risks reduction and being able to trust sellers to deliver what was promised. Trust, in general, is defined as the beliefs between parties based on different characteristics such as goodness, fairness, honesty, competence, predictability, benevolence, integrity, and many others (McKnight & Chervany, 2001). Trust in seller is defined as the customer beliefs that the seller is competent and can be securely relied on to serve customer long-term interests (Crosby et al., 1990). The indirect associations between trust in seller and two attributes namely the number of viewers and the content of sellers' FB page are strong. Interviewees mentioned that when they saw a large crowd gathered to watch a particular live stream, it made them feel that the product must be good, the price must be great, and the seller must be trustworthy even before knowing who the seller was, what clothing product was being sold, and at what price. In addition, interviewees mentioned that they investigated the content on sellers' FB page such as the comments other shoppers wrote about the sellers and how sellers responded to them, the evidence that there were recent orders

being sent out for delivery, the recent product updates on the page, and even the physical location of the store if existed. All these contents allow shoppers to get to know who the seller is and to judge the sellers' trustworthiness. There is also a weak association between fast delivery to trust towards the seller which indicates that by delivering the order on time as expected, the shoppers may mildly increase their trust in seller. Lastly, it is worthwhile to also note the very strong association between seller's broadcast timing announcement and the ability for shoppers to manage their time to watch the live stream. This meant that as part of the frictionless shopping, shoppers may need to manage their time to come watch the live stream. Quite a few interviewees mentioned that it is important for them to know the timing when sellers would broadcast their live stream at least half a day in advance so that they could clear their schedule to watch the live stream. Lastly, it is important to note that the background ambiance attribute has an indirect association of (0.2) with enjoyment, which has not met the cut-off point of 3 and therefore was not included in the HVM as relevant. However, unlike other attributes derived from the literature, background ambiance was a new finding and was not specifically asked to the interviewees. So, it is possible that background ambiance could be relevant to create shopping enjoyment if such attribute was specially asked to the interviewees.

4.1.5 Shopping Attributes from Seller's Interview Data

The interview data of sellers did not generate any new important attributes beyond what the data from customers have already shown in the HVM analysis. Sellers data are summarized based on live streaming attributes as shown in the **Table 15**.

Table 15. Seller interview data based on important live streaming attributes

Seller No.	Seller Image	Seller Interactivity	Seller Presentation	Seller Shopping Guidance	Seller Politeness	Seller Verbal Attractiveness	Seller Humor	Seller Sex Appeal	Seller Pacing	Product Assortment	Product Quality	Product Trendiness	Product Brand Name	Pricing	Product Personal Appeal	Price Transparency	Background Ambiance	Broadcasst Announcement	Number of Viewers	Seller Facebook Page
1	X	X	X	X	X	X	X		X		X	X		X	X	X	X	X	X	X
2		X	X			X			X	X		X		X			X	X	X	X
3	X	X	X		X	X	X	X	X			X		X	X	X	X	X	X	X
4	X	X	X	X	X	X	X		X	X	X	X		X		X		X	X	X
5	X	X	X	X	X	X		X	X	X		X		X	X	X	X	X		X
6	X	X	X	X	X	X			X	X	X	X		X	X	X		X	X	X
7	X	X	X	X	X	X	X	X	X		X	X		X	X	X		X		X
8	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Total	**7**	**8**	**8**	6	**7**	**8**	4	4	**8**	5	5	**8**	1	**8**	6	**7**	5	**8**	6	**8**

In the table, the character 'x' represents an occurrence where a seller agrees that the attribute is important to attract customers to watch and make purchase. Attributes that almost all or all sellers find important are seller image, seller interactivity, seller presentation, seller politeness, seller verbal attractiveness, seller pacing, product trendiness, pricing, price transparency, broadcast pre-announcement, and the quality of seller Facebook page. However, there is one attribute that stands out more than others is the product brand name, which almost all fashion clothing sellers do not believe that brand name is important because their customers are looking for new fashion or trendy clothes. All of the sellers either import clothes from abroad or they designed and manufactured the clothes themselves. Seller no. 7 said that his sister and himself sell their own brand. Their customers are willing to try new trendy clothes without needing to stick to the well known brands. Seller no. 6 said that her customers expect to buy

cheap fashion clothes that they see in wholesales shopping mall like Platinum Mall, so they do not expect brand name clothes. The only exception is seller no. 8 who believes that brand name is important because his clothes sell at the price range of 500 to 2,000 and even as high as 5,000 Thai Baht. So, his customers compare his store to shops like Zara. While some of his customers do not know his store brand name, he uses a lot of attractive models to create marketing materials and develop his own store brand through partnerships with entertainment studios.

Most sellers do not give importance to background ambiance for fun or enjoyment but rather on the quality in terms of sharpness and colors of the video to present the clothes as accurately as possible. Most sellers are concerned about making sure customers have the most accurate expectations of the clothes that they buy. Seller no.6 and no.7 said that she never uses music on her live streaming, and she mostly focuses only on the lighting and plain color background to ensure customers can see items clearly. Seller no. 2 mentioned that background music is not important, but the backdrop is very important because customers expect to see a lot of clothes and it gives them a sense of confidence that they are shopping from a big store. However, seller no. 1 always uses background music so that there would be no dead air and the live stream is more fun and easier to watch.

All sellers agree that the pacing is important because spending too much time on one item makes the broadcast boring and creates a sense of pushy feeling that sellers try to avoid. Seller no. 7 said that she only spent 30-45 seconds or at most two minutes to present one clothing item. She believed that quick pacing is better for her because the more items she presents, the more chances customers will see the ones they like. Seller no. 2 mentioned that his store broadcasts at night and customers just wanted to hurry to get to the items they wanted so they could get some sleep.

Another important attribute that all sellers focus on is the broadcast pre-announcement. Seller no.3 and no.6 mentioned that customers expect her to pre-announce her live streaming at least half a day before the broadcast and if she uploads pictures of the clothes beforehand, she would see some interested customers anxiously waiting for her livestream or even ask to pre-purchase certain items before the live broadcast. Seller no. 4 mentioned that she would upload

pictures of the clothes on her messaging Line group beforehand because her followers could remind themselves if they see some items they liked.

Besides commenting on the important live streaming attributes, interviewer has asked sellers to also share their opinions on any issues that they feel satisfied and dissatisfied with their live streaming. One thing that they are very satisfied with is the use of third party auto-messaging app such as V-Rich to automate responses and confirm orders have really helped them. All sellers use automated messaging application except seller no. 5 and seller no. 8 who said they could manually respond to their customers. However, what they are really not satisfied with is the ability to advertise themselves to the audience. In recent few months, Facebook has made their Facebook live streams become much less visible to their audience. Seller no. 2 mentioned that they have been live streaming for 4 years and their audience were consistently around 5,000 per session but recently this number has dropped to only 100-200, so they had to spend some money to advertise on Facebook to become visible to their audience. Seller no. 1 used to have over 8,000 organic viewers without having to spend advertising money in the past, but right now the number dropped drastically and she had to spend money on Facebook advertising.

With regards to the potential usefulness of the live streaming seller rating website, the interviewer has asked the sellers three questions:

(1) Would sellers find the rating website of live streaming sellers to be beneficial to them?
(2) Would sellers be willing to spend money to advertise themselves on the website?
(3) Would sellers have any concerns about the rating website?

All sellers agreed that the rating website would be beneficial to them if the website and help them reach more audience. Seller no. 7 went further to say that if the website could help her build her personal brand she would be very interested. Only a few sellers have spend advertising money. Seller no. 2 said that he used to pay reviewers to write a sponsored ads for their store but they were quite expensive. One shared post could cost as much as 6,000 Thai Baht. So, he did not use this method very often. Seller no. 1 said that she would be interested in the rating website if it has high customer engagement and could direct traffic to her store. She compared the engagement

measure to those of Instagram users and said that she wanted to see the number of engagement before she could decide on how much to spend.

The only concern that sellers have about the rating website is the scoring mechanism. They would be happy if their scores are good, but would be very concerned if their scores are bad. Seller no. 1 is concerned if the website has a way to verify that the raters or reviewers are real customers. Her concern is about fake ratings and reviews.

4.1.6 Discussion

The prior studies in live streaming have suggested several shopping attributes to be relevant in motivating consumers to shop including product assortment, product quality, product trendiness, product brand name, seller presentation, seller interactivity, seller guidance, seller image, seller physical attractiveness, seller humor, cheap price, good price for the quality, and promotion. This study has investigated these shopping attributes and find that they are all still relevant in live streaming shopping for fashion clothing context. Moreover, this study has found a number of additional important attributes including product style (personal appeal), seller politeness, seller pacing, seller verbal attractiveness, clear price presentation, number of viewers, content on seller FB page, fast delivery, and seller's broadcast timing announcement.

By analyzing all of the HVMs, three major motivational patterns and three minor motivational patterns have emerged as shown in **Figure 18**. The motivational patterns are considered major if they account for most of the associated links between attributes and their values. They are considered minor if they account for fewer associated links. Major motivational patterns include frictionless shopping, shopping enjoyment, and value seeking. While minor motivational patterns include quality seeking, fashion orientation, and product selection support. These motivational patterns are consistent with patterns that appear in prior studies: patterns of frictionless shopping, quality seeking, and value seeking consumers are described in Wagner (2007); patterns of fashion orientation and shopping enjoyment are described in Ladhari et al. (2019); and pattern of product selection support is described in Sebald and Jacob (2019).

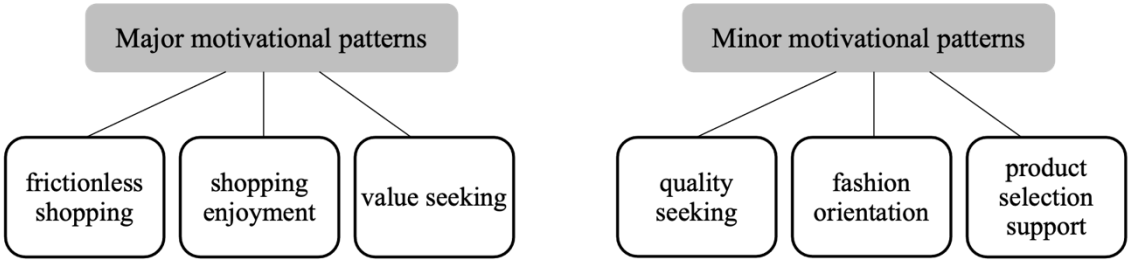

Figure 18. Six customer motivational patterns

Sellers and retailers in live streaming can focus on each of these motivational patterns by addressing their associated attributes in order to deliver higher values for the customers:

- Frictionless shopping - product assortment, product style (personal appeal), product trendiness, seller presentation, seller interactivity, seller image, seller politeness, seller pacing, seller physical attractiveness, number of viewers, content on seller FB page, fast delivery, and seller's broadcast timing announcement
- Shopping enjoyment – promotion, seller humor, seller verbal attractiveness, and seller physical attractiveness
- Value seeking – product quality, product brand name, good price for the given quality, cheap price, clear price presentation
- Quality seeking – product quality
- Fashion orientation – product trendiness
- Product selection support – seller guidance

Thus, this study finds new insights through the analysis of hierarchical theory of shopping motivation. Three major motivational patterns and three minor motivational patterns have been found along with their respective set of associated attributes. Sellers and retail managers can benefit from these findings by addressing the attributes of the live streams to achieve the desired improvements in the underlying motivational values. The HVMs can act as a tool to realize and understand shoppers' motivations that otherwise may not have been known.

4.2 Quantitative Study of Live Stream Factors Affecting Shopper Intentions

4.2.1 Survey samples and characteristics

The Facebook advertisement to gather online respondents was launched for 10 days. We collected the total of 476 respondents. Of this total, 93% (n=442) had made purchase and 58% (n=276) were female. Most respondents aged 21-30 (n=201;42.2%), were singles (n=329;69.1%), had a bachelor's degree (n=268;56.3%), had an average monthly income between less than 20,000 THB (n=195;41.0%), worked as government or state enterprise employees (n=223;46.80%), and lived in Central region or Bangkok (n=167;35.1%). As for spending habits on fashion clothing in Facebook live streaming, most respondents spend less than 200 THB per item (n=271;56.9%) and spends less than 1,000 THB per month (n=197;41.4%). Detailed classifications appear in the subsequent sections.

4.2.1.1 Number of samples classified by gender

Samples		**Gender**			**Total**
		Male	**Female**	**Others**	
Customers	Number	184	276	16	476
	%	38.7%	58.0%	3.4%	100%

4.2.1.2 Number of samples classified by age

Samples		**Age (Years)**						**Total**
		< 20	**21-30**	**31-40**	**41-50**	**> 50**	**blank**	
Customers	Number	22	201	114	69	69	1	476
	%	4.6%	42.2%	23.9%	14.5%	14.5%	0.2%	100%

4.2.1.3 Number of samples classified by marital status

Samples		**Marital Status**					**Total**
		Single	**Married**	**Divorced**	**Widowed**	**Others**	
Customers	Number	329	124	13	7	3	476

	%	69.1%	26.1%	2.7%	1.5%	0.6%	100%

4.2.1.4 Number of samples classified by education level

Samples		**Education Level**					**Total**
		Less than Bachelor	**Bachelor**	**Master**	**Doctorate**	**Others**	
Customers	Number	28	268	143	34	3	476
	%	5.9%	56.3%	30.0%	7.1%	0.6%	100%

4.2.1.5 Number of samples classified by income

Samples		**Income (in thousands THB)**						**Total**
		< 20	**20-30**	**30-40**	**40-70**	**> 70**	**blank**	
Customers	Number	195	91	65	80	27	18	476
	%	41.0%	19.1%	13.7%	16.8%	5.7%	3.8%	100%

4.2.1.6 Number of samples classified by employment

Employment	**Samples Customers**	
	Number	%
Government/State Enterprise Employees	223	46.8%
Private Company Employees	60	12.6%
Students	67	14.1%
University Faculty/Staff	12	2.5%
Self-Employed	59	12.4%
Business Owner	31	6.5%
Retired/Unemployed	24	5.0%

4.2.1.7 Number of samples classified by region

Samples		**Regions**					**Total**
		Central +BKK	**East**	**North**	**North East**	**South**	
Customers	Number	167	33	87	104	85	476
	%	35.1%	6.9%	18.3%	21.8%	17.9%	100%

4.2.1.8 Number of samples classified by spending per item of fashion clothing in Facebook live streaming

Samples		**Spending per item (THB)**					**Total**
		Never Purchase	**< 200**	**201-500**	**> 500**	**blank**	
Customers	Number	27	271	117	47	14	476
	%	5.7%	56.9%	24.6%	9.9%	2.9%	100%

4.2.1.9 Number of samples classified by spending per month on fashion clothing in Facebook live streaming

Samples		**Spending per month (THB)**					**Total**
		Never Purchase	**< 1,000**	**1,000-2,000**	**> 2,000**	**blank**	
Customers	Number	25	197	157	88	9	476
	%	5.3%	41.4%	33.0%	18.5%	1.9%	100%

4.2.2 PLS-SEM Analysis

The PLS-SEM analysis was performed using SmartPLS software. The measurement model was used to test the reliability and the validity of the constructs, and the structural model was used to test the hypotheses.

4.2.2.1 Reliability & Validity Test

The reliability of the constructs was tested using the individual loadings, composite reliability (CR), Cronbach's alpha, and average variance extracted (AVE) (see **Table 16**). To assess the reliability of the individual items, indicator loadings to be kept are at least 0.700. As a result, eleven items were dropped from the analysis (see measurement scales in section 3.2.1 Figure 4). Final set of measurement items is shown in Table 16 along with the values of Cronbach's alpha, and CR to be above 0.8 indicating sufficient internal consistency. The convergent reliability was tested using AVEs for all the factors to be above 0.5 and CR to be higher than AVE, indicating adequate validity. The discriminant validity was tested using the heterotrait-monotrait ratio of correlations (HTMT) to be less than 0.9 and satisfied the Fornell-Larcker criterion indicating that each construct is distinct from the other constructs as it correlates with its own construct more than with other constructs (see **Table 17** and **Table 18**).

Table 16. Assessment of measurement model

	Indicator loadings	Composite reliability	Cronbach's alpha	AVE	rho_A
Seller Image					
SIMA2	0.719	0.918	0.899	0.585	0.9
SIMA3	0.702				
SIMA4	0.792				
SIMA11	0.77				
SIMA12	0.754				
SIMA13	0.784				
SIMA14	0.829				
Fashion Product Quality					
FPQU1	0.895	0.959	0.946	0.823	0.947
FPQU2	0.907				
FPQU3	0.914				
FPQU4	0.919				
FPQU6	0.902				
Fashion Product Trendiness					
FPTR1	0.915	0.91	0.802	0.835	0.802

SIMA15	0.762				
Seller Interactivity					
SINT1	0.767	0.95	0.939	0.733	0.941
SINT2	0.829				
SINT3	0.89				
SINT4	0.872				
SINT5	0.886				
SINT6	0.877				
SINT7	0.866				
Seller Presentation					
SPRE1	0.934	0.956	0.932	0.88	0.932
SPRE2	0.95				
SPRE3	0.929				
Seller Shopping Guidance					
SSG1	0.891	0.948	0.927	0.821	0.927
SSG2	0.922				
SSG3	0.915				
SSG4	0.895				
Seller Politeness					
SPOL1	0.84	0.94	0.92	0.757	0.93
SPOL2	0.838				
SPOL3	0.879				
SPOL4	0.917				
SPOL5	0.876				
Seller Verbal Attractiveness					
SVA1	0.891	0.959	0.942	0.853	0.944
SVA2	0.924				
SVA3	0.947				
SVA4	0.932				
Seller Humor					
SHUM1	0.862	0.947	0.935	0.721	0.938
SHUM2	0.874				
SHUM3	0.864				
FPTR3	0.912				
Fashion Product Brandname					
FPBN1	0.907	0.944	0.91	0.849	0.911
FPBN2	0.952				
FPBN3	0.903				
Pricing					
FPPR1	0.873	0.939	0.913	0.795	0.915
FPPR2	0.851				
FPPR3	0.925				
FPPR4	0.915				
Fashion Product Personal Appeal					
FPPA1	0.872	0.938	0.901	0.835	0.907
FPPA2	0.949				
FPPA3	0.918				
Price Transparency					
PTRA1	0.84	0.918	0.881	0.737	0.892
PTRA2	0.867				
PTRA3	0.82				
PTRA4	0.906				
Background Ambiance					
BAMB1	0.903	0.942	0.918	0.803	0.919
BAMB2	0.93				
BAMB3	0.879				
BAMB4	0.871				
Broadcast Timing Announcement					
BTAN1	0.708	0.893	0.819	0.739	0.864
BTAN2	0.94				
BTAN3	0.912				
Number of Viewers					
NVIE1	0.918	0.924	0.837	0.86	0.845
NVIE2	0.936				
Seller Facebook Page					
SFBP1	0.793	0.944	0.929	0.739	0.93

SHUM4	0.86				
SHUM5	0.824				
SHUM6	0.868				
SHUM7	0.787				
Seller Sex Appeal					
SSA1	0.9	0.93	0.911	0.689	0.935
SSA2	0.758				
SSA3	0.826				
SSA4	0.78				
SSA5	0.869				
SSA6	0.836				
Seller Pacing					
SPAC1	0.938	0.924	0.836	0.859	0.851
SPAC2	0.915				
Fashion Product Assortment					
FPAS1	0.81	0.936	0.919	0.676	0.925
FPAS2	0.844				
FPAS3	0.785				
FPAS4	0.857				
FPAS5	0.871				
FPAS6	0.879				
FPAS7	0.693				
SFBP2	0.86				
SFBP3	0.867				
SFBP4	0.889				
SFBP5	0.887				
SFBP6	0.857				
Trust In Seller					
TISE1	0.912	0.953	0.933	0.834	0.937
TISE2	0.949				
TISE3	0.948				
TISE4	0.84				
Trust In Product					
TIPR1	0.938	0.956	0.931	0.878	0.931
TIPR2	0.953				
TIPR3	0.921				
Intention to Watch					
ITWA1	0.882	0.937	0.899	0.832	0.899
ITWA2	0.927				
ITWA3	0.927				
Intention to Purchase					
ITP1	0.864	0.936	0.897	0.83	0.905
ITP2	0.936				
ITP3	0.93				

Table 17. Discriminant validity using Fornell-Larcker Criterion

	Constructs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Seller Image	**0.765**																							
2	Seller Interactivity	0.704	**0.856**																						
3	Seller Presentation	0.613	0.779	**0.938**																					
4	Seller Shopping Guidance	0.653	0.764	0.776	**0.906**																				
5	Seller Politeness	0.762	0.777	0.686	0.741	**0.870**																			
6	Seller Verbal Attractiveness	0.707	0.720	0.661	0.679	0.807	**0.924**																		
7	Seller Humor	0.636	0.616	0.495	0.621	0.688	0.781	**0.849**																	
8	Seller Sex Appeal	0.430	0.353	0.232	0.328	0.402	0.425	0.589	**0.830**																
9	Seller Pacing	0.582	0.643	0.634	0.639	0.659	0.660	0.605	0.415	**0.927**															
10	Fashion Product Assortment	0.575	0.617	0.616	0.628	0.589	0.573	0.511	0.257	0.566	**0.822**														
11	Fashion Product Quality	0.559	0.589	0.613	0.595	0.608	0.569	0.487	0.232	0.560	0.731	**0.907**													
12	Fashion Product Trendiness	0.479	0.487	0.512	0.490	0.490	0.525	0.502	0.312	0.521	0.714	0.684	**0.914**												
13	Fashion Product Brandname	0.417	0.405	0.337	0.436	0.410	0.400	0.474	0.362	0.393	0.505	0.543	0.585	**0.921**											
14	Pricing	0.524	0.529	0.500	0.515	0.493	0.527	0.476	0.216	0.476	0.698	0.661	0.624	0.546	**0.891**										
15	Fashion Product Personal Appeal	0.497	0.502	0.485	0.473	0.487	0.517	0.446	0.191	0.504	0.663	0.668	0.667	0.581	0.697	**0.914**									
16	Price Transparency	0.436	0.502	0.509	0.470	0.443	0.427	0.336	0.127	0.431	0.566	0.606	0.488	0.393	0.718	0.571	**0.859**								
17	Background Ambiance	0.421	0.368	0.355	0.352	0.413	0.459	0.441	0.235	0.356	0.536	0.486	0.541	0.385	0.512	0.465	0.470	**0.896**							

18	Broadcast Timing Announcement	0.454	0.478	0.344	0.405	0.455	0.399	0.418	0.288	0.432	0.541	0.533	0.490	0.484	0.550	0.514	0.509	0.544	**0.860**						
19	Number of Viewers	0.465	0.412	0.369	0.355	0.449	0.448	0.447	0.354	0.392	0.508	0.477	0.503	0.413	0.523	0.474	0.432	0.627	0.613	**0.927**					
20	Seller Facebook Page	0.500	0.545	0.570	0.509	0.557	0.543	0.431	0.200	0.494	0.683	0.652	0.616	0.437	0.682	0.615	0.664	0.645	0.620	0.707	**0.859**				
21	Trust In Seller	0.517	0.437	0.431	0.447	0.527	0.511	0.414	0.194	0.457	0.507	0.590	0.482	0.385	0.538	0.499	0.543	0.397	0.548	0.487	0.591	**0.913**			
22	Trust In Product	0.463	0.442	0.430	0.446	0.486	0.473	0.392	0.164	0.465	0.478	0.574	0.440	0.355	0.537	0.526	0.538	0.329	0.485	0.423	0.548	0.773	**0.937**		
23	Intention to Watch	0.528	0.436	0.357	0.436	0.472	0.463	0.486	0.314	0.395	0.492	0.519	0.444	0.429	0.494	0.485	0.466	0.439	0.611	0.526	0.532	0.678	0.626	**0.912**	
24	Intention to Purchase	0.510	0.443	0.386	0.419	0.475	0.498	0.466	0.275	0.388	0.476	0.523	0.434	0.374	0.511	0.464	0.481	0.404	0.539	0.567	0.582	0.691	0.595	0.771	**0.911**

Table 18. Heterotrait-monotrait Ratio (HTMT)

	Constructs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Seller Image																								
2	Seller Interactivity	0.769																							
3	Seller Presentation	0.659	0.832																						
4	Seller Shopping Guidance	0.711	0.818	0.835																					
5	Seller Politeness	0.833	0.843	0.749	0.805																				
6	Seller Verbal Attractiveness	0.768	0.767	0.706	0.727	0.869																			
7	Seller Humor	0.699	0.658	0.530	0.666	0.737	0.831																		
8	Seller Sex Appeal	0.454	0.353	0.216	0.330	0.390	0.409	0.605																	
9	Seller Pacing	0.664	0.724	0.718	0.724	0.752	0.744	0.679	0.442																
10	Fashion Product Assortment	0.619	0.659	0.659	0.676	0.635	0.610	0.552	0.262	0.634															
11	Fashion Product Quality	0.596	0.624	0.652	0.635	0.652	0.602	0.516	0.222	0.627	0.778														
12	Fashion Product Trendiness	0.560	0.563	0.592	0.568	0.572	0.604	0.577	0.340	0.633	0.828	0.785													
13	Fashion Product Brandname	0.464	0.440	0.367	0.475	0.444	0.431	0.510	0.390	0.447	0.552	0.585	0.684												
14	Pricing	0.571	0.571	0.541	0.560	0.539	0.567	0.513	0.212	0.542	0.757	0.709	0.729	0.599											
15	Fashion Product Personal Appeal	0.544	0.548	0.529	0.516	0.534	0.563	0.483	0.185	0.578	0.722	0.722	0.786	0.643	0.767										
16	Price Transparency	0.473	0.546	0.557	0.514	0.485	0.463	0.363	0.136	0.500	0.615	0.654	0.573	0.435	0.792	0.635									
17	Background Ambiance	0.460	0.397	0.383	0.381	0.449	0.493	0.474	0.236	0.407	0.581	0.521	0.630	0.421	0.558	0.512	0.518								

18	Broadcast Timing Announcement	0.528	0.542	0.393	0.465	0.527	0.457	0.470	0.312	0.527	0.621	0.610	0.606	0.554	0.638	0.599	0.603	0.651						
19	Number of Viewers	0.534	0.464	0.416	0.400	0.507	0.501	0.501	0.386	0.466	0.575	0.532	0.611	0.472	0.595	0.543	0.494	0.717	0.740					
20	Seller Facebook Page	0.535	0.583	0.612	0.548	0.604	0.580	0.460	0.200	0.559	0.731	0.693	0.713	0.475	0.737	0.670	0.728	0.699	0.718	0.797				
21	Trust In Seller	0.555	0.465	0.459	0.478	0.563	0.543	0.439	0.181	0.514	0.540	0.627	0.558	0.419	0.582	0.544	0.593	0.428	0.634	0.548	0.633			
22	Trust In Product	0.499	0.472	0.462	0.480	0.522	0.504	0.418	0.155	0.528	0.509	0.611	0.509	0.385	0.582	0.574	0.592	0.356	0.563	0.478	0.588	0.829		
23	Intention to Watch	0.586	0.475	0.391	0.477	0.511	0.502	0.526	0.327	0.453	0.538	0.563	0.523	0.474	0.546	0.538	0.518	0.483	0.703	0.604	0.581	0.740	0.685	
24	Intention to Purchase	0.564	0.480	0.419	0.457	0.517	0.539	0.505	0.279	0.442	0.517	0.565	0.510	0.412	0.561	0.513	0.532	0.446	0.628	0.652	0.633	0.750	0.647	0.857

4.2.2.2 Structural Model and Hypothesis Testing

The results of structural model are shown in **Figure 19**. In the results, a coefficient of determination (R2) is 0.639 for trust in products, 0.490 for trust in seller, 0.609 for intention to watch, and 0.653 for intention to purchase. This indicates that an adequate level of variability in the outcome of the data can be explained by the model. In **Figure 19**, the paths and factors with p > .05 are omitted for simplicity. **Table 19** summarizes all the path coefficients and gives the results of the hypotheses.

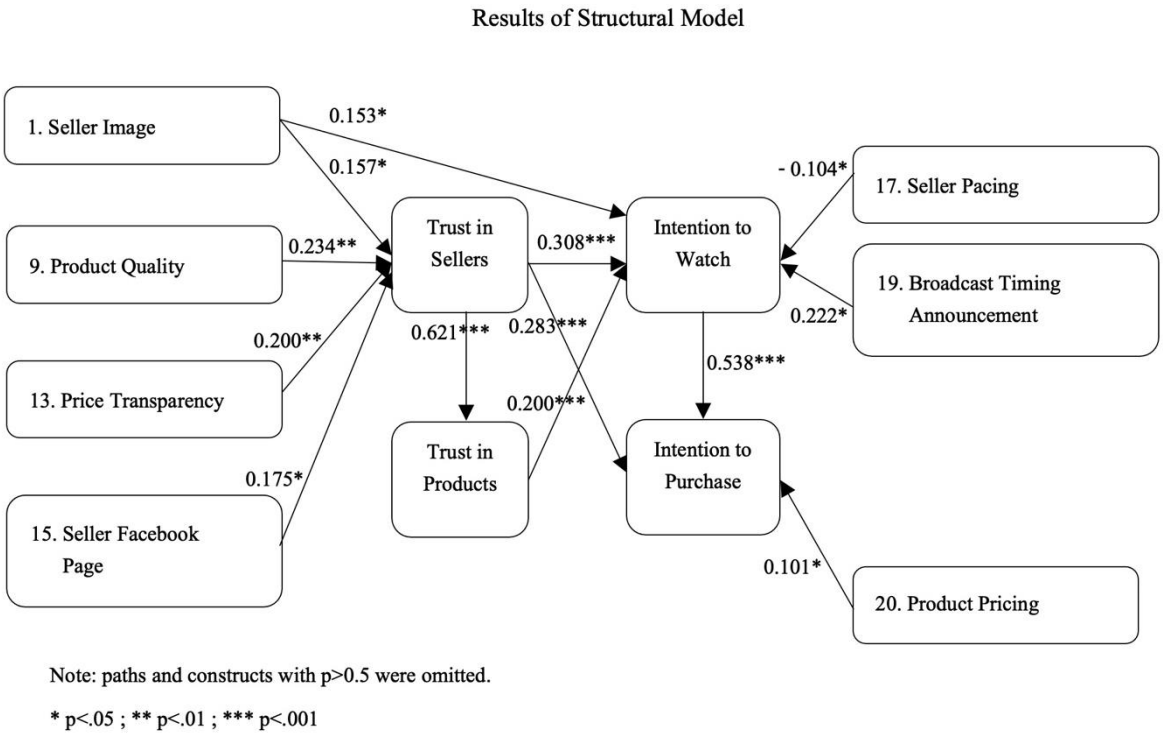

Figure 19. Results of structural model where paths and constructs with p>0.5 were omitted

Table 19. Result of path analysis

	Coefficient	Std. dev.	T Statistics	P Values	f Square	Hypothesis result
Seller Image -> Trust In Product	-0.026	0.043	0.604	0.546	0.001	H1a: not supported
Seller Image -> Trust In Seller	0.157	0.065	2.425*	0.015	0.017	H1b: not supported
Seller Image -> Intention to Watch	0.153	0.067	2.283*	0.022	0.02	H1c: not supported
Seller Interactivity -> Trust In Product	0.035	0.059	0.591	0.555	0.001	H2a: not supported
Seller Interactivity -> Trust In Seller	-0.16	0.092	1.737	0.082	0.013	H2b: not supported
Seller Interactivity -> Intention to Watch	-0.004	0.077	0.059	0.953	0	H2c: not supported
Seller Presentation -> Trust In Product	-0.016	0.059	0.265	0.791	0	H3a: not supported
Seller Presentation -> Trust In Seller	-0.079	0.067	1.188	0.235	0.003	H3b: not supported
Seller Presentation -> Intention to Watch	-0.066	0.075	0.879	0.38	0.003	H3c: not supported
Seller Shopping Guidance -> Trust In Product	0.059	0.062	0.948	0.343	0.003	H4a: not supported
Seller Shopping Guidance -> Trust In Seller	0.027	0.083	0.328	0.743	0	H4b: not supported
Seller Shopping Guidance -> Intention to Watch	0.076	0.071	1.067	0.286	0.004	H4c: not supported
Seller Politeness -> Trust In Product	0.006	0.07	0.081	0.935	0	H5a: not supported
Seller Politeness -> Trust In Seller	0.131	0.084	1.559	0.119	0.007	H5b: not supported
Seller Politeness -> Intention to Watch	-0.096	0.081	1.184	0.236	0.005	H5c: not supported
Seller Verbal Attractiveness -> Trust In Product	0.005	0.062	0.075	0.94	0	H6a: not supported
Seller Verbal Attractiveness -> Trust In Seller	0.11	0.071	1.553	0.12	0.007	H6b: not supported
Seller Verbal Attractiveness -> Intention to Watch	-0.048	0.075	0.641	0.522	0.001	H6c: not supported
Fashion Product Assortment -> Trust In Product	-0.068	0.07	0.969	0.333	0.004	H7a: not supported
Fashion Product Assortment -> Trust In Seller	-0.063	0.072	0.875	0.381	0.002	H7b: not supported
Fashion Product Assortment -> Intention to Watch	0.046	0.07	0.651	0.515	0.002	H7c: not supported
Fashion Product Quality -> Trust In Product	0.104	0.084	1.243	0.214	0.009	H8a: not supported
Fashion Product Quality -> Trust In Seller	0.234	0.079	2.967**	0.003	0.034	**H8b: supported**
Fashion Product Quality -> Intention to Watch	0.017	0.067	0.251	0.802	0	H8c: not supported
Fashion Product Trendiness -> Trust In Product	-0.054	0.071	0.754	0.451	0.003	H9a: not supported
Fashion Product Trendiness -> Trust In Seller	0.015	0.075	0.199	0.842	0	H9b: not supported
Fashion Product Trendiness -> Intention to Watch	-0.051	0.059	0.871	0.384	0.002	H9c: not supported
Fashion Product Brandname -> Trust In Product	-0.045	0.054	0.834	0.404	0.003	H10a: not supported
Fashion Product Brandname -> Trust In Seller	-0.006	0.074	0.084	0.933	0	H10b: not supported
Fashion Product Brandname -> Intention to Watch	0.026	0.058	0.446	0.656	0.001	H10c: not supported

Fashion Product Personal Appeal -> Trust In Product	0.142	0.098	1.443	0.149	0.021	H11a: not supported
Fashion Product Personal Appeal -> Trust In Seller	0.023	0.071	0.316	0.752	0	H11b: not supported
Fashion Product Personal Appeal -> Intention to Watch	0.052	0.061	0.849	0.396	0.002	H11c: not supported
Price Transparency -> Trust In Product	0.057	0.057	1.008	0.314	0.003	H12a: not supported
Price Transparency -> Trust In Seller	0.2	0.06	3.357**	0.001	0.037	**H12b: supported**
Price Transparency -> Intention to Watch	0.024	0.058	0.41	0.682	0.001	H12c: not supported
Number of Viewers -> Trust In Product	-0.007	0.045	0.155	0.877	0	H13a: not supported
Number of Viewers -> Trust In Seller	0.085	0.061	1.405	0.16	0.006	H13b: not supported
Number of Viewers -> Intention to Watch	0.079	0.066	1.204	0.229	0.006	H13c: not supported
Seller Facebook Page -> Trust In Product	0.021	0.07	0.302	0.763	0	H14a: not supported
Seller Facebook Page -> Trust In Seller	0.175	0.072	2.436*	0.015	0.016	H14b: not supported
Seller Facebook Page -> Intention to Watch	-0.013	0.072	0.181	0.856	0	H14c: not supported
Seller Humor -> Intention to Watch	0.155	0.09	1.731	0.083	0.016	H15: not supported
Seller Sex Appeal -> Intention to Watch	0.057	0.043	1.324	0.186	0.005	H16: not supported
Seller Pacing -> Intention to Watch	-0.104	0.052	1.994*	0.046	0.012	H17: not supported
Background Ambiance -> Intention to Watch	0.028	0.058	0.486	0.627	0.001	H18: not supported
Broadcast Timing Announcement -> Intention to Watch	0.222	0.059	3.784***	0	0.053	**H19: supported**
Pricing -> Trust In Product	0.055	0.069	0.809	0.419	0.002	H20a: not supported
Pricing -> Intention to Watch	-0.074	0.066	1.123	0.261	0.004	H20b: not supported
Pricing -> Intention to Purchase	0.101	0.049	2.045*	0.041	0.019	H20c: not supported
Trust In Seller -> Trust In Product	0.621	0.059	10.557***	0	0.545	**H21a: supported**
Trust In Seller -> Intention to Watch	0.308	0.071	4.336***	0	0.077	**H21b: supported**
Trust In Seller -> Intention to Purchase	0.283	0.068	4.163***	0	0.076	**H21c: supported**
Trust In Product -> Intention to Watch	0.2	0.075	2.661**	0.008	0.036	**H22a: supported**
Trust In Product -> Intention to Purchase	-0.015	0.065	0.236	0.813	0	H22b: not supported
Intention to Watch -> Intention to Purchase	0.538	0.053	10.201***	0	0.417	**H23: supported**

* p<.05; ** p<.01; *** p<.001

In the results, product quality (β = 0.234; p < .003) and price transparency (β = 0.2; p < .001) have significant positive influence on trust in sellers which supports hypotheses H8b and H12b. However, seller image (β = 0.157; p < .015) and the content on seller's Facebook page (β = 0.175; p < .015) all have low p values but also have low coefficients, indicating weak positive

influence on trust in sellers but not significant enough thus not supporting H1b, and H14b. Also, none of them has significant influence on trust in products thus not supporting hypotheses H8a, H12a, H1a, and H14a. No other live streaming factor has significant influence on trust in sellers thus not supporting H2b, H3b, H4b, H5b, H6b, H7b, H9b, H10b, H11b, and H13b. None of the live streaming factors has any significant influence on trust in products thus not supporting H1a, H2a, H3a, H4a, H5a, H6a, H7a, H9a, H10a, H11a, H20a, H12a, and H13a.

With regards to the role that trust in sellers and trust in products have on each other and on customer engagement, our results appear to show some similarities but also some contradictions as compared with Wongkitrungrueng and Assarut (2020). As for the similarity, our results show that trust in sellers could lead to customer behavior in terms of intention to watch (β = 0.308; $p < .001$) and intention to purchase (β = 0.283; $p < .001$), supporting H21b and H21c. As for the contradictory, while Wongkitrungrueng and Assarut (2020) finds that trust in products does not directly lead to any customer engagement, our results show that trust in products could directly lead to customer behavior in terms of intention to watch (β = 0.2; $p < .01$), supporting H22a but does not lead to intention to purchase thus not supporting H22b. Also, interestingly, while Wongkitrungrueng and Assarut (2020) has shown that trust in products leads to trust in sellers, our results show the other way around that trust in sellers could lead to trust in products (β = 0.621; $p < .001$) supporting H21a.

Our results also find that the pre-announcement of broadcast timing (β = 0.222; $p < .001$) has significant positive influence on consumer intention to watch the live stream which supports H19. However, not quite as expected, pricing effect on consumer intention to purchase has low p value but also low coefficient (β = 0.101; $p < .044$), suggesting weak positive influence on consumer intention to purchase but not significant enough thus not supporting H20c. Pricing also does not have significant influence on consumer intention to watch the live stream, thus not supporting H20b. It is also interesting to note that seller pacing effect on consumer intention to watch has low p value but also low coefficient (β = -0.104; $p < .05$) thus not supporting H17. And lastly, the intention to watch could lead to intention to purchase (β = 0.538; $p < .001$) supporting H23.

As for the remaining hypotheses, there are no significant findings of any attributes influence on intention to watch, thus not supporting H1c, H2c, H3c, H4c, H5c, H6c, H15, H16, H7c, H8c, H9c, H10c, H11c, H12c, and H18. Interestingly, contradicting to the common belief, the number of live streaming viewers have no significant influence on trust and the intention to watch the live stream, thus not supporting H13a, H13b, and H13c. The seller's Facebook page does not have significant influence on the customer intention to watch, thus not supporting H14c.

4.2.2.3 Indirect and Mediating Effects

Although some of the factors do not appear to have any direct effects on the customer intention to watch the live stream, but they may have indirect effects (Hayes, 2009). Therefore, we tested indirect effects using bootstrapping procedure with 5000 samples feature in SmartPLS. **Table 20** shows the results. Only the factors that have significant indirect effects on customer intentions are shown.

Table 20. Indirect and mediating effects

	Total effect		Direct effect		Indirect effects			
							Bootstrap 95% CI	
	Coefficient	T statistics	Coefficient	T statistics	path	Coefficient	Percentile	Bias Corrected
FPQ -> ITW	0.139	1.982*	0.017	0.251	FPQ -> TIS -> ITW	0.072	[0.019:0.136]	[0.024:0.144]
PTR -> ITW	0.122	2.049*	0.024	0.41	PTR -> TIS -> ITW	0.062	[0.024:0.113]	[0.025:0.116]
SFP -> ITW	0.175	2.436*	-0.013	0.181	SFP -> TIS -> ITW	0.054	[0.009:0.113]	[0.011:0.119]
FPQ -> TIP	0.249	2.556*	0.104	1.243	FPQ -> TIS -> TIP	0.145	[0.044:0.225]	[0.058:0.238]
PTR -> TIP	0.182	2.516*	0.057	1.008	PTR -> TIS -> TIP	0.124	[0.050:0.201]	[0.052:0.203]

Notes: FPQ=Fashion Product Quality, SFP=Seller FB Page, PTR=Price Transparency

ITW=Intention to Watch, TIS=Trust in Seller, TIP = Trust in Product

* p<.05; ** p<.01; *** p<.001

As Table 20 shows, while fashion product quality, price transparency, and seller's Facebook page do not have direct effect on consumer intention to watch, each of them has

indirect effect on consumer intention to watch through trust in seller (product quality, CI = 0.019 to 0.136; price transparency, CI = 0.024 to 0.113; and seller's Facebook page, CI = 0.009 to 0.113), thus fully mediate the effect.

Also, interestingly, product quality and price transparency do not have direct effect on trust in product, but each has indirect effect on trust in product through trust in seller (fashion product quality, CI = 0.044 to 0.225; and price transparency, CI = 0.050 to 0.201). Trust in seller fully mediate the effect of each of product quality and price transparency on trust in product.

4.2.2.4 Ranking of measurement items of live streaming shopping attributes

Items with abbreviated names refer to the shopping attributes that affect customers intentions to watch or purchase fashion clothing in Facebook live streaming. These attributes are measured using 7-point Likert scales and the results could be considered to be normally distributed as the excess kurtosis is within +/- 7 and skewness is within +/- 2 per the argument made by Hair, Black, Babin, and Anderson (2010) and Byrne (2010). Thus, by computing the probability that the measurement values are greater than 5 using normal probability function p(x>5), we can see rank items with the highest measurement values. The bold fonts in the measurement items in **Table 21** represent the items with greater than 80% probability that the customers would agree with those measurement items. The most agreed statements are as follow:

- The atmosphere of this live stream is cheerful
- Seller always have products in stock
- Seller has a wide variety of fashion products to choose from
- Current fashions and new products are easily available at this seller
- The fashion style of this seller appeals to me
- Most of the fashion products offered by the seller reflect a good price for the value
- Seller has a great deal of value for the money I would spend
- Seller has good prices
- Seller clearly mentions what charges will be added to the final price
- The manner in which the seller prices its products is transparent

- I think seller often shows evidence of recent orders being shipped on seller's FB page
- I think seller often updates new product information on seller's FB page
- I think seller's FB page has sufficient number of followers
- I think seller's FB page has sufficient movements
- Seller is seen as trustworthy
- Seller is seen as offering good value-for-money
- Seller facilitates two-way communication between herself/himself and viewers
- Seller is friendly
- Seller makes product attributes visible to me
- Seller makes information about how to use products visible to me
- Listening to seller talks is interesting

Table 21. Measurement items with the probability of value greater than 5

Items	Mean	Median	Standard Deviation	Excess Kurtosis	Skewness	p(x > 5)
BAMB1	**6.008**	**6**	**1.181**	**5.344**	**-2.02**	**0.8033**
BAMB2	5.931	6	1.192	4.331	-1.82	0.7826
BAMB3	5.805	6	1.198	2.308	-1.319	0.7492
BAMB4	5.773	6	1.334	2.713	-1.554	0.7189
BTAN1	5.836	6	1.21	3.653	-1.651	0.7552
BTAN2	5.492	6	1.328	1.368	-1.138	0.6445
BTAN3	5.359	6	1.338	1.2	-1.026	0.6058
FPAS1	**5.958**	**6**	**0.929**	**2.707**	**-1.176**	**0.8488**
FPAS2	**5.908**	**6**	**1.029**	**3.684**	**-1.462**	**0.8112**
FPAS3	5.517	6	1.357	1.44	-1.146	0.6484
FPAS4	5.727	6	1.173	1.933	-1.197	0.7323
FPAS5	5.727	6	1.14	1.177	-0.987	0.7382
FPAS6	5.884	6	1.064	2.569	-1.27	0.7970
FPAS7	**6.111**	**6**	**1.022**	**4.02**	**-1.623**	**0.8615**
FPBN1	5.59	6	1.278	1.91	-1.29	0.6778
FPBN2	5.456	6	1.3	1.331	-1.132	0.6371
FPBN3	5.393	6	1.367	1.099	-1.12	0.6131
FPPA1	**5.893**	**6**	**1.029**	**3.842**	**-1.527**	**0.8073**
FPPA2	5.828	6	1.102	3.499	-1.555	0.7738
FPPA3	5.853	6	1.104	3.03	-1.494	0.7801
FPPR1	**5.966**	**6**	**0.999**	**4.112**	**-1.528**	**0.8332**
FPPR2	5.803	6	1.113	2.712	-1.375	0.7647
FPPR3	**5.924**	**6**	**1.038**	**4.417**	**-1.655**	**0.8133**
FPPR4	**5.994**	**6**	**1.005**	**4.253**	**-1.593**	**0.8387**
FPQU1	5.786	6	1.091	2.278	-1.224	0.7644
FPQU2	5.834	6	1.027	2.551	-1.228	0.7916
FPQU3	5.687	6	1.147	1.574	-1.109	0.7254
FPQU4	5.798	6	1.166	2.446	-1.335	0.7531
FPQU6	5.653	6	1.221	1.677	-1.14	0.7036
FPTR1	5.796	6	1.074	3.034	-1.342	0.7707
FPTR3	5.826	6	1.032	2.001	-1.109	0.7883
ITP1	5.456	6	1.431	1.574	-1.315	0.6250
ITP2	5.538	6	1.227	2	-1.235	0.6695
ITP3	5.607	6	1.24	2.2	-1.325	0.6878
ITWA1	5.693	6	1.191	2.893	-1.463	0.7197
ITWA2	5.248	6	1.437	0.804	-0.995	0.5685
ITWA3	5.195	6	1.419	0.826	-1.012	0.5547
NVIE1	5.563	6	1.254	2.153	-1.226	0.6733
NVIE2	5.695	6	1.107	2.632	-1.261	0.7349

PTRA1	5.702	6	1.322	2.275	-1.388	0.7023
PTRA2	5.882	6	1.278	2.666	-1.59	0.7549
PTRA3	**6.032**	**6**	**1.129**	**4.45**	**-1.776**	**0.8197**
PTRA4	**6.008**	**6**	**1.088**	**4.202**	**-1.684**	**0.8229**
SFBP1	5.763	6	1.123	3.764	-1.541	0.7516
SFBP2	5.794	6	1.104	3.354	-1.495	0.7640
SFBP3	**5.939**	**6**	**1.086**	**3.907**	**-1.617**	**0.8064**
SFBP4	**6.015**	**6**	**0.971**	**3.325**	**-1.452**	**0.8521**
SFBP5	**5.954**	**6**	**0.99**	**3.379**	**-1.378**	**0.8324**
SFBP6	**6.04**	**6**	**1.041**	**4.832**	**-1.793**	**0.8411**
SHUM1	5.494	6	1.299	1.23	-1.083	0.6481
SHUM2	5.555	6	1.283	1.236	-1.125	0.6673
SHUM3	5.441	6	1.345	1.028	-1.054	0.6285
SHUM4	5.483	6	1.418	1.715	-1.334	0.6333
SHUM5	5.347	6	1.57	0.907	-1.147	0.5875
SHUM6	5.674	6	1.277	2.305	-1.418	0.7012
SHUM7	5.309	6	1.502	1.024	-1.133	0.5815
SIMA11	5.349	6	1.432	0.427	-0.93	0.5963
SIMA12	5.212	5	1.469	0.699	-0.977	0.5574
SIMA13	5.769	6	1.206	1.579	-1.234	0.7381
SIMA14	5.592	6	1.305	1.784	-1.266	0.6750
SIMA15	5.321	6	1.352	1.089	-1.029	0.5938
SIMA2	**5.989**	**6**	**1.009**	**2.362**	**-1.27**	**0.8365**
SIMA3	**6.029**	**6**	**1.027**	**2.782**	**-1.438**	**0.8418**
SIMA4	5.758	6	1.118	3.598	-1.502	0.7511
SINT1	5.687	6	1.121	1.394	-1.065	0.7300
SINT2	**5.968**	**6**	**1.023**	**2.834**	**-1.376**	**0.8280**
SINT3	5.777	6	1.162	2.246	-1.341	0.7481
SINT4	5.782	6	1.243	2.233	-1.457	0.7354
SINT5	5.666	6	1.245	0.881	-1.063	0.7037
SINT6	5.714	6	1.168	1.438	-1.128	0.7295
SINT7	5.624	6	1.265	1.175	-1.096	0.6891
SPAC1	5.662	6	1.182	1.656	-1.176	0.7123
SPAC2	5.792	6	1.176	1.699	-1.269	0.7497
SPOL1	**6.059**	**6**	**0.998**	**3.6**	**-1.529**	**0.8557**
SPOL2	5.88	6	1.098	2.971	-1.441	0.7886
SPOL3	5.784	6	1.242	2.257	-1.377	0.7361
SPOL4	5.59	6	1.26	1.863	-1.243	0.6802
SPOL5	5.431	6	1.377	1.256	-1.136	0.6229
SPRE1	5.941	6	1.14	2.344	-1.405	0.7954
SPRE2	**6.069**	**6**	**1.081**	**2.787**	**-1.548**	**0.8386**
SPRE3	**6.021**	**6**	**1.124**	**3.369**	**-1.634**	**0.8182**
SSA1	4.513	5	1.771	-0.535	-0.571	0.3917
SSA2	5.46	6	1.387	1.751	-1.326	0.6299

SSA3	4.176	5	1.905	-0.971	-0.42	0.3327
SSA4	3.811	4	1.919	-1.192	-0.153	0.2678
SSA5	4.847	5	1.68	0.05	-0.877	0.4637
SSA6	4.935	5	1.667	0.041	-0.873	0.4844
SSG1	5.534	6	1.294	0.998	-1.053	0.6601
SSG2	5.597	6	1.3	1.637	-1.24	0.6770
SSG3	5.742	6	1.207	1.503	-1.234	0.7306
SSG4	5.868	6	1.151	2.713	-1.464	0.7746
SVA1	5.752	6	1.254	2.312	-1.395	0.7256
SVA2	5.88	6	1.145	2.833	-1.516	0.7789
SVA3	5.92	6	1.105	2.797	-1.455	0.7975
SVA4	**5.989**	**6**	**1.068**	**2.472**	**-1.391**	**0.8228**
TIPR1	5.639	6	1.174	2.22	-1.254	0.7069
TIPR2	5.689	6	1.169	2.417	-1.317	0.7222
TIPR3	5.811	6	1.091	3.399	-1.467	0.7714
TISE1	5.676	6	1.128	3.498	-1.478	0.7255
TISE2	5.676	6	1.106	3.005	-1.344	0.7295
TISE3	5.66	6	1.114	2.497	-1.256	0.7232
TISE4	5.443	6	1.261	1.354	-1.106	0.6373

4.2.3 Discussion

This study examined the live streaming attributes that motivate shoppers to watch and shop fashion clothes on Facebook live streaming. We showed the relationships between live streaming attributes and the influence they have on consumer trust and intentions to watch and purchase. Our findings revealed how live steaming attributes including product quality, price transparency, seller image, seller Facebook page, seller pacing, broadcast timing announcement, and pricing are associated with customer trust and intentions.

Only product quality and price transparency were found to be the only significant attributes that have a positive influence on trust in seller which leads to customer intentions to watch and purchase. This finding is consistent with prior studies in customer trust. Halim, Swasto, Hamid, and Firdaus (2014) and Chinomona et al. (2013) showed that product quality has positive influence on customer trust and intention to purchase. Mittal and Agrawal (2016) and Bertini and Gourville (2012) showed that price transparency builds customer trust and enhances customer engagement. N. L. Kim, Kim, and Rothenberg (2020) also found that price transparency can be

perceived as being fair and honest, thus positively affects customer trust in the brand and enhances purchase intention.

On the other hand, seller image and seller Facebook page have weak positive influence on trust in seller, but not enough to be significant due to their low coefficient values. This finding is consistent with prior studies in customer trust. Orth and Green (2009) showed that not all aspects of grocery store image led to customer trust. Some aspects of store image led to trust (e.g., high service quality and frontline employee benevolence) but not the others (e.g., better pricing and product selections). Jung and Kim (2016) found that not all contents on Facebook page enhances brand trust. Specifically, comments made by brand does not impact customer trust, but posts made by other customers affect customer trust in the brand. This is consistent with our findings to suggest that customers may develop some trust in seller based on some aspects of store image and certain pieces of information on seller Facebook page.

Our findings revealed that seller's announcement of the broadcast schedule has a direct positive influence on customer intention to watch. As people are busy with their daily schedules, it is important for them to manage their time. For example, Yeo (2017) showed that television programs airing on Fridays and Saturdays receive drops in viewership because people are busy with other activities rather than watching televisions. Therefore, sellers who make announcement of the live stream broadcast timing would lead to a better chance for their customers to arrange time to watch.

But our findings also revealed that seller pacing has weak and non-significant negative direct relationships with customer intention to watch the live stream. Live streaming sellers should not rush through the products but spend ample time on each product to keep the customers watching. This is consistent with the finding of J. E. Swan et al. (1999) which showed that salespersons who take their time with the customers explaining each product thoroughly without having the customers feel rushed would result in successful sales relationship.

Additionally, we found product pricing to have a weak direct positive influence on customer intention to purchase, but non-significant due to low coefficient value. Pricing strategies

such as low pricing and value-based pricing have all been studied and shown to affect customer intention to purchase (Kwon & Schumann, 2001; Lal & Rao, 1997). Due to most live streaming sellers offering fashion clothing products at very low and competitive prices, customers feel very little incentive to make purchase decision based on pricing alone. As indicated earlier, influence on the purchase intention of fashion clothing in live streaming was shown to be dominated by the product quality rather than prices.

Our findings also suggested that customer trust in seller has a direct positive influence on trust in product. This finding is consistent with prior studies that examined customer trust in salespersons. J. Swan and Nolan (2013) showed that salespersons can build trust with their customers through their experience and knowledge such as the knowledge of the products. As customers perceived that salesperson had their best interests in mind, salespersons could create trust with their customers, and in turn could positively influence customer attitudes. In our study, we showed that salespersons who gained trust with their customers could positively influence customers to trust the products.

Finally, we found that trust in seller and trust in product have a direct positive influence on customer intention to watch and then to purchase. This finding is consistent with prior studies of customer trust and customer purchase intention in online commerce. Jarvenpaa et al. (2000) indicated that customer trust in a store increases the intentions to shop and make purchase from that store. Similarly, we found that customer trust in a seller increases the intentions to watch and make purchase from that seller.

4.3 Live Streaming Rating Website Prototype Development

There are three main parts about the development of live streaming aggregator website that has rating mechanism for live streaming sellers.

- First part is Live Stream Ratings database. The system has to gather live stream URLs and the user engagement activities from Facebook. There must be database that holds ratings information about each live streaming sellers.

- Second part is Live Stream Meta Data. The system has to gather public meta data about each live streaming seller.
- Third part is to create a web application to allow customers to browse through a list of live streaming sellers, give ratings, and get recommendations.

4.3.1 The results from Phase 1 and Phase 2 as a building block for prototype

The qualitative study in Phase 1 has provided a complete list of 20 live streaming attributes that may have effect on the customer trust and their intentions to watch and make purchase. A subset of attributes has been confirmed to significantly influence customers as the results of the quantitative study in Phase 2. These consist of three significant attributes: product quality, price transparency, and broadcast timing announcement; and consist of three weak attributes: seller image, seller Facebook fanpage, and product pricing. These live streaming attributes are used as attribute tags in the ratings for our website prototype, which are shown in **Table 22**. These attribute tags will help customers make better decision in live streaming shopping because customers can save time to search for live streams by filtering on different attributes that they are interested in and the attribute tags can also be used by recommendation system to recommend similar live streams that have similar attributes tags.

Moreover, as our research finding suggests that broadcast timing announcement significantly influences the intention of customers to watch the live stream, LSRW has a “remind me” button feature to remind users when their favorite sellers start their live stream. Sellers can pre-configure their information about their broadcast timing and LSRW will remind users before the live stream starts, giving users enough time to manage their busy schedule to come watch their favorite live streaming sellers.

Table 22. Attribute tags that users can give to sellers

Attribute tags in Thai	English Meaning
แม่ค้าดูน่าเชื่อถือ	Seller is seen as trustworthy
แม่ค้าเป็นคนที่ฉันชอบ	Seller I particularly like
แม่ค้าเป็นคนน่ารัก	Seller is likeable
แม่ค้าเป็นคนน่าเข้าหา	Seller is approachable
แม่ค้าเป็นคนอบอุ่น	Seller is very warm
สินค้ามีคุณภาพดี	Good quality products
สินค้าดูน่าเชื่อถือ	Reliable products
สินค้าคงทนใช้ได้นาน	Products are long lasting
สินค้ามีคุณสมบัติตรงตามที่นำเสนอ	Products seem genuine
ราคาดี	Good price
ส่วนลดดี	Good discounts
คุ้มค่ากับราคา	Value for money
ราคาโปร่งใสไม่มีค่าธรรมเนียมแอบแฝง	Transparent pricing and no hidden costs
แม่ค้าแจ้งเวลาก่อนไลฟ์ล่วงหน้าอย่างเหมาะสม	Sufficiently preannounces the time of the live stream
ลูกค้าคนอื่นๆคอมเม้นต์ในทางที่ดี	Other customers posted favorable comments
แม่ค้าตอบคอมเม้นต์ได้ดี	Seller responds well in the comments
แม่ค้าแสดงให้เห็นว่ามีการจัดส่งสินค้าจริง	Seller often shows evidence of recent orders being shipped
แม่ค้าอัปเดตสินค้าใหม่ๆเสมอ	Seller often updates new product information
เพจแม่ค้ามีจำนวนคนติดตามเพียงพอ	Seller's FB page has sufficient number of followers

4.3.2 Live Stream Ratings database using JSON database

In this part, data collected from Facebook API are stored in JSON database, a non-relational database technology. The data schema is shown in **Table 23**.

Table 23. Database schema for video sharing data

Data	Description	Example
User	The user who shares the live stream content to the group anonymized with generic running number	User0
Video title	The title of seller's live streaming video	เสื้อสูทผู้หญิง แฟชั่นเกาหลี-ราคาถูก by Nim
Video description	The description of seller's live streaming video	สูทแฟชั่น 120 ทั้งร้าน มาแล้วววววว
Video URL	The URL of seller's live streaming video	https://www.facebook.com/AriyaShop.net/videos/17775847762 1188/

The shared videos that are not related to fashion clothing selling are removed. The posts were collected during January 2022 and data consist of 10,524 posts shared by 6,647 users for live videos broadcasted by 1,718 sellers.

The Firebase JSON database is a Google cloud-based service that stores data and allow programming to execute web applications. **Figure 20** shows the screenshot of the database and the stored data.

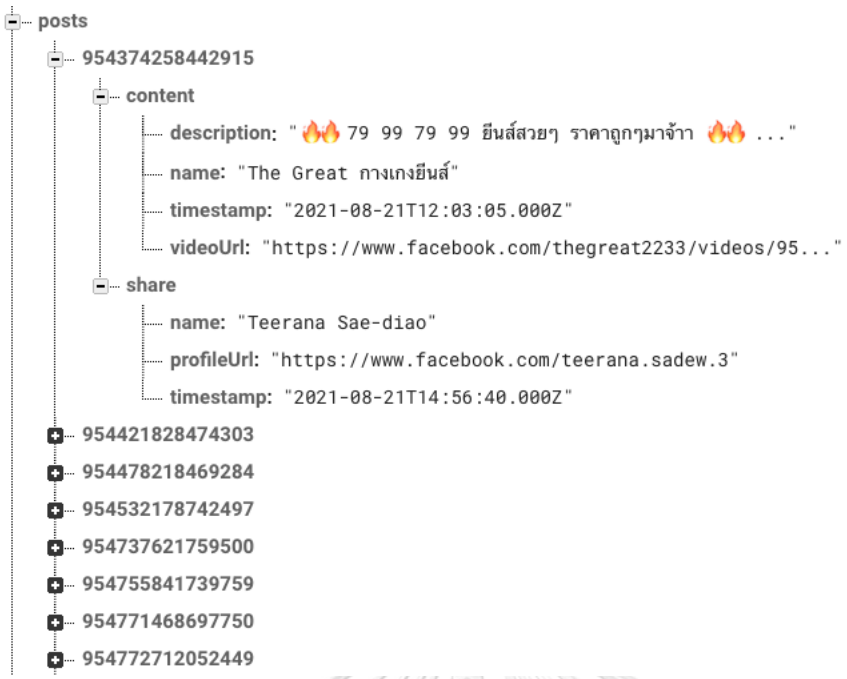

Figure 20. Firebase JSON database storing shared live streaming data

Moreover, the database will hold information about video ratings and the attributes that customers enjoy about the seller as shown in **Figure 21**. These ratings values will be inputted by the users through the web application.

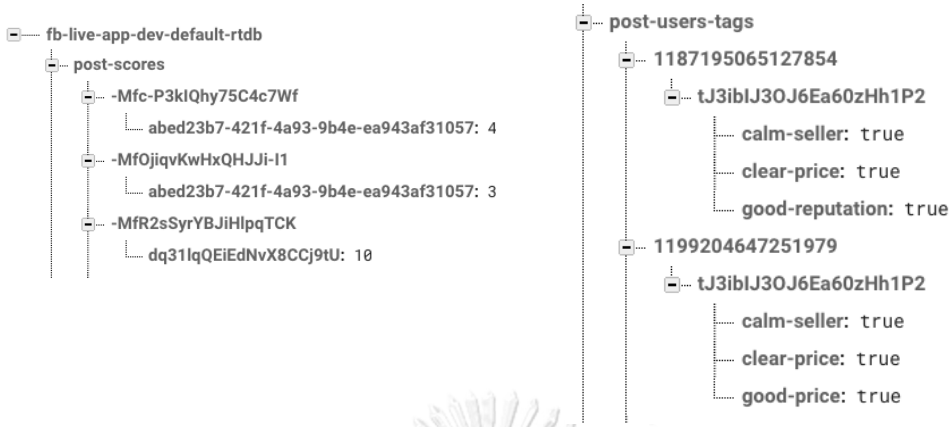

Figure 21. Firebase JSON database storing user ratings and attributes about the sellers

4.3.3 Front-end Web Application using Node JS

The purpose of front-end application is for shoppers to share their experience they had from shopping with certain live streaming sellers. The web application will have a large number of live streaming seller profiles for shoppers to browse through and get recommendations that are similar to the ones that shoppers like. Screenshots from the application is seen in the **Figure 22**.

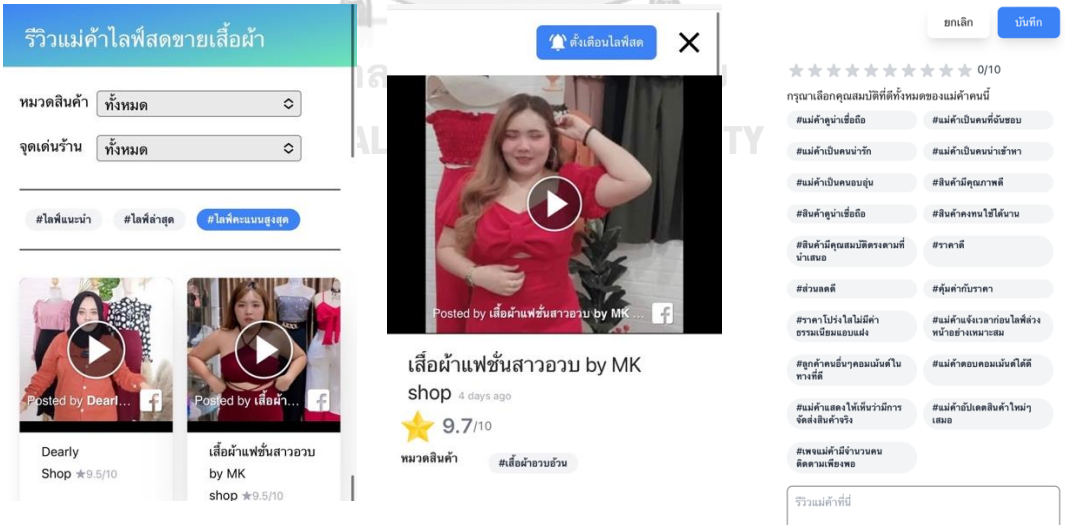

Figure 22. Web application that user can provide star ratings and recommend sellers with good characteristics.

4.3.4 The recommendation model and implementation

The collaborative filtering technique is used to recommend videos based on the implementation of the python code by Jeong (2021) according to the procedure shown in section 3.3.

4.3.5 Slow start problem and user profile setup

Due to the problem of slow start where the initial set of rating data are small causing the effectiveness of rating data to be low, the user preference data will be gathered using the optional inquiries made to the website users when they visit to use the website. Two types of inquiries will be made. In the first inquiry, user has the choices of clothing categories they prefer as shown in **Figure 23**. This inquiry represents the clothing types that the user prefers.

Figure 23. Feature that allows users to choose clothing categories that they prefer

Based on the clothing types that the user prefers, the second inquiry will be made to give the choices of sellers who carry these types of clothing. User has the choices to choose the sellers that they seem to like as shown in **Figure 24**. These initially selected sellers will assume the ratings of 7 for that user to help the system makes recommendations based on sellers most similar to the selected sellers.

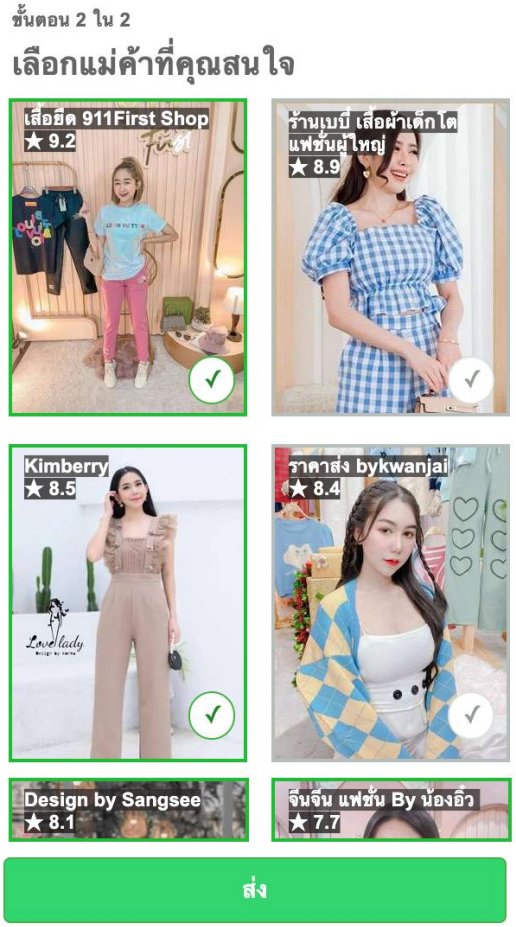

Figure 24. Feature that allows users to choose preferred sellers in their preferred categories

Another feature to help the system makes better recommendations, user has the option to allow LSRW to track user navigations within the website. If the user navigates LSRW and click on the videos of any seller to watch for more than 5 seconds or for a reasonable amount of time,

the action will be counted towards user preference and will assume the predicted rating of 7 for that particular seller to indicate some preference towards the seller.

4.3.6 The seller portal with auto-generated performance insights report

As a value added benefit to help sellers have insights into their selling characteristics and increase their ability to improve themselves in their business, the performance insights report is automatically generated for each seller. Seller can view the personalized report as shown in **Figure 25**.

Figure 25. Seller's personalized report based on their unique characteristics

The seller's personalized report is formulated based on the percentage of unique characteristics tagged for each seller. For example, if 20 of 30 submitted ratings have tagged seller with any characteristics belonging to seller image, then the seller would have a score of seller image of 20 divided by 30 or 66.7% out of a 100% maximum. Some of the characteristics belonging to seller image include "seller is seen as trustworthy", "seller I particularly like",

"seller is likable", "seller is approachable", and "seller is very warm". Moreover, the detailed report will show detailed percentage value on each item. If there are 5 out of 30 ratings that have tagged seller as trustworthy, then the seller is given a score of 16.7% on that tagged item. If the value for that item is low, then the seller is advised to focus on making the customers feel more trusting towards him/herself.

Besides the personalized report, sellers have their personal portal where they can respond to customer reviews, manage their paid ads, and view traffic data generated through LSRW. The portal and its details can be seen in **Figure 26**.

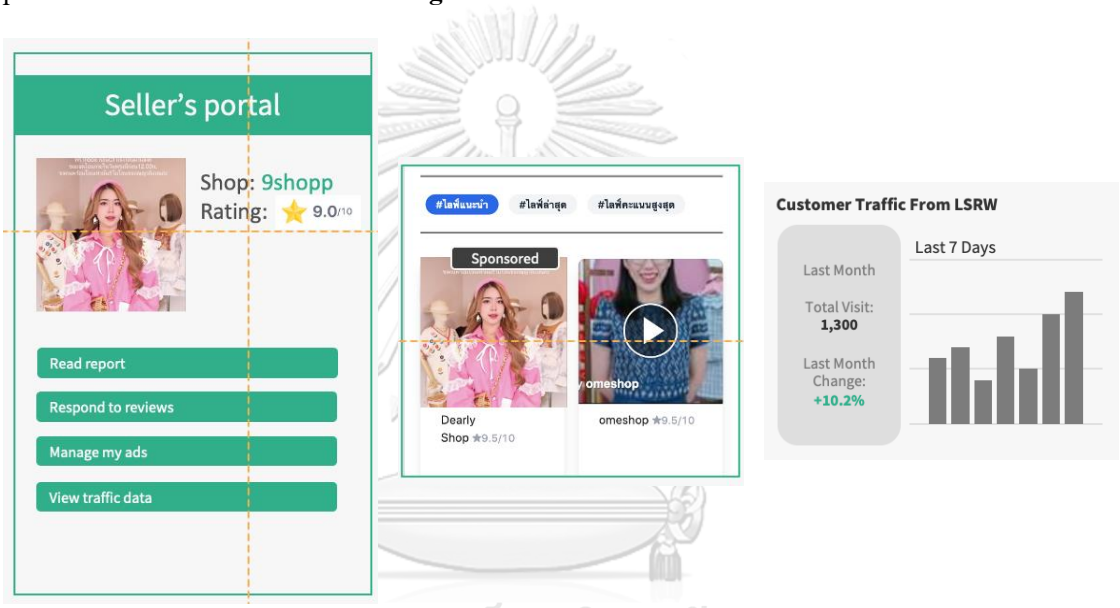

Figure 26. Seller's personalized portal

4.4 Recommendation System Technical Evaluation

The statistical properties of collected data used in performance evaluation is summarized in **Table 24**. According to the data properties, the data used in the evaluation included 5,672 ratings associated with 1,795 customers and 1,072 sellers. The ratings dataset is split into test set of size 79 and training set of size 5,593.

Table 24. Statistical properties of dataset used in performance evaluation

Customers	Sellers	Size of dataset*	Size of test set |T|	Size of training set |M|
1,795	1,072	5,672	79	5,593

*Dataset only includes data of customers sharing 2 or more live streaming sellers

Following the evaluation procedure similar to that of Cremonesi et al. (2010) as described in section 3.4, we compute the overall recall and precision. The resulting recall(K) and precision(K) at various top-K recommendation lists is summarized in **Table 25** and illustrated in **Figure 27**.

Table 25. Recommendation system technical evaluation results

#hit	2	4	7	10	20	28	36	51
recall(K)	2.53%	5.06%	8.86%	12.66%	25.32%	35.44%	45.57%	64.56%
precision(K)	0.84%	1.01%	0.89%	0.63%	0.51%	0.35%	0.23%	0.13%
K	3	5	10	20	50	100	200	500
#Neighbors	3	5	10	20	50	100	200	500

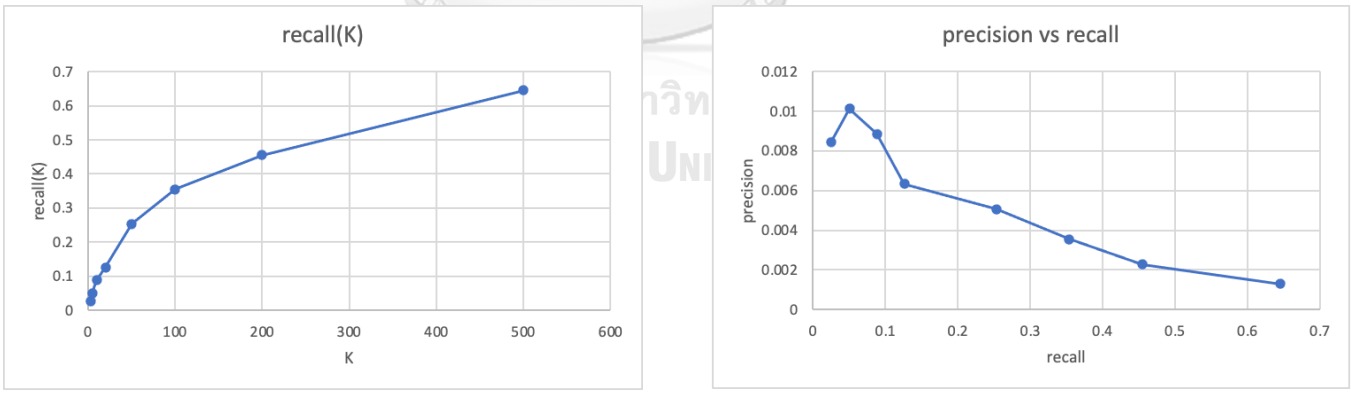

Figure 27. Performance evaluation (a) recall@K and (b) precision-versus-recall

In the table 25, the value #Neighbors represents the number of the nearest neighbors used to build the seller's similarity index. As seen in the table, given a recommendation list of size 3,

the number of relevant live streams reaches 2.53% of all relevant live streams and 0.84% of all the live streams recommended. If we increase the number of recommendation list size to 20, the numbers become 25.32% and 0.51% respectively. In comparison with the study of Cremonesi et al. (2010), which uses dataset from 1 million Movielens data and 10 million Netflix data, for K of 10, our results reveal the recall value of 0.12 versus their results ranging from 0.28 to 0.52 for various recommendation models, and when the recall value of 0.2, the precision value from our study is near 0.006 versus their results ranging from 0.01 to 0.12. This suggests that our recommendation performance results is a bit lower than their results for both recall and precision values. However, it is important to note that the low performance is partly due to the overestimation of irrelevancy because the data under evaluation is sparse. The density of our dataset is 0.29% as computed by using the number of customers times the number of sellers and divided by size of the dataset. Our data density is much lower than the density of their study which are of density 4.26% and 1.18% from Movielens and Netflix data respectively. Future efforts could be to collect more study data that has density between 1-4% and use different recommendation algorithms to enhance performance.

4.5 Technology Acceptance Test of Live Streaming Rating Website (LSRW)

4.5.1 Survey samples and characteristics

The Facebook advertisement was launched for five days to invite research participants to watch the website introductory video clip and try out the live streaming rating website, then fill out the online questionnaire. We collected the total of 104 responses, but 5 of them were thrown out due to standard deviation of the records being 0 indicating that the records were filled out with the same numbers for every question. Thus, there were a total of 99 valid responses. Of this total, 68.7% (n=68) were female. Most respondents aged between 21 and 30 (n=29;29.3%), were singles (n=61;61.6%), had a bachelor's degree (n=42;42.4%), had an average monthly income less than 20,000 THB (n=30;30.3%), worked as government or state enterprise employees (n=43;43.4%), and lived in Bangkok and surrounding areas (n=33;33.3%). Detailed classifications appear in the subsequent sections.

4.5.1.1 Number of samples classified by gender

Samples		**Gender**			**Total**
		Male	**Female**	**Others**	
Customers	Number	26	68	5	99
	%	26.3%	68.7%	5.1%	100%

4.5.1.2 Number of samples classified by age

Samples		**Age (Years)**					**Total**
		< 20	**21-30**	**31-40**	**41-50**	**> 50**	
Customers	Number	2	29	19	21	28	99
	%	2.0%	29.3%	19.2%	21.2%	28.3%	100%

4.5.1.3 Number of samples classified by marital status

Samples		**Marital Status**				**Total**
		Single	**Married**	**Divorced**	**Widowed**	
Customers	Number	61	33	3	2	99
	%	61.6%	33.3%	3.0%	2.0%	100%

4.5.1.4 Number of samples classified by education level

Samples		**Education Level**				**Total**
		Less than Bachelor	**Bachelor**	**Master**	**Doctorate**	
Customers	Number	3	42	38	16	99
	%	3.0%	42.4%	38.4%	16.2%	100%

4.5.1.5 Number of samples classified by income

Samples	**Income (in thousands THB)**	**Total**

		< 20	**20-30**	**30-40**	**40-70**	**> 70**	**blank**	
Customers	Number	30	19	17	18	9	6	99
	%	30.3%	19.2%	17.2%	18.2%	9.1%	6.1%	100%

4.5.1.6 Number of samples classified by employment

Employment	**Samples Customers**	
	Number	%
Government/State Enterprise Employees	43	43.4%
Private Company Employees	14	14.1%
Students	9	9.1%
University Faculty/Staff	5	5.1%
Self-Employed	13	13.1%
Business Owner	6	6.1%
Retired/Unemployed	9	9.1%

4.5.1.7 Number of samples classified by region

Samples		**Regions**					**Total**
		Central +BKK	**East**	**North**	**North East**	**South**	
Customers	Number	39	5	18	24	13	99
	%	39.4%	5.1%	18.2%	24.2%	13.1%	100%

4.5.2 PLS-SEM Analysis

The PLS-SEM analysis was performed using SmartPLS software. The measurement model was used to test the reliability and the validity of the constructs, and the structural model was used to test the hypotheses.

4.5.2.1 Reliability & Validity Test

The reliability of the constructs was tested using the individual loadings, composite reliability (CR), Cronbach's alpha, and average variance extracted (AVE) (see **Table 26**). To assess the reliability of the individual items, indicator loadings to be kept are at least 0.700, thus all the items were kept for the analysis (see measurement scales in section 3.5.1 Figure 10). The measurement items is shown in Table 26 along with the values of Cronbach's alpha, and CR to be above 0.8 indicating sufficient internal consistency. The convergent reliability was tested using AVEs for all the factors to be above 0.5 and CR to be higher than AVE, indicating adequate validity. The discriminant validity was tested using the heterotrait-monotrait ratio of correlations (HTMT) to be less than 0.9 and satisfied the Fornell-Larcker criterion indicating that each construct is distinct from the other constructs as it correlates with its own construct more than with other constructs (see **Table 27** and **Table 28**).

Table 26. Assessment of measurement model

	Indicator loadings	Composite reliability	Cronbach's alpha	AVE	rho_A
Perceived Information Usefulness					
PIU1	0.931	0.915	0.86	0.782	0.878
PIU2	0.871				
PIU3	0.847				
Perceived Performance Usefulness					
PPU1	0.837	0.928	0.897	0.764	0.905
PPU2	0.882				
PPU3	0.912				
PPU4	0.863				
Perceived Ease of Use					
PEOU1	0.93	0.962	0.947	0.864	0.954
PEOU2	0.933				
PEOU3	0.905				
PEOU4	0.95				
Perceived Enjoyment					
PE1	0.931	0.95	0.921	0.864	0.924
PE2	0.945				
PE3	0.913				
Perceived Relative Advantage					
PRA1	0.775	0.923	0.896	0.707	0.899
PRA2	0.834				
PRA3	0.83				
PRA4	0.889				
PRA5	0.873				
Attitude					
ATT1	0.804	0.945	0.93	0.743	0.932
ATT2	0.843				
ATT2	0.904				
ATT4	0.878				
ATT5	0.892				
ATT6	0.848				
Intention to use LSRW					
INT1	0.956	0.96	0.944	0.856	0.945
INT2	0.929				
INT3	0.915				
INT4	0.899				

Table 27. Discriminant validity using Fornell-Larcker Criterion

	ATT	INT	PE	PEOU	PIU	PPU	PRA
ATT	**0.862**						
INT	0.838	**0.925**					
PE	0.754	0.732	**0.93**				
PEOU	0.533	0.54	0.632	**0.929**			
PIU	0.592	0.565	0.54	0.548	**0.884**		
PPU	0.753	0.718	0.764	0.572	0.663	**0.874**	
PRA	0.763	0.781	0.773	0.469	0.555	0.759	**0.841**

Table 28. Heterotrait-monotrait Ratio (HTMT)

	ATT	INT	PE	PEOU	PIU	PPU	PRA
ATT							
INT	0.894						
PE	0.813	0.785					
PEOU	0.563	0.57	0.671				
PIU	0.655	0.622	0.596	0.605			
PPU	0.819	0.777	0.834	0.613	0.751		
PRA	0.833	0.847	0.851	0.508	0.622	0.844	

The results of structural model are shown in **Figure 28**. In the results, a coefficient of determination (R2) is 0.687 for attitude and 0.703 for intention to use LSRW. This indicates that an adequate level of variability in the outcome of the data can be explained by the model. **Table 29** summarizes all the path coefficients and gives the results of the hypotheses.

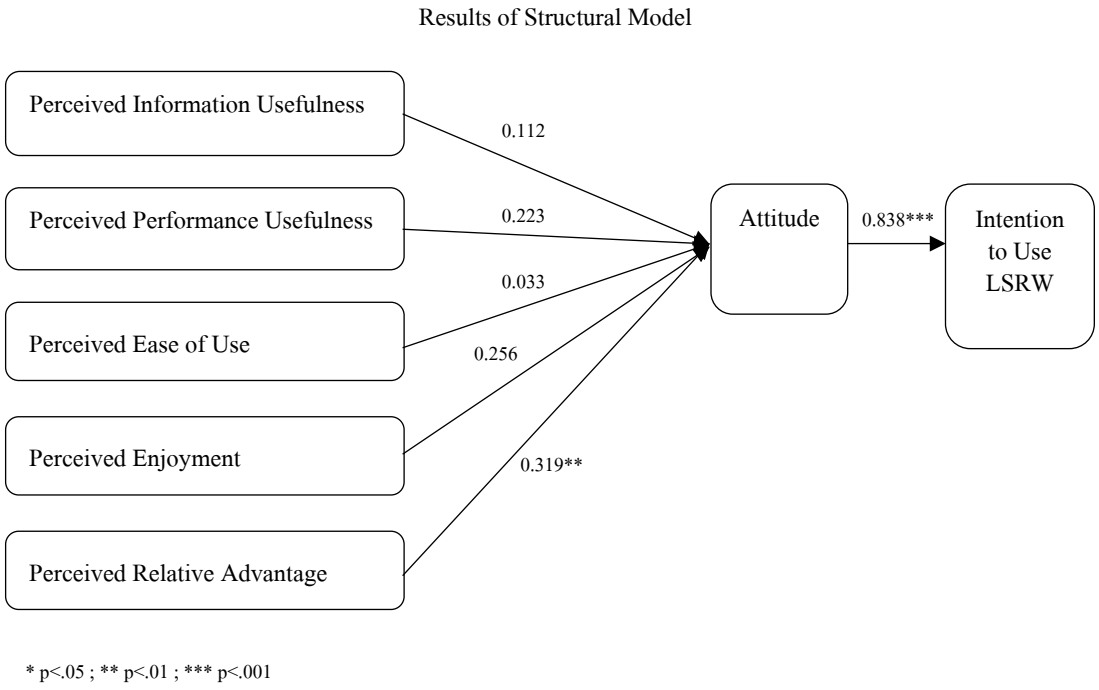

Figure 28. Results of structural model for technology acceptance test of Live Streaming Rating Website

Table 29. Result of path analysis

	Coefficient	Std. dev.	T Statistics	P Values	f Square	Hypothesis result
Perceived Information Usefulness -> Attitude	0.112	0.093	1.218	0.223	0.02	H1: not supported
Perceived Performance Usefulness -> Attitude	0.223	0.116	1.915	0.056	0.046	H2: not supported
Perceived Ease of Use -> Attitude	0.033	0.074	0.451	0.652	0.002	H3: not supported
Perceived Enjoyment -> Attitude	0.256	0.134	1.898	0.058	0.058	H4: not supported
Perceived Relative Advantage -> Attitude	0.319	0.119	2.685**	0.007	0.106	**H5: supported**
Attitude -> Intention to Use LSRW	0.838	0.039	21.784***	0.000	2.365	**H6: supported**

* p<.05; ** p<.01; *** p<.001

In the results, only perceived relative advantage (β = 0.319; p < .007) has significant positive influence on attitude which supports hypothesis H5. However, perceived performance usefulness (β = 0.223; p < .056) and perceived enjoyment (β = 0.256; p < .058) both have p values slightly larger than 0.05 and f-square values between 0.02 and 0.15, indicating weak positive influence on attitude and small effect size but not significant enough thus not supporting H2 and H4. Also, perceived information usefulness and perceived ease of use do not have significant influence on attitude thus not supporting hypotheses H1 and H3. Our results also find that the attitude (β = 0.838; p < .000) has significant positive influence on intention to use LSRW and have very large effect size with f-square value of 2.365 being much greater than 0.15, thus supporting H6.

4.5.2.2 Ranking of factors for technology acceptance of LSRW

The technology acceptance criteria of LSRW are measured using 7-point Likert scales and the results could be considered normally distributed as the excess kurtosis is within +/- 7 and skewness is within +/- 2. Thus, by computing the probability that the measurement values are greater than 5 using normal probability function p(x>5), we can see rank items with the highest measurement values as shown in **Table 30**.

Table 30. Technology acceptance criteria ranked by the highest probability of value greater than 5

	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness	p(x>=5)
PIU3	6	6	3	7	0.876	1.091	-1.006	87.3%
PEOU3	6	6	3	7	0.964	1.436	-1.168	85.0%
PIU1	5.889	6	3	7	0.863	0.778	-0.833	84.9%
PIU2	5.879	6	3	7	0.868	1.632	-1.079	84.4%
PRA1	5.838	6	4	7	0.884	-0.398	-0.475	82.8%
PEOU4	5.909	6	2	7	1.055	2.175	-1.336	80.6%
PPU1	5.717	6	3	7	0.841	0.81	-0.97	80.3%
PEOU1	5.909	6	2	7	1.12	1.971	-1.307	79.1%
PEOU2	5.869	6	2	7	1.107	2.051	-1.324	78.4%
PPU2	5.778	6	3	7	1.001	-0.493	-0.521	78.1%
PPU4	5.727	6	1	7	0.952	5.423	-1.567	77.7%
PPU3	5.707	6	2	7	1.085	0.439	-0.74	74.3%
PRA3	5.677	6	2	7	1.043	0.809	-0.835	74.2%
PRA2	5.636	6	2	7	1.087	0.273	-0.669	72.1%
PE1	5.535	6	2	7	1.095	1.124	-0.96	68.7%
PRA4	5.535	6	1	7	1.149	2.07	-1.123	67.9%
PRA5	5.485	6	1	7	1.122	1.46	-0.963	66.7%
PE2	5.273	5	2	7	1.238	0.041	-0.601	58.7%
PE3	4.919	5	1	7	1.468	-0.008	-0.695	47.8%

Therefore, top ten of the items with highest probability that customers find LSRW most valuable include items such as

- I find this website useful in seeking information about live streaming shopping for fashion clothes.

- It was easy to learn how to use this website.
- Using this website improves my seeking for information about live streaming shopping for fashion clothes.
- Using this website makes it easier to seek information about live streaming shopping for fashion clothes.
- It would improve my experience in live streaming shopping for fashion clothes.
- Using this website was easy.
- I find this website useful in my shopping for fashion clothes.
- I found this website to be very easy to use.
- This website was intuitive to use.
- Using this website helps me do shopping for fashion clothes more quickly.

Additionally, by computing the probability p(x>5) of the measurement values of the attitudes and the intention to user LSRW, we can see reasonable indications that there is 63-81% probability that users have favorable attitudes and likely intentions to use LSRW as shown in **Table 31**.

Table 31. Descriptive data of attitudes and intentions to use LSRW

	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness	p(x>=5)
ATT1	5.354	6	2	7	1.085	0.74	-0.843	63%
ATT2	5.465	6	2	7	1.028	0.361	-0.696	67%
ATT3	5.667	6	3	7	0.974	0.247	-0.68	75%
ATT4	5.768	6	3	7	0.941	0.905	-0.919	79%
ATT5	5.798	6	3	7	0.921	0.68	-0.844	81%
ATT6	5.838	6	3	7	0.971	0.711	-0.876	81%
INT1	5.525	6	3	7	1.14	-0.31	-0.603	68%
INT2	5.535	6	3	7	1.085	-0.689	-0.381	69%
INT3	5.525	6	2	7	1.076	0.521	-0.782	69%
INT4	5.657	6	3	7	1.007	0.326	-0.77	74%

Lastly, based on the text-based comments made in the questionnaire, many users have mentioned that they prefer to LSRW because of the following reasons:

- LSRW helps them conveniently find preferred stores or sellers
- LSRW helps them find sellers that they have never seen in Facebook before
- LSRW lets them choose specific kinds of clothing to shop
- LSRW's feature to search sellers based on characteristics is interesting for them
- LSRW gives recommendations
- LSRW lets them give stars/reviews and read others' reviews
- LSRW helps users feel confident about shopping from certain sellers
- LSRW is innovative and not seen anywhere else yet
- LSRW is a convenient way to find sellers
- LSRW is easy to use

Many users have also mentioned some of the weaknesses of LSRW prototype and expected to see improvements in the following areas:

- Website loading is slow
- Website always jumps back to the first video when returning from seller's profile page instead of where user has left off making navigation not continuous.
- Some videos are not accessible
- Website layout is too simple and can be improved
- Some stores do not correspond to the chosen categories
- Reviews should be adjustable from time to time because sometimes sellers do well on one live stream and another time not so well
- Users should be able to make order directly from LSRW instead of going to Facebook
- LSRW should have more product varieties
- LSRW should have more stores and more live videos
- LSRW should have store wide promotion like Shopback, a website that gives cashback or money back every time shopper makes purchase from member sites

- LSRW should have ratings of each live session filtered by clothing categories
- LSRW should help shoppers who get bad experience with sellers such as receiving products not fitting descriptions or not receiving products at all
- LSRW should guarantee purchases made from shopping with sellers on the website
- Website design should be more attractive, modern, and more real-time
- LSRW should have more social media feel
- LSRW should have features that help sellers sell better
- LSRW should separate men-women clothing
- LSRW should have dark background mode because white background is too bright when using it at night

4.5.3 Discussion

This part of the study examined technology acceptance test of the LSRW based on the extended TAM framework. We showed the relationships between perceived values of LSRW and the influence they have on consumer attitude and intention to use LSRW. Our findings revealed how perceived values including perceived relative advantage, perceived performance usefulness, and perceived enjoyment are associated with consumer attitude and intention.

Only perceived relative advantage was found to be significant perceived value that has a positive influence on consumer attitude which leads to consumer intention to use LSRW. This indicates that consumers may use LSRW over the original sites such as social networking sites that the LSRW gather data from. This finding is consistent with Ong (2011) which shows that consumers prefer to use shopping aggregator sites to compare choices and get recommendations.

Additionally, perceived performance usefulness and perceived enjoyment were found to have weak positive influence on consumer attitude. This indicates that consumers may have tendency to use LSRW because it could provide them with ability to do shopping easier and more efficiently and allow them to have fun while using it. This finding is consistent with Ong (2011) which shows that consumers who find shopping aggregator sites useful will have positive attitude and intention to use them in the future.

However, perceived information usefulness and perceived ease of use do not have significant influence on consumer attitude. This indicates that consumers might expect that any

website including LSRW should have useful information and be easy to use, but these are not the main determining factors of their attitude or intentions to use it.

Lastly, our finding found that consumer attitude has significant influence on the intention to use LSRW. Therefore, it is imperative that LSRW provides added values to the consumers to enable positive attitudes and encourage them to use LSRW.

CHAPTER 5

POTENTIAL COMMERCIALIZATION MODEL

After testing the website prototype with the users and finding that users have favorable attitudes and intentions to use the website, the research in this chapter presents the commercialization model of LSRW by discussing the value propositions, the competitive advantages, the market opportunities, and the commercialization strategies.

5.1 Value Propositions of Live Streaming Rating Website (LSRW)

With recent innovations in e-commerce, consumer lifestyles have been raised with higher convenience, faster speed, better savings, and consumers' abilities to make wiser shopping decisions. One of the reasons is due to better access to more relevant information in an effective and easy-to-use manners. LSRW offers value propositions to extend those dimensions of consumer shopping. LSRW is a total data aggregator of live streaming sellers and customers, where shopping is made easy, fun, and saving both time and money. In particular, LSRW offer these values to customers:

1. Cost savings - Customers can get discounts and savings, so they can buy more products or shop more frequently.
2. Effective shopping - Customers can easily find what they want and what they need in lesser time.
3. Purchase confidence - Consumers can feel more trusting to make purchase from sellers with reliable ratings.

The value propositions for customers are summarized in the value proposition canvas as depicted in **Figure 29**. As seen in the canvas, customers use live streaming to find clothes for themselves or for others. While shopping, they may have some objectives in mind which are considered "Jobs to be done". They look for the right clothes and good deals. Sometimes, they watch live streams to update their fashion trends or entertain themselves to relieve stress or pass the time. And for some customers, they seek to buy clothes from live streams to resell in their own locality.

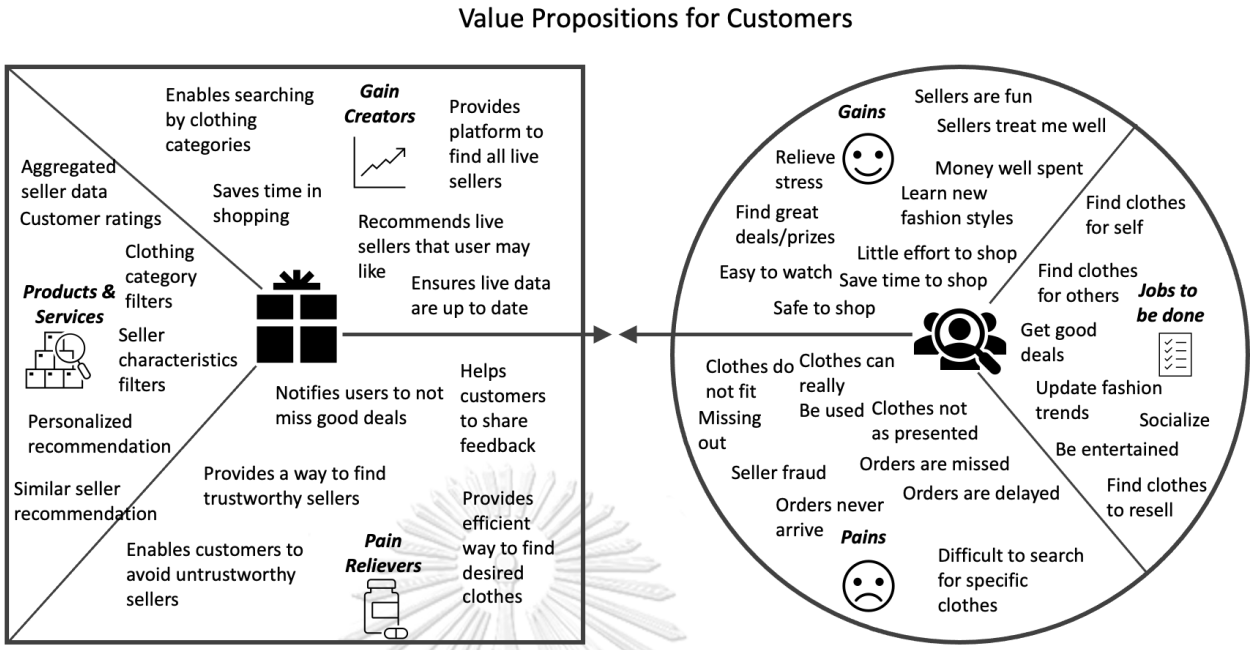

Figure 29. Value proposition canvas for customers of LSRW

While engaging in live streaming shopping, customers expect "gains" or certain benefits. They expect to see better deals or prices relative to offline shopping. They must also find the sessions to be easy to watch, enjoyable and fun. They expect that shopping should be pleasant and requires little effort to find what they look for. On the other side, customers may have some "pains" or negative experiences with current process of live streaming shopping. There are often the cases of purchase gone wrong such as the clothes are misrepresented, the clothes do not fit, the deliveries are delayed or never arrived, and some sellers are fraud. Customers also find it difficult to search for specific clothing types and sometimes they never find what they want in live streaming.

As a way to create the gains and relieve the pains of live streaming shopping for customers, LSRW supports customers by acting as a central aggregator for all seller and customer data in live streaming shopping. LSRW categorizes sellers by clothing categories and seller characteristics so that customers could find the sellers that they like using less time and with little effort. LSRW also ensures that the data are up to date and as real time as possible. LSRW also gathers data of as many sellers as possible to ensure the complete list of sellers, whom many customers may never have seen before. Another important feature is recommendation system that helps customers find the right sellers for them. With the ratings and review data, customers could

make better decisions to find trustworthy sellers and avoid untrustworthy sellers and have more confidence in shopping.

Besides providing values to customers, LSRW also helps sellers to attract more customers, generate more sales, and grow their businesses. In particular, LSRW offer these values to sellers:

1. Increased Sales – Sellers would get more customer traffic generated from LSRW
2. Better skills - Sellers may improve their selling abilities by getting insights from customer feedback and from auto-generated personalized seller report based on ratings data.
3. Cost savings – Sellers may save marketing costs through advertising on LSRW instead of using Facebook Ads or influencer posts.

The value propositions for sellers are summarized in the value proposition canvas as depicted in **Figure 30**. As seen in the canvas, sellers use live streaming to attract customers and close sales. In order to sell, there are a lot of activities that need to be done which are their "Jobs to be done". They have to do marketing to invite potential customers to watch their livestreams, to take orders, reconcile payments, answer inquiries, fulfill orders and deliveries, and manage product returns, exchanges, or refund. In the meanwhile, they also have to save costs, build their personal or store brands, and improve their selling skills.

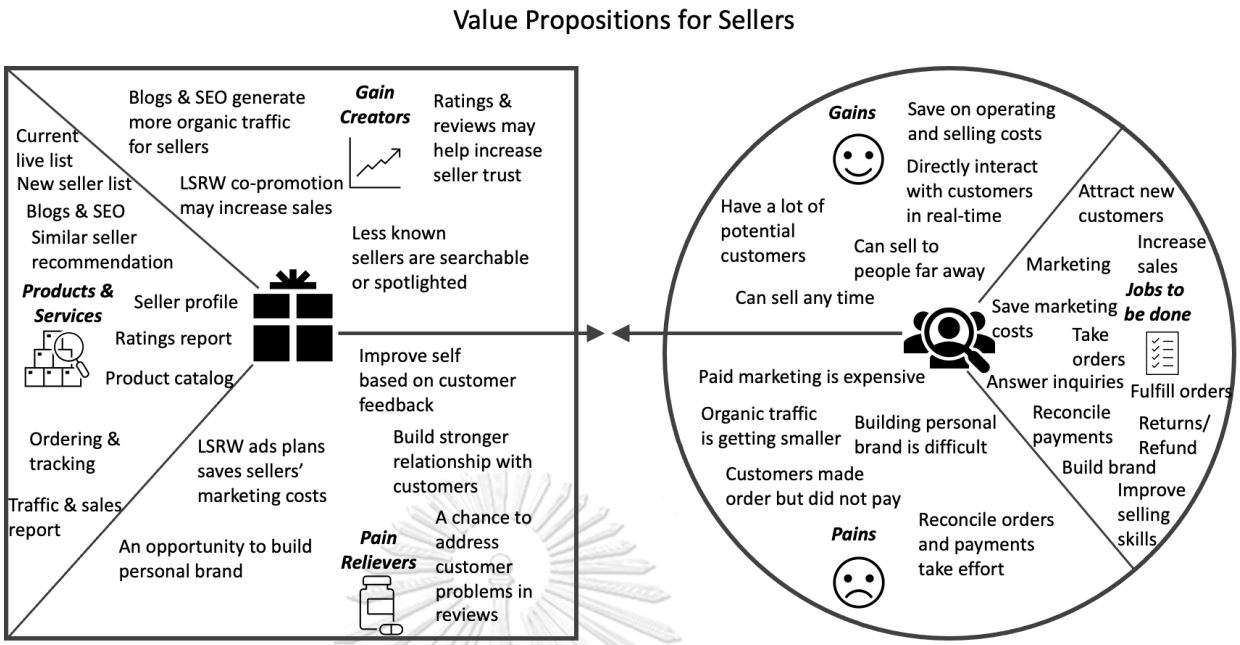

Figure 30. Value proposition canvas for sellers of LSRW

While conducting sales in live streaming, sellers expect "gains" or certain benefits from such activities. They expect live streaming to be a low cost and effective channel to make a living. They also expect to gain a lot of potential customers, to sell anytime and anywhere at their convenience while reaching customers anywhere in Thailand. They also expect to interact with customers in real-time and build long term relationships with customers. On the opposite side, sellers may have some "pains" or difficulties with current process of live streaming shopping. The most important problem they face is the decline in the number of audience or potential customers, the inability to generate enough free or organic traffic, and the high costs associated with paid marketing. Other difficulties they face are the customers' failure to complete payments on confirmed orders, the substantial efforts to reconcile payments with orders, and the expertise necessary to build personal or store brands.

As a way to create the gains and relieve the pains for live streaming sellers, LSRW supports sellers by attracting potential customers to the platform and convert them to become extra traffic for the sellers. LSRW achieve this in many ways. First, the ratings and reviews data on its website will help trustworthy sellers to gain reputation and receive additional traffic. Second, LSRW's expertise in SEO strategies such as shopping keywords targeting, blogs copywriting, and website structuring will add more organic traffic for the sellers. Lastly, LSRW

co-promotion campaigns with sellers such as cashback, free deliveries, and purchase protection guarantee may encourage more customers to make purchase. In addition to help sellers with creating organic traffic, sellers may choose to purchase paid ads plans to have their advertisements appear on LSRW as sponsored ads, thus creating more traffic. Besides the advantages in customer traffic generation, sellers also get to gain insights into their own performance by viewing the auto-generated personalized report based on customer reviews data, get to have a chance in addressing customer negative reviews and increase their confidence, and get to build their own reputation and brands by improving their skills and building customer relationships to keep their ratings favorable.

5.2 Customer and Seller Personas

5.2.1 Customer personas

Based on the qualitative interviews of live streaming customers in section 4.1 and the observation from the actual market, we have identified four main types of customers as shown in **Table 32**. The determining factors are based mainly on two distinct dimensions. One dimension is the differences in their shopping objectives including personal use, entertainment, and reselling for profit. Another dimension is the motivation behind the act of shopping and purchase decision.

Table 32. Characteristics of 4 customer personas

	Persona 1	***Persona 2***	***Persona 3***	***Persona 4***
Objective	Usage	Usage	Entertainment	Resales
Motivation	Convenience	Value	Fun	Value
Orientation	Functional	Functional	Fun	Functional
Price sensitivity	Low-moderate	High	High	Very High
Purchase frequency per month	3-5	1-2	1-2	3-5
Order size	1-5	3-5	1-3	10 or more

Product interest:	Private labels, curated products	2nd hand, wholesale, product imitations	Wholesale	Wholesale, private labels
Time to shop	Free time, night time, after work	Free time, night time, after work	Free time	Day time

Customer persona 1 and customer persona 2 are those who watch and make purchase for the purpose of personal usage. The difference is that customer persona 1 is motivated by convenience and values hassle free shopping experience, but customer persona 2 is motivated by value for money. Customer persona 1 engage in live streaming shopping because they have difficulty finding the right products elsewhere and are willing to pay the price as long as they are comparable to similar products. They usually shop 3-5 times per month and repeat purchases from the same sellers they have purchased in the past. They also actively make time to watch their favorite sellers and look for sellers with unique products, especially one of a kind products of which they are willing to pay premium prices for. Customer persona 2 are sometimes considered bargain hunters because they look for clothing that are much cheaper than they could find elsewhere. They shop less expensive clothing but usually shop in higher volume per order of 3 or more to save on shipping costs. They are particularly concerned with delivery fees.

Customer persona 3 are those who do not look for any specific products but are simply strolling around social media to pass their time and happen to stumble upon interesting live streaming. They are motivated by fun activities such as games to win free products or extremely cheap products that they might never need or use. They follow the crowd and are drawn in to live streams that garner large crowds.

Customer persona 4 are most unique because they buy in bulk from live streaming sellers to resell again offline. They frequently buy from the same sellers. Since they buy in moderate volume, they are not interested in one-of-a-kind products but are interested in volume and special wholesale discounts.

5.2.2 Seller personas

Based on the qualitative interviews of live streaming sellers in section 4.1 and the observation from the actual market, we have identified four main types of sellers as shown in **Table 33**. The determining factors are based mainly on two distinct dimensions. One dimension is the pricing of clothes the sellers carry from low-cost products to premium products. Another dimension is the size of their sales figures which could not be determined, so the numbers of followers from small to large are used as an indicator instead.

Table 33. Characteristics of 4 seller personas

	Persona 1	***Persona 2***	***Persona 3***	***Persona 4***
Pricing	Low cost	Premium	Low cost	Premium
Size (Sales)	Small	Small	Large	Large
Product sources:	2nd hand, wholesale, dropship, product imitations	Private labels, original brand names	2nd hand, wholesale, product imitations	Private labels, original brand names
Capital	Small	Large	Large	Large
Product assortments	Limited	Limited	Wide	Wide
Mindset	Trying out	Serious	Serious	Serious
Experience	Limited (0-1 year)	Moderate (1-2 years)	High (1+ years)	High (2+ years)
No. of followers	Small	Small	Large	Large

Seller persona 1 and seller persona 2 are those that are just starting out their online fashion clothing businesses. The difference is that seller persona 2 chooses to produce private label clothing brands or sell popular brand clothing, which requires a sizable capital, and they usually have more serious mindset, while seller persona 1 carries used clothing, wholesale,

dropship, or product imitation. The costs to acquire used clothing, wholesale, or product imitations are usually not significant. And the costs for dropship model are smallest due to sellers not having to carry any inventory because, by definition, product owners such as fashion brands or manufacturers will deliver products to customers on behalf of sellers and sellers earn sales commission. Therefore, most newcomers will usually fall into seller persona 1 category.

Seller persona 3 and seller persona 4 are experienced sellers who possess the skills and expertise to conduct their businesses and would already have a sizable number of followers from either their Facebook fanpage or their other social media channels. Note that we do not consider experienced sellers who are just starting out live streaming activities to be in their own dimensions because experienced sellers would view live streaming activity to be just an additional marketing and sales activity for their businesses. Thus, they would already be inclusive in either Persona 3 or Persona 4. Seller persona 3 is specialized in acquiring large volume of clothing products in various types, sizes, and selections, which are sold at low prices, low margins, and in high volumes. Seller persona 4 is specialized in producing its own clothing brand and products and also carry extensive range of selections which are sold at premium prices, high margins, and in moderate to high volumes. Both seller persona 3 and persona 4 also have large capital, high experience, and career making mindset.

5.3 Competitive Advantages of LSRW

5.3.1 Advantages of LSRW

By serving as a central aggregator for all seller and customer data in live streaming shopping, LSRW's advantages over its competitors will be its ability to offer its customers the following:

- A huge repository of customer reviews.
- A most complete list of all live streaming sellers that would give customers a convenient way to find any sellers, large, small, old or new that otherwise would unlikely to be found.
- Ratings give customers an ability to identity trustworthy sellers.

- Seller tagging gives customers an ability to look for sellers with unique characteristics such as likeable sellers, good quality products, good price, and good value for money.
- Categorizing sellers based on clothing types gives customers an ability to find specific types of clothing.
- Recommendations help save customers time and enable smooth shopping experience.

In addition to benefits to customers, LSRW's advantages over its competitors will be its ability to offer its sellers the following:

- A central platform to generate traffic of shoppers for live streaming sellers.
- Sponsored ads of the platform will give sellers spotlights in highest traffic areas such as in search results, most popular lives, or newest sellers list.
- High quality blogs reviewing handpicked top sellers in different categories will add traffic to most underrated sellers.
- SEO expertise will enable cost effective way to generate organic traffic for the platform and, in turn, for sellers within the platform.
- Ratings and reviews with data quality control processes help ensure trust for honest and effective sellers.
- Co-promotions with sellers such as cashback, free shipping, and purchase guarantee will increase traffic and sales for sellers.

In analyzing the competition, as shown in **Table 34**, LSRW is in a very unique position and differs from all the other close competitors. Most competitors focus on either being the applications that help live streaming sellers perform more efficiently such as V Rich, Shopline, AIS Alive, Page 365, Cf Manager, Shoplus+, Shipnity, and Fillgoods or being the major live streaming platforms such as Facebook, Shopee, Lazada, and Tiktok. Only one competitor, Getfin has a unique focus on being live streaming drop-shipping platform.

Table 34. Competitor analysis

	Shopline	***V Rich, AIS Alive, Page365, Cf Manager, Shoplus+, Shipnity, Fillgoods***	***Getfin***	***LSRW***
Positioning	Live seller assist application		Drop-shipping live streaming platform	Live streaming rating website
Main targets	All sellers		Product owners & Sellers	Customers & Sellers
Scale	Hongkong-based with 8 countries	Local	Local	Local
Innovation	Broadcast to multiple platforms, live activities tools, own websites	Sell easier on Facebook/IG live	Drop-shipping feature	Live seller data ratings, reviews, recommendations

5.3.2 SWOT analysis of LSRW

LSRW's Strengths:

1. Largest live streaming seller selections – LSRW is a first mover as a central repository of live streaming data for customers and sellers in Thailand.

2. Innovation – LSRW offers data advantages to enable innovative ways for customers to conveniently and effectively search for shopping live streams using application development technologies and recommendation systems.
3. Empowered platform for small sellers – LSRW will attract and empower small individual sellers to conduct better live streaming activities such as generating low-cost traffic, getting more sales, and building customer trust.

LSRW's Weaknesses:

1. Business model can quickly be copied – it is not difficult to copy LSRW's business model because data aggregator models have been copied for all kinds of data in the past such as products review sites, product comparison sites, and video aggregator sites. Therefore, fast moving execution to gain early grounds will be essential.
2. Potential for losses – in the online retail businesses, it is common to incur losses to gain sales and attract new users through promotions, discounts, and free shipping. Many e-commerce platforms have incurred losses for many years since their inceptions and LSRW is likely to be of no exception.
3. Reliance of data access privileges given by data owners – LSRW's ability to collect and use data rely on the adoption of application by page owners or group owners to access token with data permissions to access data in compliance with Meta and Facebook terms.
4. Defamation lawsuits – for any review sites, even with the most transparent and best enforced reviewer guidelines and data quality processes, it is possible for the websites to be named in the lawsuits along with the reviewers.

LSRW's Opportunities:

1. Growth opportunities into multiple businesses – LSRW can grow its data repository advertising-based business by adding other business units such as a cash back commission-based referral business unit, a storage and fulfillment service for sellers, an outsourced 24/7 automated or manual customer service for sellers, and a matching business unit between live streaming sellers and product owners.

2. Wide range of expandable products and services – Though LSRW starts out with fashion clothing products, the website can expand to other businesses that have been popular in the live streaming markets such as beauty products, electronic gadgets, home appliances, fortune telling services, religious ceremonial services, and many more.
3. New opportunity to serve growing demand for personalization – LSRW community involves fashion clothing sellers with talents to choose great looking clothes for shoppers, therefore any new business such as a business to personally recommends unique clothes to each shopper, to send shoppers new personalized clothes to try multiple clothes a week, or even to host a show based on fashion competition (e.g. given a limited budget, a group of fashion clothing seller must compete by choosing best clothes for a particular customer and getting the highest votes).

LSWR's Threats:

1. Strict data privacy laws – for any data aggregator sites, the most essential factor is the ability to collect and use data. The laws of data privacy have been increasingly stricter, and this could limit the kinds of data LSRW can access, use, or perform marketing on. For example, Thailand's Personal Data Protection Act that will be in effect on 1 June 2022 may impact on how customer data can be used.
2. Data security and integrity – the danger of data security and data fraud are increasingly difficult and more expensive to manage as bad actors have been increasingly more sophisticated. Threat of supplying LSRW with dishonest data could jeopardize the integrity of the website.
3. Fierce competitors – there are many giant competitors in the live streaming shopping market that could create difficulty for LSRW to centralize live streaming shopping data because LSRW's business model could overlap with their online market share.
4. Slow economic activities – the economy is Thailand in 2022 is not yet recovered due to outstanding effects of covid pandemic and the growth or success of business model of LSRW could be impacted by the slow recovery of Thailand economy.

5.4 Market Opportunities of LSRW (Market Assessment)

5.4.1 Market opportunity analysis

Market sizes: The total available market is considered to be the market size of the sales of fashion & beauty sector sold via the internet, which peaked at 908 million USD or 29.7 billion THB in 2019 and dropped to 710.7 million USD or 23.3 billion THB in 2021 based on Hootsuite's Digital 2019 and 2021 Thailand reports (Kemp, 2021; Kemp & Moey, 2019).

Serviceable market, or the size of the market that make purchase on live streaming, is estimated to be 5% of the total available market or 1,165 million THB by taking a 1% chance of a viewer making a purchase on live streaming times an estimated average of 5 live streaming video views for each customer as calculated by the half-year reported 400 million live video views on Shopee divided by an estimated of 80 million Shopee visitors. (Brand Buffet, 2021; Statista.com, 2020)

Target market is revenue from commissions or advertising budget of the live streaming sellers of the overall serviceable market which could be 10-20%. Taking a conservative estimation, the target market is therefore 10% of 1,165 million THB or 116.5 million THB.

Expected market share is considered to be mainly from Facebook sellers which comprised of 64% of all sellers based on the favorite selling platform survey data reported by Electronic Transactions Development Agency (2019). Therefore, expected market share is 64% of 116.5 million THB or 74.56 million THB.

Expected sales and profitability: The annual total revenue is the expected market share which is 74.56 million THB, and the estimated long-term annual cost is 70% or 52.2 million THB, whereby the profitability is 30% or 22.36 million THB.

5.4.2 Five-Forces analysis

The Porter's Five Forces is applied to LSRW to analyze the benefits and risks of the rating website as shown in **Figure 31**. Details in the model show that the market opportunity of LSRW has high risks of threats of new entrants due to the ease of copying the business model and using monetary incentives to access data from Facebook page or group owners. Moreover, new entrants do not require large capital to being their business.

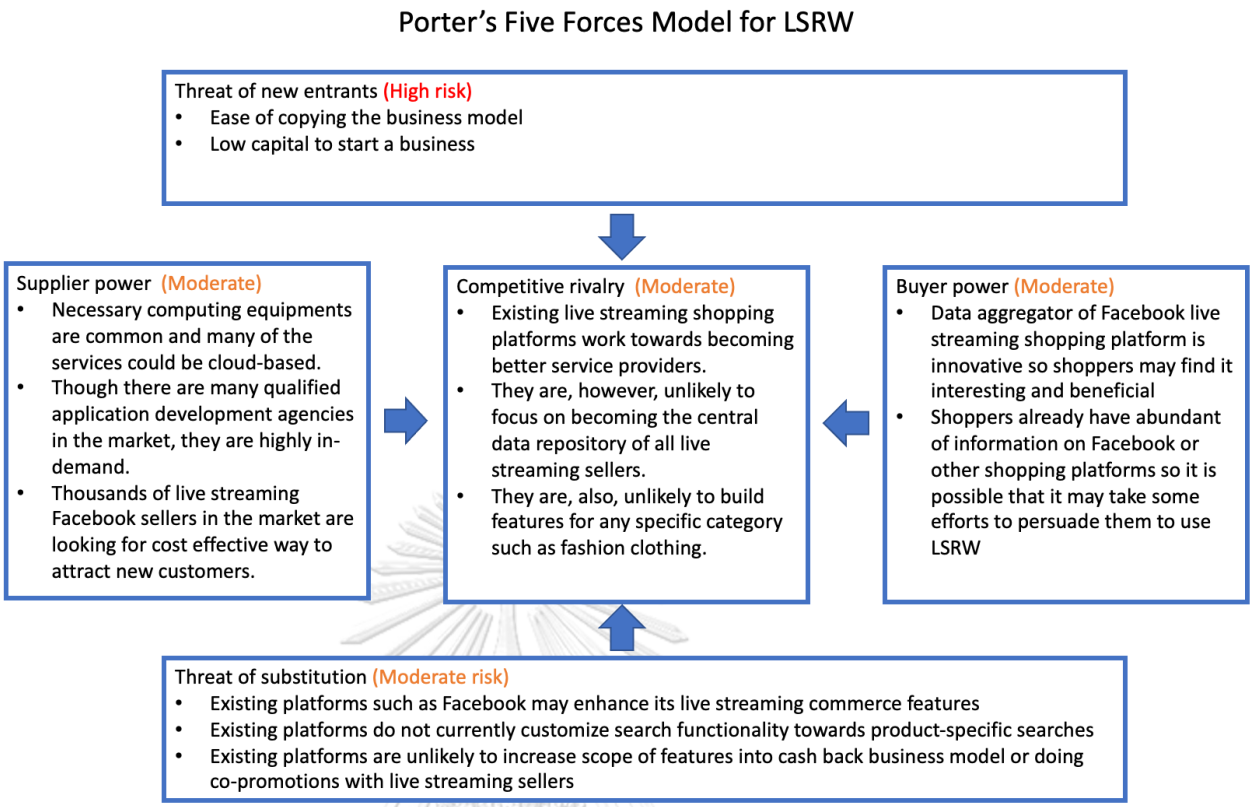

Figure 31. Porter's Five-Forces model of LSRW

There are moderate risks of substitutions due to the possibility of Facebook enhancing its live streaming commerce features to enable a more searchable functionality. It is, however, unlikely for Facebook to customize its search functionality towards product-specific searches or even extend its scope of features into cash back business model or doing co-promotions with live streaming sellers.

Regarding the buyer definition in our business model, the shoppers will be considered as the buyers because they make purchases and a fraction of those will become revenues to our platform through the sellers. There are moderate risks of buyer power due to shoppers would have never seen a data aggregator of Facebook live streaming shopping platform similar to LSRW before and they would find it beneficial and interesting to use to search for their favorite live streaming sellers. However, buyers already have abundant of information on Facebook so it is possible that it may take some efforts to persuade them to use LSRW.

In terms of suppliers, there are suppliers of technology equipment, application development talents, and the live streaming sellers. The risks of suppliers are moderate. The risks from technology equipment suppliers are low because the necessary computing equipment is common and many of the services could be cloud-based. The risks from getting application development talents are moderate because even though there are many qualified application development agencies in the market, but they are highly in-demand. The risks of getting corporation from live streaming sellers are low due to the availability of thousands of live streaming Facebook sellers in the market and especially with them being faced with challenges of expensive marketing costs to acquire new shoppers. Based on the needs to increase shopper traffic, most live streaming sellers should find LSRW to be of benefits for them.

Lastly, but most importantly, the competitive rivalry is moderate. Though the existing live streaming shopping platforms such as Facebook, Shopee, Lazada, or Tiktok may work towards becoming better service providers. They are, however, unlikely to focus on becoming the central data repository of all live streaming sellers especially if LSRW begins only with a single specific category of fashion clothing.

5.5 Commercialization strategies for LSRW

5.5.1 Value chain analysis

The summary of value chain analysis is shown in **Figure 32**. Regarding inbound logistics for LSRW, since the website does not sell its own products, it only provides a means for live streaming sellers to gain customer traffic through the website, so its sellers on the website are the inbound logistics. The operations of LSRW refers to the technical systems to support rating, reviewing, and recommendation mechanisms on the website including the accessing of live streaming shopping data. Additionally, operations also include the tracking of sales in seller's live streaming in the event that the seller chooses to pay commission on sales associated with traffic generated through LSRW. Outbound logistics include seller's fulfillment service and commission payables from seller to LSRW.

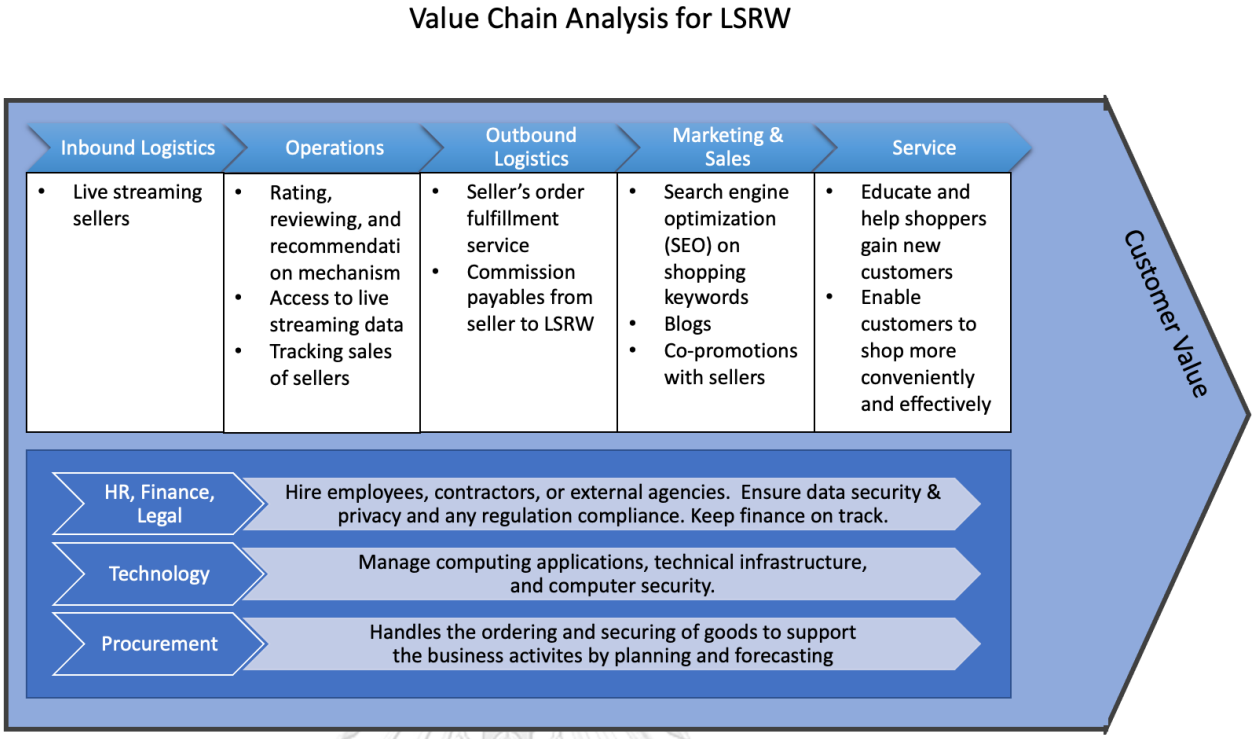

Figure 32. Value chain analysis for LSRW

Marketing and sales of LSRW spans from SEO and traffic generating blogs to co-promotions with sellers to persuade shoppers to use the website. For service, LSRW provides premium services to both the end-customers and the live streaming sellers. LSRW educates sellers, helps them gain new cost-effective traffic, and tracks sales performance for them. LSRW also helps shoppers to most conveniently and effectively search for live streaming sellers and products that they look for. Together with sellers, LSRW enables value added services for shoppers such as cashback programs, shipping discounts, and purchase protection guarantee.

With regards to supporting activities, LSRW's human resources team hires competent employees, contractors, or external agencies to carry out application development, partner relationships, business development, marketing, and sales activities. The finance and legal units ensure data security and privacy, any regulation compliance, and keeping the financial goals on sight. The technology unit manages computing applications, technical infrastructure, and computer security. The procurement unit handles the ordering and securing of goods to support the business activities by planning and forecasting.

5.5.2 Strategies to attract and grow LSRW users

There are three kinds of strategies. First kind of strategies consists of four short-term strategies to be implemented within the first 3 years. Second kind of strategies consists of four long-term strategies to be implemented when customer base is stronger during years 4 and 5. Third kind of strategy is specifically for the purpose of growing and strengthening the community of reviewers of LSRW to ensure high quality information provided by the website.

Firstly, short-term strategies involve lesser efforts from the operational and technical sides and more efforts on the marketing sides which could be rolled out quickly. The main intention to use these strategies is to speed up the adoption of LSRW and provide immediate benefits for the users who are customers as well as sellers. These short-term strategies include cashback program, purchase protection, free shipping, and paid ads. **Table 35** shows the descriptions and details of these short-term strategies.

Table 35. The descriptions and details of LSRW short-term strategies

Feature	Description	How does it work?	Main targets (CP=Customer Persona; SP=Seller Persona)
Cashback	Shoppers register and allow product purchase tracking to receive cash back. (similar to Shopback)	Live streaming merchants pay LSRW a commission for every sale shopper turns on tracking application on their browser or mobile phone. Merchants benefit from increased sales due to traffic from LSRW.	CP 1,2,3,4 SP 3,4
Purchase protection plan	A guarantee that any products purchased from our verified merchants will be received or money back.	Either use 3rd party escrow service (like Kaidee and Shopee) or insurance company to cover purchase protection risks and verified merchants share cost of	CP 1,2,3 SP 1,2

		insurance premium	
Free shipping for premium members	Premium members pay annual fees and receive free shipping on all their orders over certain amount. This incentivizes premium members to shop through LSRW more frequently. (similar to Amazon Prime)	LSRW uses commissions received from cashback scheme to cover shipping costs. Merchants will benefit from increased sales due to customer enjoying free shipping.	CP 2,3 SP 2,4
Paid Ads Plan	Sellers put real-time sponsored ads on the high traffic areas of the LSRW website such as on search results and recommended product list.	Sellers pay for real-time advertisement during broadcast time in either the per impression or per click scheme.	SP 2,4

Secondly, long-term strategies involve more intensive efforts from the operational, technical, and administrative sides which could take considerable time to implement but is essential for long-term growth. The main intention to use these strategies is to support and enable sellers to become more efficient, while allowing them to focus on essential selling activities. These long-term strategies include fulfillment service, storefront, customer service, and drop-shipping service. **Table 36** shows the descriptions and details of these long-term strategies.

Table 36. The descriptions and details of LSRW long-term strategies

Feature	Description	How does it work?	Main targets (CP=Customer Persona; SP=Seller Persona)
Seller Virtual	Customers can order products shown in live streams directly	Sellers prepare product inventory on LSRW prior to	CP 1,2 SP 2,4

Storefront	from seller virtual storefront on LSRW. Live streaming sellers can offload product ordering operation to LSRW online ordering process.	their live streaming. If sellers use LSRW fulfillment services, the product inventory is automatically updated to reflect stock at the warehouse.	
Seller Fulfillment Service	Sellers in the segments of private labels and wholesalers can offload their fulfillment operations to us by transporting and storing their inventory at our partnered warehouse (like Mycloud fulfillment or A-commerce fulfillment). The warehouse automatically ships the orders to customers. (similar to Amazon's Fulfillment-By-Amazon)	Sellers do not initially pay any storage or operational fees and only fees incurred are base fee plus % commission on every sale. If any products are non-moving more than 180 days, then the dormant storage fees kick in, which will incentivize merchants to move the products quickly.	SP 3,4
24/7 Customer Service	Sellers do not have to answer customer inquiries regarding the orders made through LSRW. All inquiries will be answered by our automated AI chatbot (such as deeple.ai) or human 24/7 customer service team.	LSRW pulls AI chatbot or human resources to enable customer service for all orders made through our platform.	CP 1,2,4 SP 3,4
Drop-shipping	Dropship is a situation where sellers do not own the	Product owner creates product inventory list with	SP 1

service	products but are able to sell the products authorized by the product owners, who maintain and ship the products. Sellers can focus on selling and product owners get sales. Product owners pay sellers commissions for every sale. (similar to Aliexpress plug-ins such as Oberlo)	LSRW. Sellers may apply to be authorized sellers for the product owners.	

Thirdly, strategy to grow and strengthen the community of reviewers consists of reviewer reward system and other occasional benefits exclusively for reviewers with highest contributions. Under the LSRW's reviewer reward system, reviewers are categorized into ten levels: Beginner 1,2,3; Intermediate 1,2,3; Advanced 1,2,3; and Expert based on their accumulated points. **Table 37** shows the required points needed for each reviewer level. Reviewer may earn points from performing activities such as writing reviews, uploading photos of purchased products, suggesting new information, and participating in article competition. An article competition refers to an event where LSRW invites users to write an article on interesting shopping topics such as my top 10 favorite jeans sellers or my top 10 prettiest sellers. Winning articles are published on LSRW and any users can view the articles. **Table 38** shows the points earning activities and their associated points. Reviewers also earn special badges on their user profiles upon achieving certain amount of activity levels as acknowledgement for their valuable contributions to LSRW. Achievement badges are their required amount of activity levels are shown in **Table 39**. Additionally, LSRW provides many other exclusive benefits for reviewers with highest contributions as summarized in **Table 40**. These benefits include participating in events such as "interesting sellers of the month", "live streaming shopping festival", and "annual celebration party". Reviewers can redeem their accumulated points for rewards such as LSWR branded

gadgets, reusable shopping bags, stationary, and fashion items. Top reviewers also get cash discount coupons each month to give away to their loyal followers.

Table 37. Reviewer reward system – point requirements to attain reviewer levels

Level	Beginner			Intermediate			Advanced			Expert
	1	2	3	1	2	3	1	2	3	
Points	0	50	100	1K	3K	6K	10K	30K	60K	100K

Table 38. Reviewer reward system – list of activities to earn points

Activities	Points earned
Give rating and review of sellers	
- Rate seller	1/review
- Tag seller characteristics at least 5 tags	5/review
- Review at least 100 characters	10/review
- Upload picture of clothes bought from seller	2/picture (max. 10/seller)
- Being the first review of a seller	5/review
Help suggest seller information that is not already in the system	
- Suggest additional clothing categories of existing sellers	1/suggestion
- Suggest removal of wrong clothing categories of existing sellers	1/suggestion
- Suggest fan page of new sellers	5/suggestion
Compete in article competition	
- Write detailed article for given topic	50/article
- Winners	200/article

Table 39. Reviewer reward system – list of achievement badges

Achievement badges	Badge levels
No. of reviews	50,100,250,1K
No. of reviews for each clothing category	50,100,250,1K
No. of pictures uploaded	100,500,1K,3K
No. of tags	500,1K,5K,10K
No. of suggestions	50,100,250,1K
No. of people seeing your reviews	10K,50K,100K,500K,1M
No. of people like your reviews	100,1K,5K,10K,50K
No. of people comment on your reviews	20,50,100,500,1K
No. of people seeing your articles	10K,50K,100K,500K,1M
No. of people like your articles	100,1K,5K,10K,50K
No. of people comment on your articles	20,50,100,500,1K
No. of people click on seller links on your articles	100,1K,5K,10K,50K,100K,500K,1M

Table 40. Reviewer reward system – list of exclusive events for top reviewers

Events	Description
Interesting sellers of the month	Top reviewers are invited to suggest underrated sellers that are kind of like hidden gems. LSRW picks a list of interesting sellers from all the suggestions. Reviewer is given a budget to shop at that seller's live stream and writes review about that seller. Sellers do not have to pay anything because LSRW wants to promote well-deserving sellers and bring them to light for other customers to see.
Live streaming shopping festival	Top reviewers are invited to LSRW-hosted shopping event at a shopping mall where live streaming sellers are invited to open their booths. Complimentary cash coupons are given to top reviewers to do shopping at the festival.

Annual celebration party	Top reviewers are invited to LSRW-hosted fashion show celebration event where food and drink are served, and live streaming shopping sellers can showcase their clothes.

5.5.3 Business model canvas

LSRW's business model is summarized in the business model canvas as shown in **Figure 33**. The value propositions for both customers and sellers are outlined. The promotional activities and premium customer services are used to add value for customers to build customer relationships and ensure customer satisfaction. The customer segments include four types of customer segments: convenient shopper, value shopper, entertainment shopper, and reseller – these correspond to the four customer personas 1 to 4 in the section 5.2.1.

Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
- Live streaming sellers
- Live streaming data owners
- Fashion brands
- Fulfillment service providers</td>
<td>Key Activities
- Building application
- Data quality control
- Build relationships</td>
<td rowspan="2">Value Propositions
Customer values:
- Cost savings
- Effective shopping
- Purchase confidence.
- Seller values:
- Increased sales
- Insights into improving their performance
- Cost savings</td>
<td>Customer Relationships
- Co-promotions with sellers to offer cash backs and discounts
- Premium customer services</td>
<td rowspan="2">Customer Segments
- Convenient shopper
- Value shopper
- Entertainment shopper
- Reseller</td>
</tr>
<tr>
<td>Key Resources
- Application developers
- Data engineers
- Data quality admins</td>
<td>Channels
- Website
- Mobile application</td>
</tr>
<tr>
<td colspan="3">Cost Structure
- Application development costs
- Website marketing costs: SEO, blogs content
- Shopper marketing and promotion costs: cashback, discounts, purchase protection
- Staff
- Computing equipment or cloud services</td>
<td colspan="2">Revenue Structure
- Paid ads as search ads & discovery ads
- Sales commissions: 2-5% regular</td>
</tr>
</table>

Figure 33. Business model canvas for LSRW

The key partners include live streaming sellers, data owners, fashion brands, and fulfillment service providers. Key activities include building the application, getting access to live streaming data, ensuring the integrity of ratings and reviews data through quality control processes, and building relationships with customers and key partners. Key resources required include application developers, computing equipment, data engineers, and data quality admins to ensure proper application functions and data integrity. The main costs include costs to develop website application, the costs to do marketing for the website, the marketing costs to attract customers, the personnel costs, and the computing equipment costs. The main revenues include paid ads revenue from the sellers and the sales commissions of the sales contributed by the traffic generated from LSRW.

5.5.4 Financial analysis

Initial investment YR 1:

- Application development costs: 3,000 man hours * 1,200/hour = 3.6 million THB
- Website marketing costs:
  - SEO & blogs content = 0.5 million THB/year
  - Paid marketing via Facebook/Instagram/Google search/Twitter/Tiktok/Youtube = 300 THB/customer acquisition * 30,000 customers = 0.9 million THB/year
- Shopper marketing and promotion costs:
  - Cashback = 2% of Gross Merchandise Value (GMV)
  - discounts = 8%-15% of GMW in special promotional events (30% of calendar dates)
  - purchase protection (use escrow service or insurance) = 1% of GMV
- Staff:
  - Product Manager 600,000 THB/year * 1 person = 0.60 million THB/year
  - Data engineer 600,000 THB/year * 1 person = 0.60 million THB/year
  - Data quality admin 360,000 THB/year * 3 admins = 1.08 million THB/year
- Computing equipment or cloud services: 120,000THB/year

YR 2-5

Costs:

- Application new features development costs are expected to grow because we intend to continuously enhance the application and support the growing number of users: 3.6-7.2 million THB/year
- Application maintenance costs: around one-third of the previous year development costs 1.2-2.0 million THB/year
- Website marketing costs: 0.5 million THB/year
- Staff is expected to double in year 2-3 and increase at 70% in year 4-5 to align with the growing number of users: 5.6, 11.2, 19, 32.4 million THB/year
- Computing equipment or cloud services: 120,000THB/year

5-Year cash flow (see **Table 41**):

After the first 6 months of application development, LSRW expects to attract around 30,000 users in the latter half of the first year. We also expect that each user will spend an average of 500 THB, so GMV in the first year will total 15 million THB. One of the major sources of revenues will come from advertising money of branded businesses that would like to target users on LSRW. As the number of LSRW users grow, the advertising money will also grow. We expect that each user will watch an average of 100 sellers in a month, generating 100 page views per month per seller. Thus, for the latter six months of the first year, the revenue from targeted ads is calculated as 30,000 users times 600 page views and multiplied by advertising revenue of 150 THB per thousand page views, totaling 2.7 million THB.

The next revenue source is the paid ads revenue related to seller, which is calculated from the assumption that around 10% of the sellers would be willing to pay for ads at the budget of around 10% of their GMV, thus the overall revenue of seller-related paid ads is 1% of GMV. The following years 2-4 are projected with double growth and double marketing and promotion budgets. By year 5, marketing and promotion budgets are expected to reduce by 30% because the

brand should be strong by now. Revenues in early years begin with 2-5% and expected that the average of commissions by year 4 and 5 to be around 3 and 4%, respectively.

In addition to the main revenue sources, the extra revenues from later initiatives during years 4 and 5 include revenues from storefront operations, revenues from drop-shipping operations, and revenues from fulfillment operations. Associated costs for these initiatives are also considered in the costs section.

With regards to costs, the costs to develop application declines in year 4 and 5 due to smaller enhancement features required. Paid marketing costs in year 4 and 5 are minimal and stable because we will leverage sellers to help promote LSRW through their ads spending on other online paid media in exchange for our support in the joined shopper marketing and promotions. We also expect that in the year 6-10 to follow, the total revenues will continuously grow at similar or higher rates than costs, which leave profit margin to be around 40-50%. **Figure 34** shows 5-year financial forecasts of revenue, cost, profit. Breakdown of revenue by sources and costs by areas are shown in **Figure 35** and **Figure 36**, respectively.

Table 41. 5-Year financial forcast for LSRW

Unit:million THB	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Gross Merchandize Value (GMV)	15	30	60	120	240
Revenues (targeted ads)	2.7	10.8	21.6	43.2	86.4
Revenues (2-5% Commission)	0.3	0.6	1.2	3.6	9.6
Revenues (seller-related paid ads)	0.15	0.3	0.6	1.2	2.4
Revenues (storefront)	-	-	-	1.8	4.8
Revenues (drop-shipping)	-	-	-	-	1.92

Revenues (fulfillment)	-	-	-	-	2.4
Total Revenues	3.15	11.7	23.4	49.8	107.52
Application development costs	3.6	3.6	3.6	5.8	7.2
Application maintenance costs	0	1.2	1.2	1.2	2.0
Website marketing costs (SEO)	0.5	0.5	0.5	0.1	0.1
Paid marketing costs	0.9	0.9	1.8	1.8	1.8
Shopper marketing & promotions costs	1.2	2.4	4.8	9.6	13.4
Staff	2.8	5.6	11.2	19.0	32.4
Computing equipment or cloud services	0.12	0.24	0.36	0.64	1.22
Costs (storefront)	-	-	-	3.6	1.2
Costs (drop-shipping)	-	-	-	-	1.34
Costs (fulfillment)	-	-	-	-	1.68
Total costs	9.12	14.44	23.46	41.74	62.34
Profit/(Loss)	(5.97)	(2.74)	(0.06)	8.06	45.18
Profit margins	-190%	-23%	0%	16%	42%
No. of Users	30,000	60,000	120,000	240,000	480,000

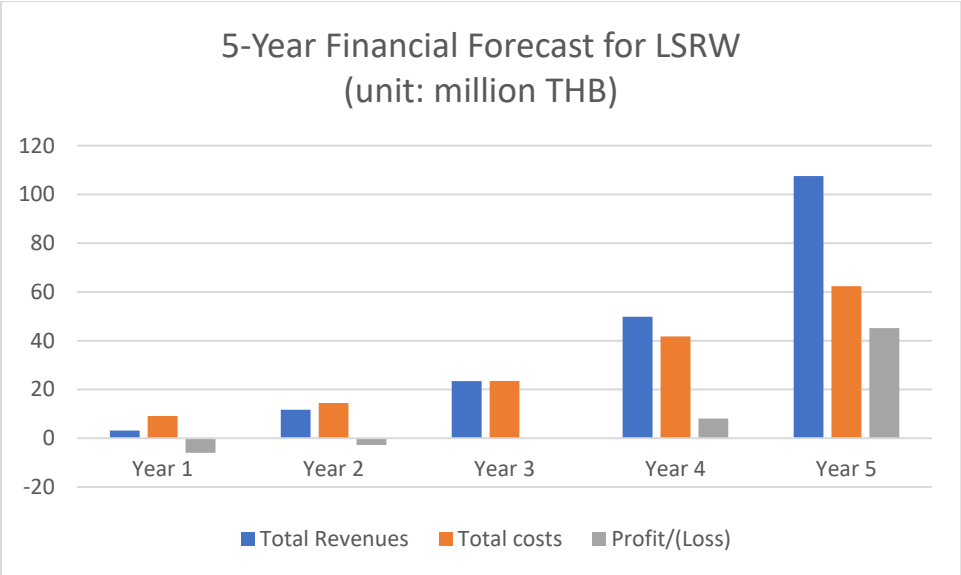

Figure 34. 5-year financial forecasts of revenue, cost, profit

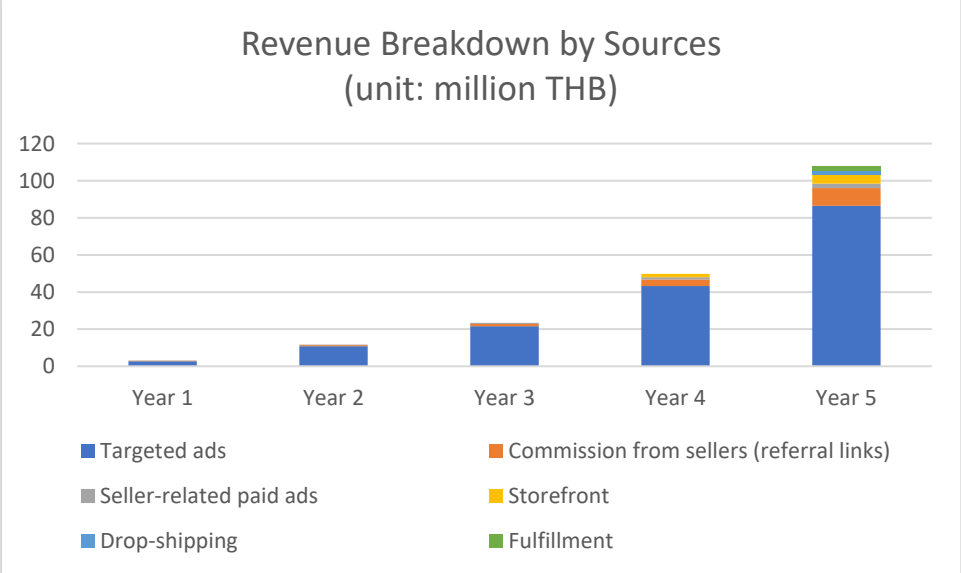

Figure 35. Revenue breakdown by revenue sources

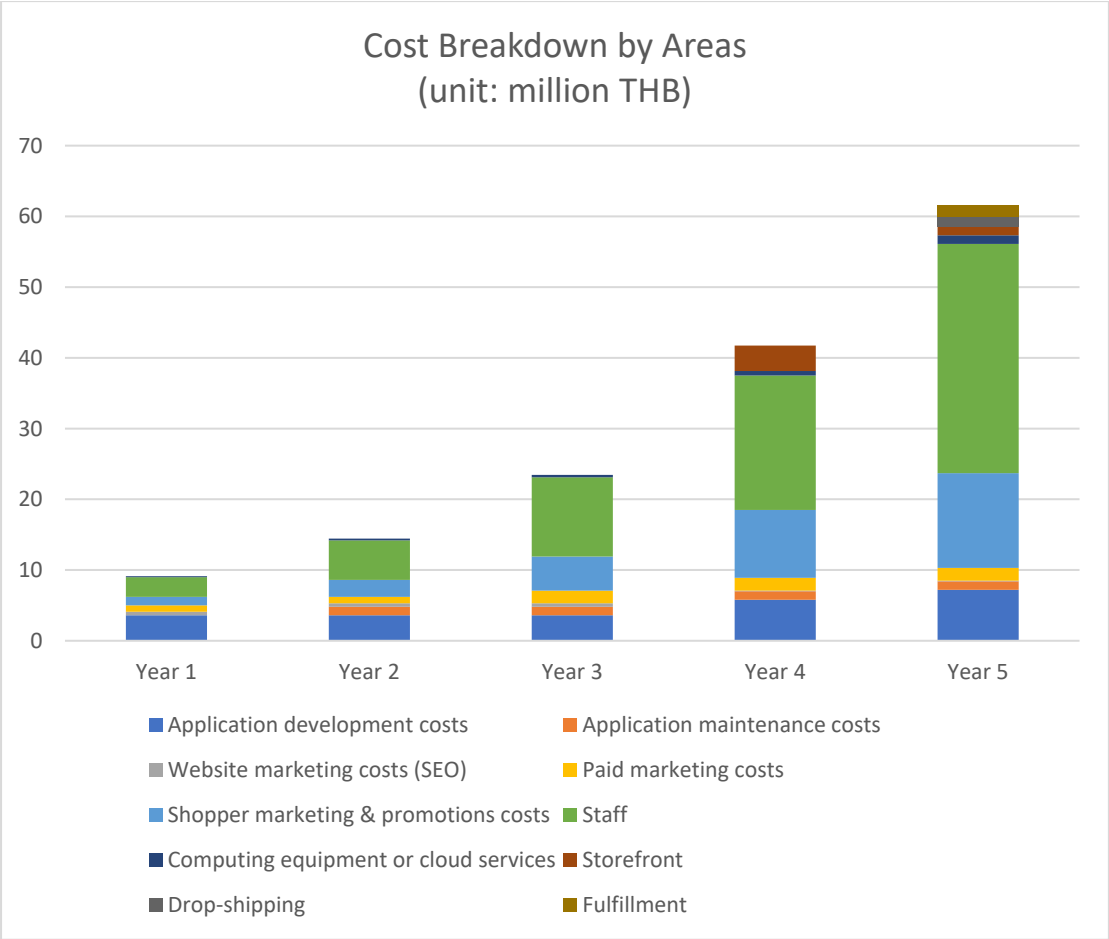

Figure 36. Cost breakdown by cost areas

5.5.5 Special policies

5.5.5.1 Data source policy compliance

According to Meta Platform Terms (2022) for developers, Facebook data is permissible to be collected via Facebook API using group owner's token and any personal identity should be discarded or anonymized in compliance with Personally Identifiable Information (PII) regulations. LSRW will secure group owner's tokens to available live streaming sharing groups per authorization by their respective owners.

5.5.5.2 Negative or inappropriate reviews management

LSRW will implement customer reviews policies to ensure safe, friendly, and honest community. Sellers can request LSRW to investigate any inappropriate customer reviews. LSRW

will remove reviews that violate LSRW's usage policies. The inappropriate reviews under the policies will include

- Fake content and spam
- Mislead or false representation
- Dishonest intention (e.g. dissatisfied employee, competitor, self review)
- General or social opinions not from customer's own experience
- Violation of local laws and regulations
- Offensive or hateful content

LSRW will formulate the usage policies to ensure that the reviews are made with well intentions, honesty, and truthful content. To ensure the enforcement of the policies, the following steps will be used:

Step 1: The reported review will be hidden for investigation, which may result in three outcomes:

i. If the investigation finds the review to comply with the policies, it will be retrieved back.

ii. If the investigation finds the review to violate the policies, the customer reviewer will be informed to update the review and re-submit to comply with the policies.

iii. If the investigation finds the review to be questionable or unresolved, LSRW reserves the rights to hide or remove such reviews and customer reviewer will be informed of the decision.

Step 2: The reported review will be removed after 48 hours or appropriate time has passed since the reviewer has been informed of the policy violations. Seller will also be informed of the results of the reported review.

In the event that the seller wishes to respond the reviews, LSRW provides website feature that allows seller to post the replies under any review to manage customer experience. However, if the seller wishes to remove his or her profile completely from LSRW, the seller can submit request to LSRW and all the reviews will be removed.

CHAPTER 6

CONCLUSIONS

6.1 Qualitative Study of Live Stream Factors Affecting Shopper Intentions

The results of the qualitative part of the study identify important shopping attributes that motivate consumers to watch and shop in live streaming. Moreover, the findings identify several motivational patterns that are associated with these attributes. However, the limitation of this study is due to the fact that its sample size is appropriate for this type of qualitative study but does not allow us to make general inferences to conclude that newly found shopping attributes are relevant for the entire population. For future study, the output of this work can be used to guide the development of framework and questionnaires to use in the subsequent quantitative study to confirm the importance of these attributes. It could then be used as guidance to develop a tool that helps shoppers evaluate the live streams based on the relevant attributes that match their shopping values.

6.2 Quantitative Study of Live Stream Factors Affecting Shopper Intentions

In terms of theoretical contributions, this study contributes to the online social commerce research by being among the early studies on live streaming shopping, a means of selling that helps many sellers to directly sell to customers. While focusing on the fashion clothing products, this study is among the first live streaming shopping studies to shed new insights in this product category. We extend recent live streaming shopping studies (Cai et al., 2018; Sun et al., 2019; Wongkitrungrueng & Assarut, 2020) that involve live streaming values, customer trust, and customer engagement by examining live streaming shopping attributes in affecting customer intentions to watch and purchase. Additionally, this study contributes to the studies related to trust in online commerce. While Wongkitrungrueng and Assarut (2020) has shown that customer trust in live streaming shopping depends on trust in product influencing trust in seller, which in turn positively influences customer engagement, our study finds the reverse of that to also be true, suggesting that live streaming shopping may also depend on trust in seller influencing trust in product, which in turn positively influences customer intention to watch and then to purchase.

As for the managerial implications, this study provides insights that may benefit managers in online social commerce. By understanding the importance of live streaming attributes that could influence customer trust and intentions, live streaming sellers can focus on creating more values in those attributes to better serve their customers thus enabling higher intentions to watch and purchase. Sellers could carry higher quality products that customers would feel satisfied with their purchase and developed more trust in seller. This would increase customer intentions to watch and make future purchases. In addition, sellers could ensure that their product pricing is transparent, and customers feel that they could easily understand the final price of their order with no surprised fees such as delivery fees. Lastly, live streaming sellers could plan and preannounce their broadcast timing to give enough time for customers to manage their busy schedule.

This study has some limitations and future research may be needed to address them. The studies in the area of live streaming shopping is relatively new and still limited in numbers, especially in the areas of fashion clothing products, more research efforts in this area is needed to fully understand its impact on customer behaviors. This study is limited to one platform, Facebook live streaming, one product category, fashion clothing, and one country, Thailand.

In terms of product category, it is possible that the live streaming attributes may have different impacts on customer trust and behaviors in different product categories. Some shoppers view fashion clothing as both functional and fun, but might view products such as home organizers, fitness accessories, small kitchen appliances as more functional or products such as home and garden decorations as more fun. Products exhibiting different levels of functional requirements and fun may have different impacts on customer trust and behaviors. Additionally, this study is based on a general fashion clothing product category, but other types of clothing such as large size clothing and vintage clothing, may also result in different impacts on customer trust and behaviors.

Moreover, in addition to Facebook live streaming, there are other popular live streaming shopping platforms such as Lazada and Shopee. Since Facebook is a social networking platform that has live streaming feature, it is possible that audience in this platform are more into fun and enjoyment than seriously looking to shop. While Lazada and Shopee are e-commerce platforms

that have live streaming feature, it is also possible that audience in these platforms are already looking to shop and might be more eager to purchase. Therefore, based on the different nature of users in different platforms, the results may be different.

Lastly, the people in Thailand may behave differently in shopping behaviors as compared with shoppers in other countries such as China and the western countries. The shopping process of how live streaming attributes may influence customer trust and intentions may vary across different cultures. This means that the different population of the study and other antecedents such as different live streaming attributes could be incorporated into future studies.

6.3 Recommendation System Technical Evaluation

The conclusion about the technical evaluation is that the values of recall and precision from our study are lower than similar study of Cremonesi et al. (2010). Given the recommendation list of size 10, our recall value result is 0.12 versus their results ranging from 0.28 to 0.52 from different models, and when the recall value of 0.2, our precision value result is near 0.006 versus their results ranging from 0.01 to 0.12. These low recall and precision resulting values are partly because our data density of 0.29% is much less than their study dataset density of 1.18-4.26%. Sparse data can cause the overestimation of irrelevancy which hinders the resulting recall and precision values. In the future study, we could collect more data to increase data density to 1-4% and try different recommendation algorithms to increase the recommendation evaluation results.

6.4 Technology Acceptance Test and Business Model of Live Streaming Rating Website (LSRW)

In terms of innovation, LSRW has incorporated the research outputs from the studies of phase 1 and phase 2 by focusing on the live streaming attributes that are important for the consumers in order to increase their intentions to watch and make purchase from live streams. Specifically, the rating mechanism allows consumers to give their feedback on those aspects of the live streaming sellers that were found to be significant. Other consumers can use this

information to find the preferred live streams to watch and become more efficient in live streaming shopping.

In terms of the technology acceptance results, consumer would use LSRW because they perceived that the use of LSRW has advantages over the use of original social networking sites. They also perceived that LSRW could allow them to be more efficient in live streaming shopping and also have fun. Thus, it is important that for LSRW to be successful, it has to continue to excel in the areas of increasing consumer shopping efficiency and enabling more enjoyment. Also, consumer did not perceive that LSRW provides useful information and is not easy to use. LSRW has to collect more data and present them in useful fashions while restructuring the website to be more user friendly.

Users find that PIU and PEOU are the top values provided by LSRW. However, the values that have influence on the attitude and intention to use LSRW are those of PRA, PPU, and PE.

6.5 Commercialization Plan of LSRW

The research of live streaming attributes has resulted in the prototype development of the solution to help shoppers receive better and more efficient live streaming shopping experience. Based on the results of user acceptance test, such prototype has been well received by the users with probability of 63-81% that users feel favorable attitudes and express likely intentions to use LSRW as described earlier in section 4.5.2.2. Thus, the commercialization plan has been proposed in this research.

Three customer value propositions have been discussed including cost savings, effective shopping, and purchase confidence. Three seller value propositions have also been discussed including increased sales, insights into improving their performance, and cost savings.

Four customer personas have been discussed based on two distinct dimensions including customer shopping objectives and their motivations. Four seller personas have also been discussed based on two distinct dimensions including product pricing and sales figures.

Analysis of LSRW benefits to both customers and sellers have been discussed and the SWOT analysis have been presented to describe the potentials of LSRW. Market analysis have been carried out using market opportunity estimation and five force analysis.

Strategies to attract customers and sellers of different personas have been proposed including cashback program, purchase protection plan, free shipping for premium membership, paid ads plan, seller virtual storefront, seller fulfillment service, payment collection service, 24/7 customer service, and dropshipping service.

To capture the overall picture, business model canvas has been presented and financial analysis of five-year plan has been projected. Finally, to ensure all policies are honored and properly adhered to, special policies have been discussed including Facebook data policy compliance, PII data regulation compliance, and negative or inappropriate reviews management.

6.6 Future Recommendations

In terms of research studies, since this study is limited to just one platform, Facebook live streaming, and to just one product category, fashion clothing, in Thailand. Future studies can be performed on other live streaming platforms that are very popular and very different too such as Lazada, Shopee, and Tiktok. Also, there are other product categories that are selling a lot on live streaming too. Research could apply to other categories that are more functional-oriented such as home organizers, fitness accessories, and small kitchen appliances or to those that are more fun-oriented such as home and garden decorations. The research could also be applied to other countries, but the scope of research in Thailand is still understudied, so we encourage more studies to happen in Thailand.

In terms of commercialization plan, there is a lot of room to grow and expand due to the innovativeness of LSRW. The initial scope is only for fashion clothing category, but LSRW could expand to other product categories that are being marketed and sold through live streaming in Thailand. Some of the most seen categories include the followings:

- Beauty and skin care products
- Other fashion products and accessories

- Toys and collectibles
- Electronic gadgets
- Food and agricultural products
- Collectible coins and religious artifacts
- Home decorations

Besides products, some services also broadcast live streaming videos to promote their services which include the followings:

- Beauty clinics
- Religious talks or ceremonies
- Fortune tellers and lottery number predictors
- Well-living or life coaches

Moreover, there are event-based live broadcasts such as car dealerships, amateur music bands, and social events of celebrities. So, there are quite a bit of opportunities in the other products and services markets. Some of the businesses in these markets are under-utilizing live streaming technology to market their products and services, so LSRW could potentially expand into marketing and sales services to assist these businesses in using and benefiting from live streaming.

REFERENCES

Aghekyan-Simonian, M., Forsythe, S., Suk Kwon, W., & Chattaraman, V. (2012). The role of product brand image and online store image on perceived risks and online purchase intentions for apparel. *Journal of Retailing and Consumer Services, 19*(3), 325-331. doi:https://doi.org/10.1016/j.jretconser.2012.03.006

Albayrak, T., Caber, M., & Çömen, N. (2016). Tourist shopping: The relationships among shopping attributes, shopping value, and behavioral intention. *Tourism Management Perspectives, 18*, 98-106. doi:https://doi.org/10.1016/j.tmp.2016.01.007

Babin, B. J., Darden, W. R., & Griffin, M. (1994). Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value. *Journal of Consumer Research, 20*(4), 644-656. doi:10.1086/209376

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74-94. doi:10.1007/BF02723327

Ballantine Paul, W. (2005). Effects of interactivity and product information on consumer satisfaction in an online retail setting. *International Journal of Retail & Distribution Management, 33*(6), 461-471. doi:10.1108/09590550510600870

Barclay, D., Higgins, C., & Thompson, R. (1995). The partial least squares (PLS) approach to causal modelling: personal computer adoption and use as an illustration. *Technology Studies, 2*(2), 285-309.

Barry, J. M., & Graça, S. S. (2018). HUMOR EFFECTIVENESS IN SOCIAL VIDEO ENGAGEMENT. *Journal of Marketing Theory and Practice, 26*(1-2), 158-180.

doi:10.1080/10696679.2017.1389247

Bateman, C., & Valentine, S. (2015). The impact of salesperson customer orientation on the evaluation of a salesperson's ethical treatment, trust in the salesperson, and intentions to purchase. *Journal of Personal Selling & Sales Management, 35*(2), 125-142. doi:10.1080/08853134.2015.1010538

Bauer, J. C., Kotouc, A. J., & Rudolph, T. (2012). What constitutes a "good assortment"? A scale for measuring consumers' perceptions of an assortment offered in a grocery category. *Journal of Retailing and Consumer Services, 19*(1), 11-26. doi:https://doi.org/10.1016/j.jretconser.2011.08.002

Bento, M., Martinez, L. M., & Martinez, L. F. (2018). Brand engagement and search for brands on social media: Comparing Generations X and Y in Portugal. *Journal of Retailing and Consumer Services, 43*, 234-241. doi:https://doi.org/10.1016/j.jretconser.2018.04.003

Bertini, M., & Gourville, J. (2012). Pricing To Create Shared Value. *Harvard Business Review, 90*, 96.

Borgardt, E. (2020). Means-End Chain theory: a critical review of literature. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, 64*, 141-160. doi:10.15611/pn.2020.3.12

Brand Buffet. (2021). Retrieved from https://www.brandbuffet.in.th/2021/07/shopee-live-streaming/

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming, 2nd ed*. New York, NY, US: Routledge/Taylor & Francis Group.

Cai, J., Wohn, D., Mittal, A., & Sureshbabu, D. (2018). *Utilitarian and Hedonic Motivations for Live Streaming Shopping*.

Cervellon, M. C., Carey, L., & Harms, T. (2012). Something old, something used: Determinants of women's purchase of vintage fashion vs second‐hand fashion. *International Journal of Retail & Distribution Management, 40*(12), 956-974. doi:10.1108/09590551211274946

Chandrruangphen, E., Assarut, N., & Sinthupinyo, S. (2021). *Shopping Motivation in Live Streaming: A Means-End Chain Approach.* Paper presented at the 2nd International Conference on Research in Management, Vienna, Austria.

Chang, W., & Chang, I. (2014). The Influences of Humorous Advertising on Brand Popularity and Advertising Effects in the Tourism Industry. *Sustainability (Switzerland), 6*, 9205-9217. doi:10.3390/su6129205

Chebat, J.-C., Michon, R., Haj-Salem, N., & Oliveira, S. (2014). The effects of mall renovation on shopping values, satisfaction and spending behaviour. *Journal of Retailing and Consumer Services, 21*(4), 610-618. doi:https://doi.org/10.1016/j.jretconser.2014.04.010

Chen, S., & Dhillon, G. (2003). Interpreting Dimensions of Consumer Trust in E-Commerce. *Information Technology and Management, 4*, 303-318. doi:10.1023/A:1022962631249

Chen, Y.-H., Hsu, I. C., & Lin, C.-C. (2010). Website attributes that increase consumer purchase intention: A conjoint analysis. *Journal of Business Research, 63*(9), 1007-1014. doi:https://doi.org/10.1016/j.jbusres.2009.01.023

Chi, T. (2018). Understanding Chinese consumer adoption of apparel mobile commerce: An extended TAM approach. *Journal of Retailing and Consumer Services, 44*, 274-284. doi:https://doi.org/10.1016/j.jretconser.2018.07.019

Chin, W. W. (1998). Issues and opinion on structural equation modeling. *MIS Quarterly: Management Information Systems, 22*(1), vii-xvi.

Chinomona, R., Okoumba, L., & Pooe, D. (2013). *The Impact of Product Quality on Perceived Value, Trust and Students' Intention to Purchase Electronic Gadgets* (Vol. 4).

Chopdar, P. K., Korfiatis, N., Sivakumar, V. J., & Lytras, M. D. (2018). Mobile shopping apps adoption and perceived risks: A cross-country perspective utilizing the Unified Theory of Acceptance and Use of Technology. *Computers in Human Behavior, 86*, 109-128. doi:https://doi.org/10.1016/j.chb.2018.04.017

Coursaris, C. K., Osch, W. V., & Balogh, B. A. (2016, 5-8 Jan. 2016). *Do Facebook Likes Lead to Shares or Sales? Exploring the Empirical Links between Social Media Content, Brand Equity, Purchase Intention, and Engagement.* Paper presented at the 2016 49th Hawaii International Conference on System Sciences (HICSS).

Cremonesi, P., Koren, Y., & Turrin, R. (2010). *Performance of recommender algorithms on top-n recommendation tasks.* Paper presented at the Proceedings of the fourth ACM conference on Recommender systems.

Crosby, L. A., Evans, K. R., & Cowles, D. (1990). Relationship Quality in Services Selling: An Interpersonal Influence Perspective. *Journal of Marketing, 54*(3), 68-81.

doi:10.2307/1251817

Cui, F., Lin, D., & Qu, H. (2018). The impact of perceived security and consumer innovativeness on e-loyalty in online travel shopping. *Journal of Travel & Tourism Marketing, 35*, 1-16. doi:10.1080/10548408.2017.1422452

Darian, J., Tucci, L. A., & Wiman, A. (2001). Perceived salesperson service attributes and retail patronage intentions. *International Journal of Retail & Distribution Management, 29*, 205-213. doi:10.1108/09590550110390986

Davari, A., Iyer, P., & Rokonuzzaman, M. (2016). Identifying the determinants of online retail patronage: A perceived-risk perspective. *Journal of Retailing and Consumer Services, 33*, 186-193. doi:https://doi.org/10.1016/j.jretconser.2016.08.009

De Vries, E. L. E. (2019). When more likes is not better: the consequences of high and low likes-to-followers ratios for perceived account credibility and social media marketing effectiveness. *Marketing Letters, 30*(3), 275-291. doi:10.1007/s11002-019-09496-6

Donnelly, S., Gee, L., & Silva, E. S. (2020). UK mid-market department stores: Is fashion product assortment one key to regaining competitive advantage? *Journal of Retailing and Consumer Services, 54*, 102043. doi:https://doi.org/10.1016/j.jretconser.2020.102043

Eine, B., & Charoensukmongkol, P. (2021). A Cross-Cultural Perspective on Factors that Influence the Intention to Repurchase in Online Marketplaces: A Comparison Between Thailand and Germany. *Asian Journal of Business Research, 11*(1), 20-39. doi:https://doi.org/10.14707/ajbr.210097

El Hedhli, K., Chebat, J.-C., & Sirgy, M. J. (2013). Shopping well-being at the mall: Construct, antecedents, and consequences. *Journal of Business Research, 66*(7), 856-863. doi:https://doi.org/10.1016/j.jbusres.2011.06.011

El Hedhli, K., Zourrig, H., & Park, J. (2017). Image transfer from malls to stores and its influence on shopping values and mall patronage: The role of self-congruity. *Journal of Retailing and Consumer Services, 39*, 208-218. doi:https://doi.org/10.1016/j.jretconser.2017.08.001

Electronic Transactions Development Agency. (2019). Thailand Internet User Behavior 2019. Retrieved from https://www.etda.or.th/publishing-detail/thailand-internet-user-behavior-2019-slides.html

Escobar-Rodríguez, T., & Bonsón-Fernández, R. (2017). Analysing online purchase intention in Spain: fashion e-commerce. *Information Systems and e-Business Management, 15*(3), 599-622. doi:10.1007/s10257-016-0319-6

Facebook Embedded Video & Live Video Player. (2022). Retrieved from https://developers.facebook.com/docs/plugins/embedded-video-player/

Ferraro, C., Sands, S., & Brace-Govan, J. (2016). The role of fashionability in second-hand shopping motivations. *Journal of Retailing and Consumer Services, 32*, 262-268. doi:https://doi.org/10.1016/j.jretconser.2016.07.006

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*(1), 39-50.

doi:10.2307/3151312

Forsythe, S., & Shi, B. (2003). Consumer Patronage and Risk Perceptions in Internet Shopping. *Journal of Business Research, 56*, 867-875. doi:10.1016/S0148-2963(01)00273-9

Fraser, C. A., Kim, J. O., Thornsberry, A., Klemmer, S., & Dontcheva, M. (2019). *Sharing the studio: How creative livestreaming can inspire, educate, and engage.* Paper presented at the C and C 2019 - Proceedings of the 2019 Creativity and Cognition.

Gourville, J., & Soman, D. (2005). Overchoice and Assortment Type: When and Why Variety Backfires. *Marketing Science, 24*, 382-395. doi:10.1287/mksc.1040.0109

Grewal, D., Munger, J., Iyer, G., & Levy, M. (2003). The Influence of Internet-Retailing Factors on Price Expectations. *Psychology & Marketing, 20*, 477-493. doi:10.1002/mar.10083

Ha, H. Y. (2004). Factors influencing consumer perceptions of brand trust online. *Journal of Product & Brand Management, 13*(5), 329-342. doi:10.1108/10610420410554412

Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate Data Analysis: A Global Perspective*.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review, 26*(2), 106-121. doi:10.1108/EBR-10-2013-0128

Hajli, N., Sims, J., Zadeh, A. H., & Richard, M.-O. (2017). A social commerce investigation of the

role of trust in a social networking site on purchase intentions. *Journal of Business Research, 71*, 133-141. doi:https://doi.org/10.1016/j.jbusres.2016.10.004

Halim, P., Swasto, B., Hamid, D., & Firdaus, M. (2014). The Influence of Product Quality, Brand Image, and Quality of Service to Customer Trust and Implication on Customer Loyalty (Survey on Customer Brand Sharp Electronics Product at the South Kalimantan Province). *European Journal of Business and Management, 6*, 159-166.

Hamilton, W. A., Garretson, O., & Kerne, A. (2014). *Streaming on twitch: Fostering participatory communities of play within live mixed media.* Paper presented at the Conference on Human Factors in Computing Systems - Proceedings.

Hayes, A. (2009). Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium. *Communication Monographs - COMMUN MONOGR, 76*, 408-420. doi:10.1080/03637750903310360

Hennig‐Thurau, T. (2004). Customer orientation of service employees: Its impact on customer satisfaction, commitment, and retention. *International Journal of Service Industry Management, 15*(5), 460-478. doi:10.1108/09564230410564939

Hilvert-Bruce, Z., Neill, J. T., Sjöblom, M., & Hamari, J. (2018). Social motivations of live-streaming viewer engagement on Twitch. *Computers in Human Behavior, 84*, 58-67. doi:10.1016/j.chb.2018.02.013

Hinson, R., Boateng, H., Renner, A., & Kosiba John Paul, B. (2019). Antecedents and consequences of customer engagement on Facebook: An attachment theory perspective. *Journal of*

Research in Interactive Marketing, 13(2), 204-226. doi:10.1108/JRIM-04-2018-0059

Hou, F., Guan, Z., Li, B., & Chong Alain Yee, L. (2019). Factors influencing people's continuous watching intention and consumption intention in live streaming: Evidence from China. *Internet Research, 30*(1), 141-163. doi:10.1108/INTR-04-2018-0177

Huang, L.-S. (2015). Trust in product review blogs: the influence of self-disclosure and popularity. *Behaviour & Information Technology, 34*(1), 33-44. doi:10.1080/0144929X.2014.978378

Huang, Y.-C., Chang, L. L., Yu, C.-P., & Chen, J. (2019). Examining an extended technology acceptance model with experience construct on hotel consumers' adoption of mobile applications. *Journal of Hospitality Marketing & Management, 28*(8), 957-980. doi:10.1080/19368623.2019.1580172

Imlawi, J., & Gregg, D. (2014). Engagement in Online Social Networks: The Impact of Self-Disclosure and Humor. *International Journal of Human–Computer Interaction, 30*(2), 106-125. doi:10.1080/10447318.2013.839901

Iyengar, S. S., & Lepper, M. R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology, 79*(6), 995-1006. doi:10.1037/0022-3514.79.6.995

Jang Ju, Y., Baek, E., & Choo Ho, J. (2018). Managing the visual environment of a fashion store: Effects of visual complexity and order on sensation-seeking consumers. *International Journal of Retail & Distribution Management, 46*(2), 210-226. doi:10.1108/IJRDM-03-2017-0050

Janiszewski, C. (1998). The influence of display characteristics on visual exploratory search behavior. *Journal of Consumer Research, 25*(3), 290-301. doi:10.1086/209540

Jarvenpaa, S. L., Tractinsky, N., & Vitale, M. (2000). Consumer trust in an Internet store. *Information Technology and Management, 1*(1), 45-71. doi:10.1023/A:1019104520776

Jeong, Y. (2021). Item-Based Collaborative Filtering in Python. Retrieved from https://towardsdatascience.com/item-based-collaborative-filtering-in-python-91f747200fab

Jiang, Y., Wang, X., & Yuen, K. F. (2021). Augmented reality shopping application usage: The influence of attitude, value, and characteristics of innovation. *Journal of Retailing and Consumer Services, 63*. doi:10.1016/j.jretconser.2021.102720

Johnson, K. K. P., Kim, H.-Y., Mun, J. M., & Lee, J. Y. (2015). Keeping customers shopping in stores: interrelationships among store attributes, shopping enjoyment, and place attachment. *The International Review of Retail, Distribution and Consumer Research, 25*(1), 20-34. doi:10.1080/09593969.2014.927785

Jung, Y. J., & Kim, J. (2016). Facebook marketing for fashion apparel brands: Effect of other consumers' postings and type of brand comment on brand trust and purchase intention. *Journal of Global Fashion Marketing, 7*(3), 196-210. doi:10.1080/20932685.2016.1162665

Kautish, P., & Sharma, R. (2019). Managing online product assortment and order fulfillment for superior e-tailing service experience: An empirical investigation. *Asia Pacific Journal of Marketing and Logistics, 31*(4), 1161-1192. doi:10.1108/APJML-05-2018-0167

Kavanaugh, A., Ahuja, A., Gad, S., Neidig, S., Pérez-Quiñones, M. A., Ramakrishnan, N., & Tedesco, J. (2014). (Hyper) local news aggregation: Designing for social affordances. *Government Information Quarterly, 31*(1), 30-41. doi:https://doi.org/10.1016/j.giq.2013.04.004

Kawaf, F., & Istanbulluoglu, D. (2019). Online fashion shopping paradox: The role of customer reviews and facebook marketing. *Journal of Retailing and Consumer Services, 48*, 144-153. doi:https://doi.org/10.1016/j.jretconser.2019.02.017

Kemp, S. (2021). DIGITAL 2021: THAILAND Retrieved from https://datareportal.com/reports/digital-2021-thailand

Kemp, S., & Moey, S. (2019). DIGITAL 2019 SPOTLIGHT: ECOMMERCE IN THAILAND. Retrieved from https://datareportal.com/reports/digital-2019-ecommerce-in-thailand

Kennedy, M., Ferrell, L., & LeClair, D. T. (2001). *Consumers' trust of salesperson and manufacturer: an empirical study*.

Kim, J., Fiore, A. M., & Lee, H.-H. (2007). Influences of online store perception, shopping enjoyment, and shopping involvement on consumer patronage behavior towards an online retailer. *Journal of Retailing and Consumer Services, 14*(2), 95-107. doi:https://doi.org/10.1016/j.jretconser.2006.05.001

Kim, N. L., Kim, G., & Rothenberg, L. (2020). Is Honesty the Best Policy? Examining the Role of Price and Production Transparency in Fashion Marketing. *Sustainability, 12*(17), 6800.

Kim, S., & Park, H. (2013). Effects of various characteristics of social commerce (s-commerce) on consumers' trust and trust performance. *International Journal of Information Management, 33*(2), 318-332. doi:https://doi.org/10.1016/j.ijinfomgt.2012.11.006

Kim, S. C., Yoon, D., & Han, E. K. (2016). Antecedents of mobile app usage among smartphone users. *Journal of Marketing Communications, 22*(6), 653-670. doi:10.1080/13527266.2014.951065

Komiak, S. X., & Benbasat, I. (2004). Understanding Customer Trust in Agent-Mediated Electronic Commerce, Web-Mediated Electronic Commerce, and Traditional Commerce. *Information Technology and Management, 5*(1), 181-207. doi:10.1023/B:ITEM.0000008081.55563.d4

Konuk, F. A. (2018). The role of store image, perceived quality, trust and perceived value in predicting consumers' purchase intentions towards organic private label food. *Journal of Retailing and Consumer Services, 43*, 304-310. doi:https://doi.org/10.1016/j.jretconser.2018.04.011

Kwon, K.-N., & Schumann, D. W. (2001). The Influence of Consumer= S Price Expectations on Value Perception and Purchase Intention. *ACR North American Advances*.

Ladhari, R., Gonthier, J., & Lajante, M. (2019). Generation Y and online fashion shopping: Orientations and profiles. *Journal of Retailing and Consumer Services, 48*, 113-121. doi:https://doi.org/10.1016/j.jretconser.2019.02.003

Lal, R., & Rao, R. (1997). Supermarket Competition: The Case of Every Day Low Pricing.

Marketing Science, 16(1), 60-80.

Lee, D. Y., & Dawes, P. L. (2005). Guanxi, Trust, and Long-Term Orientation in Chinese Business Markets. *Journal of International Marketing, 13*(2), 28-56.

Lee, Y. j., & Dubinsky, A. J. (2017). Consumerì desire to interact with a salesperson during e-shopping: development of a scale. *International Journal of Retail & Distribution Management, 45*, 20-39.

Leeraphong, A., & Sukrat, S. (2018). *How Facebook Live Urge SNS Users to Buy Impulsively on C2C Social Commerce?* Paper presented at the Proceedings of the 2nd International Conference on E-Society, E-Education and E-Technology, Taipei, Taiwan. https://doi.org/10.1145/3268808.3268830

Leong, L.-Y., Hew, T.-S., Ooi, K.-B., & Chong, A. Y.-L. (2020). Predicting the antecedents of trust in social commerce – A hybrid structural equation modeling with neural network approach. *Journal of Business Research, 110*, 24-40. doi:https://doi.org/10.1016/j.jbusres.2019.11.056

Liang, T.-P., & Lai, H.-J. (2002). Effect of store design on consumer purchases: An empirical study of on-line bookstores. *Information & Management, 39*, 431-444. doi:10.1016/S0378-7206(01)00129-X

Logan, K. (2011). Hulu.com or NBC? Streaming Video versus Traditional TV A Study of an Industry in Its Infancy. *Journal of Advertising Research, 51*, 276 – 287. doi:10.2501/JAR-51-1-276-287

Lu, Z., Xia, H., Heo, S., & Wigdor, D. (2018). *You watch, you give, and you engage: A study of live streaming practices in China.* Paper presented at the Conference on Human Factors in Computing Systems - Proceedings.

Manager Online. (2020). Retrieved from https://mgronline.com/business/detail/9630000006345

McColl, J., Canning, C., McBride, L., Nobbs, K., & Shearer, L. (2013). It's Vintage Darling! An exploration of vintage fashion retailing. *The Journal of The Textile Institute, 104*(2), 140-150. doi:10.1080/00405000.2012.702882

McKnight, D. H., & Chervany, N. L. (2001). What Trust Means in E-Commerce Customer Relationships: An Interdisciplinary Conceptual Typology. *International Journal of Electronic Commerce, 6*(2), 35-59. doi:10.1080/10864415.2001.11044235

Melewar, T. C., Foroudi, P., Gupta, S., Kitchen Philip, J., & Foroudi Mohammad, M. (2017). Integrating identity, strategy and communications for trust, loyalty and commitment. *European Journal of Marketing, 51*(3), 572-604. doi:10.1108/EJM-08-2015-0616

Meta Platform Terms. (2022). Retrieved from https://developers.facebook.com/terms/

Miguens, M. J., & Vázquez, E. (2017). An integral model of e-loyalty from the consumer's perspective. *Computers in Human Behavior, 72*. doi:10.1016/j.chb.2017.02.003

Mikians, J., Gyarmati, L., Erramilli, V., & Laoutaris, N. (2012). *Detecting price and search discrimination on the Internet*.

Milgrom, P. (2000). Putting Auction Theory to Work: The Simultaneous Ascending Auction. *Journal of Political Economy, 108*(2), 245-272. doi:10.1086/262118

Mir, I., & Rehman, K. u. (2013). Factors affecting consumer attitudes and intentions toward user-generated product content on YouTube. *Management & Marketing, 8*(4), 637-654.

Mittal, D., & Agrawal, S. R. (2016). Price transparency reflects assurance and reliability. *Journal of Retailing and Consumer Services, 31*, 43-51. doi:https://doi.org/10.1016/j.jretconser.2016.03.004

Moqbel, M., Charoensukmongkol, P., & Bakay, A. (2013). Are US academics and professionals ready for IFRS? An explanation using technology acceptance model and theory of planned behavior. *Journal of International Business Research, 12*(2), 47.

Nicholson, C. Y., Compeau, L. D., & Sethi, R. (2001). The role of interpersonal liking in building trust in long-term channel relationships. *Journal of the Academy of Marketing Science, 29*(1), 3-15. doi:10.1177/0092070301291001

Nitzl, C., Roldan, J. L., & Cepeda, G. (2016). Mediation analysis in partial least squares path modelling, Helping researchers discuss more sophisticated models. *Industrial Management and Data Systems, 116*(9), 1849-1864. doi:10.1108/IMDS-07-2015-0302

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed. ed.). New York: McGraw-Hill.

Okumus, B., Bilgihan, A., & Ozturk, A. B. (2016). Factors Affecting the Acceptance of Smartphone

Diet Applications. *Journal of Hospitality Marketing & Management, 25*(6), 726-747. doi:10.1080/19368623.2016.1082454

Ong, B. S. (2011). Online Shoppers' Perceptions and Use of Comparison-Shopping Sites: An Exploratory Study. *Journal of Promotion Management, 17*(2), 207-227. doi:10.1080/10496491.2011.553789

Orth, U. R., & Green, M. T. (2009). Consumer loyalty to family versus non-family business: The roles of store image, trust and satisfaction. *Journal of Retailing and Consumer Services, 16*(4), 248-259. doi:https://doi.org/10.1016/j.jretconser.2008.12.002

Pantano, E., Rese, A., & Baier, D. (2017). Enhancing the online decision-making process by using augmented reality: A two country comparison of youth markets. *Journal of Retailing and Consumer Services, 38*, 81-95. doi:https://doi.org/10.1016/j.jretconser.2017.05.011

Reynolds, T. J., & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research, 28*(1), 11-31.

Richard, J., & Guppy, S. (2014). Facebook: Investigating the influence on consumer purchase intention. *Asian Journal of Business Research, 4*, 1-15. doi:10.14707/ajbr.140006

Rubio, N., Villaseñor, N., & Yagüe, M. J. (2017). Creation of consumer loyalty and trust in the retailer through store brands: The moderating effect of choice of store brand name. *Journal of Retailing and Consumer Services, 34*, 358-368. doi:https://doi.org/10.1016/j.jretconser.2016.07.014

Ruiz-Mafe, C., Martí-Parreño, J., & Sanz-Blas, S. (2014). Key drivers of consumer loyalty to Facebook fan pages. *Online Information Review, 38*(3), 362-380. doi:10.1108/OIR-05-2013-0101

Sasatanun, P., & Charoensukmongkol, P. (2016). Antecedents and outcomes associated with social media use in customer relationship management of Thai microenterprises. *International Journal of Technoentrepreneurship, 3*(2), 127-149. doi:https://doi.org/10.1504/IJTE.2016.080258

Sebald, A. K., & Jacob, F. (2019). What help do you need for your fashion shopping? A typology of curated fashion shoppers based on shopping motivations. *European Management Journal*. doi:https://doi.org/10.1016/j.emj.2019.08.006

Shah, R., & Goldstein, S. M. (2006). Use of structural equation modeling in operations management research: Looking back and forward. *Journal of Operations Management, 24*(2), 148-169. doi:https://doi.org/10.1016/j.jom.2005.05.001

Shankar, V., Inman, J. J., Mantrala, M., Kelley, E., & Rizley, R. (2011). Innovations in Shopper Marketing: Current Insights and Future Research Issues. *Journal of Retailing, 87*, S29-S42. doi:https://doi.org/10.1016/j.jretai.2011.04.007

Shareef, M. A., Dwivedi, Y. K., Kumar, V., Davies, G., Rana, N., & Baabdullah, A. (2019). Purchase intention in an electronic commerce environment. *Information Technology & People, 32*(6), 1345-1375. doi:10.1108/ITP-05-2018-0241

Statista.com. (2020). Retrieved from https://www.statista.com/statistics/1007161/thailand-number-

monthly-web-visits-shopee-quarter/

Steinbrück, U., Schaumburg, H., Duda, S., & Krüger, T. (2002). *A picture says more than a thousand words: photographs as trust builders in e-commerce websites*. Paper presented at the CHI '02 Extended Abstracts on Human Factors in Computing Systems, Minneapolis, Minnesota, USA. https://doi.org/10.1145/506443.506578

Sun, Y., Shao, X., Li, X., Guo, Y., & Nie, K. (2019). How live streaming influences purchase intentions in social commerce: An IT affordance perspective. *Electronic Commerce Research and Applications, 37*, 100886. doi:https://doi.org/10.1016/j.elerap.2019.100886

Swan, J., & Nolan, J. (2013). Gaining Customer Trust: A Conceptual Guide for the Salesperson. *Journal of Personal Selling & Sales Management, 5*, 39-48. doi:10.1080/08853134.1985.10754400

Swan, J. E., Bowers, M. R., & Richardson, L. D. (1999). Customer Trust in the Salesperson: An Integrative Review and Meta-Analysis of the Empirical Literature. *Journal of Business Research, 44*(2), 93-107. doi:https://doi.org/10.1016/S0148-2963(97)00244-0

Tang, J. C., Venolia, G., & Inkpen, K. M. (2016). *Meerkat and Periscope: I Stream, You Stream, Apps Stream for Live Streams*. Paper presented at the Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems, San Jose, California, USA.

Thomas, M., V, K., & Monica, M. (2018). Online Website Cues Influencing the Purchase Intention of Generation Z Mediated by Trust. *Indian Journal of Commerce & Management Studies, 9*, 13. doi:10.18843/ijcms/v9i1/03

Twing‐Kwong, S., Gerald Albaum, L., & Fullgrabe, L. (2013). Trust in customer‐salesperson

relationship in China's retail sector. *International Journal of Retail & Distribution Management, 41*(3), 226-248. doi:10.1108/09590551311306264

Vázquez, R., del Rio, A. B., & Iglesias, V. (2002). Consumer-based Brand Equity: Development and Validation of a Measurement Instrument. *Journal of Marketing Management, 18*, 27-48. doi:10.1362/0267257022775882

Wagner, T. (2007). Shopping motivation revised: a means-end chain analytical perspective. *International Journal of Retail & Distribution Management, 35*(7), 569-582. doi:10.1108/09590550710755949

Wang, M., & Li, D. (2020). What motivates audience comments on live streaming platforms? *PLOS ONE, 15*(4), e0231255. doi:10.1371/journal.pone.0231255

Wang, X., & Wu, D. (2019) Understanding User Engagement Mechanisms on a Live Streaming Platform. In*: Vol. 11589 LNCS. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* (pp. 266-275).

Wongkitrungrueng, A., & Assarut, N. (2020). The role of live streaming in building consumer trust and engagement with social commerce sellers. *Journal of Business Research, 117*, 543-556. doi:https://doi.org/10.1016/j.jbusres.2018.08.032

Wongkitrungrueng, A., Dehouche, N., & Assarut, N. (2020). Live streaming commerce from the sellers' perspective: implications for online relationship marketing. *Journal of Marketing Management, 36*(5-6), 488-518. doi:10.1080/0267257X.2020.1748895

Wood, L. (2000). Brands and brand equity: definition and management. *Management Decision, 38*(9), 662-669. doi:10.1108/00251740010379100

Workman, J. E., & Kidd, L. K. (2000). Use of the Need for Uniqueness Scale to Characterize Fashion Consumer Groups. *Clothing and Textiles Research Journal, 18*(4), 227-236. doi:10.1177/0887302X0001800402

Yeo, J. (2017). The Weekend Effect in Television Viewership and Prime-Time Scheduling. *Review of Industrial Organization, 51*(3), 315-341. doi:10.1007/s11151-016-9545-9

Yüksel, H. (2016). Factors Affecting Purchase Intention in YouTube Videos. *Bilgi Ekonomisi ve Yönetimi Dergisi, 11*, 33-47.

Yun, Z.-S., & Good, L. (2007). Developing customer loyalty from e-tail store image attributes. *Managing Service Quality, 17*, 4-22. doi:10.1108/09604520710720647

Zeithaml, V. (1988). Consumer Perceptions of Price, Quality and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing, 52*, 2-22. doi:10.1177/002224298805200302

Zhang, J., Wang, Y., & Vassileva, J. (2013). SocConnect: A personalized social network aggregator and recommender. *Information Processing & Management, 49*(3), 721-737. doi:https://doi.org/10.1016/j.ipm.2012.07.006

Zhou, M., Zhao, L., Kong, N., Campy, K. S., Qu, S., & Wang, S. (2019). Factors influencing behavior intentions to telehealth by Chinese elderly: An extended TAM model. *International Journal of Medical Informatics, 126*, 118-127.

doi:https://doi.org/10.1016/j.ijmedinf.2019.04.001

Zhou, R., Khemmarat, S., Gao, L., Wan, J., & Zhang, J. (2016). How YouTube videos are discovered and its impact on video views. *Multimedia Tools and Applications, 75*(10), 6035-6058. doi:10.1007/s11042-015-3206-0

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