A Sequential Serial Mediation Model of Brand Image, Customer Experience and Smart in-store Technology Application on Repurchase Intention: The Case of a Counter-brand Skincare Products

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Abstract

The purpose of this study was to analyze the sequential serial mediation model of brand image and customer experience and the adoption of smart in-store technologies to determine the impact of perceived usefulness and ease of use on the desire to repurchase intention skincare products from another brand. A total of 250 online surveys were conducted using random sampling. Qualified respondents were selected as well as 194 questionnaires being returned for analysis. The statistical software and advanced statistical software were used to analyze and interpret data. The statistics used were the descriptive statistics, which consisted of percentage, mean, and standard deviation and the inferential statistics, which consisted of sequential serial mediation model were examined. The results of the study found that neither ease of use nor perceived usefulness were strongly related to the intention to repurchase cosmetic and counter brand products. Similarly, the results found that there was no significant positive relationship between the use of smart in-store technologies (reported ease of use and perceived usefulness) and repurchase intention when brand image was used as a mediator. Moreover, the results of this study found that customer experiences played a critical role in the interaction between in-store technology adoption and repurchase intention. Lastly, this study found that a sequential serial mediation effected among ease of use, perceived usefulness, and repurchase intention for cosmetic and counter brands. As a result, this work provides both theoretical and managerial implications for improving the customer experiences in omnichannel marketing and retailing.

Keywords: smart in-store technology adoption, customer experience, repurchase intention

บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อวิเคราะห์แบบจำลองอนุกรมของภาพลักษณ์ของแบรนด์ ประสบการณ์ของลูกค้า และการประยุกต์ใช้เทคโนโลยีภายในร้านอย่างชาญฉลาดในความตั้งใจซื้อซ้ำ: กรณีศึกษาผลิตภัณฑ์บำรุงผิวจากเคาน์เตอร์ โดยเก็บข้อมูลแบบสอบถามออนไลน์ทั้งหมด 250 ชุด โดยใช้วิธีการสุ่มตัวอย่างแบบพิจารณา ซึ่งจากแบบสอบถามทั้งหมด มีผู้ตอบแบบสอบถามที่ผ่านการคัดกรองให้ตอบแบบสอบถามได้จำนวน 194 ชุด การวิเคราะห์ข้อมูลและตีความข้อมูล เพื่อทดสอบสมมติฐานสถิติเชิงพรรณนา ประกอบด้วย ร้อยละ ค่าเฉลี่ย และส่วนเบี่ยงเบนมาตรฐาน และสถิติเชิงอนุมาน ประกอบด้วย การวิเคราะห์แบบจำลองอนุกรม วิเคราะห์ข้อมูลจากโปรแกรม สถิติทางสังคมศาสตร์ และโปรแกรมสถิติทางสังคมศาสตร์ขั้นสูง ผลการวิจัยพบว่าการรับรู้ความง่ายในการใช้งานและการรับรู้ถึงประโยชน์จากการใช้งานไม่มีผลโดยตรงกับความตั้งใจในการซื้อ เครื่องสำอางและผลิตภัณฑ์ เคาน์เตอร์แบรนด์ซ้ำ ในทำนองเดียวกันผลการวิจัยชี้ให้เห็นว่าการนำเทคโนโลยีอัจฉริยะมาใช้ในร้านค้า (รายงานความสะดวกในการใช้งานและการรับรู้ถึงประโยชน์) ในฐานะตัวแปรคั่นกลางระหว่างการรับรู้ความง่ายในการใช้งาน และการรับรู้ถึงประโยชน์จากการใช้งาน เพื่อสร้างภาพลักษณ์ให้กับแบรนด์เพิ่มไม่มีอิทธิพลต่อความตั้งใจในการซื้อเครื่องสำอาง และผลิตภัณฑ์ เคาน์เตอร์แบรนด์ซ้ำ แต่ในทางกลับกันประสบการณ์ของผู้บริโภคมีอิทธิพลต่อความตั้งใจในการซื้อเครื่องสำอาง และผลิตภัณฑ์ เคาน์เตอร์แบรนด์ซ้ำในฐานะตัวแปรคั่นกลาง จากผลการวิจัยสรุปได้ว่าผลของแบบจำลองความสัมพันธ์ แบบอนุกรมระหว่างการรับรู้ความง่ายในการใช้งานและการรับรู้ถึงประโยชน์จากการใช้งานมีผลทางอ้อมต่อความตั้งใจ ในการซื้อเครื่องสำอางและผลิตภัณฑ์ เคาน์เตอร์แบรนด์ซ้ำ ท้ายที่สุดนี้ผลการวิจัยในครั้งนี้เป็นประโยชน์ในเชิงทฤษฎี และเชิงการจัดการสำหรับการปรับปรุงประสบการณ์ของลูกค้าในด้านการตลาดแบบหลายช่องทางและการค้าปลีก

คำสำคัญ: การนำเทคโนโลยีอัจฉริยะมาใช้ในร้านค้า ประสบการณ์ของผู้บริโภค ความตั้งใจกลับมาซื้อซ้ำ

Introduction

Nowadays, brands need to take care of smart in-store technologies and adapt to survive in the competitive market, especially in the new normal time during COVID -19. As a result, retailers need to provide a specialized offering to meet consumers' individual needs and provide a smooth and consistent experience (Roy et al., 2020). The current study fills a knowledge gap in consumer technology adoption by developing and implementing a store customer experience strategy that is consistent with the concept of a frictionless customer experience.

According to previous studies, smart technologies in stores, such as the Internet, smartphones, QR code, e-payment, e-wallets, holographic screens, and others, are the digital innovations that improve the shopping experience and service (Grewal et al., 2020). Several studies have found that the consumer's experience with the technology and the level of usability influence the adoption of in-store technologies (Weber & Badenhorst-Weiss, 2018). Moreover, perceived usefulness is the critical facet of in-store technology adoption, and perceived usefulness and usability are the most important factors in in-store technology adoption (Alam et al., 2021).

In the last five years, the market for cosmetics and skin care products in Thailand has become very exciting. The Thai skin care and color cosmetics industry is one of the largest in Southeast Asian countries. For example, dermatological products in Thailand had a market value of approximately 92 billion Thai Baht in 2019. In comparison, oral cosmetics had a market value of about 25.6 billion Thai Baht. This year, the market for beauty and personal care products in Thailand was estimated at about two hundred billion Thai baht (Statista, 2023). In 2027, the market is expected to reach $3,530.00 million, representing a compound annual growth rate (CAGR) of 10.03 percent from 2023 to 2027. In 2023, the user penetration will be 11.8% and is expected to reach 15.4% by 2027 (Statista, 2023).

In the face of competitive marketing and the dynamic development of high technology, customer experience becomes the fundamental component of omnichannel retail marketing, which has been overlooked in previous research. Few scholars have investigated the critical role of customer experience as the second mediator of customers repurchase intention for beauty products. Therefore, this study examines the sequential serial mediation of brand image and customer experience to determine the influence of perceived usefulness and ease of use on the desire to repurchase skin care products from a particular brand. Although most research applies multiple theories to explain consumer behavior in repurchase intention through S-O-R theory and the expectation-confirmation model (ECM), some researchers apply other theories related to technological advances in the digital age. This study fills the research gap by applying the Technology Acceptance Model (TAM), Social Cognitive Theory (SCT), and Expectation-Confirmation Model (ECM) in this study to gain a deeper understanding of user motivation and the influence of customer experience on customer repurchase intention.

Research Objective

The purpose of this study is to examine the serial mediation effect of brand image and customer experience and the adoption of smart in-store technologies to determine the influence of perceived usefulness and ease of use on the desire to repurchase skin care products. This research applied the Technological Acceptance Model (TAM), Social Cognitive Theory (SCT), and the Expectation-Confirmation Model (ECM) to gain a better comprehension of consumer motivation and the significant influence of customer experience on repurchase intention.

Review Literature

Technology acceptance model (TAM)

According to Davis (1989), this model is based on the notion that perceived usefulness and ease of use or perceived ease of use are the most important determinants of intention to use a technology (Davis, 1989). Previous research has shown that the more user-friendly a new technology appears, the greater the intention to use it, and the greater the intention to use it, the greater the actual consumer behavior. Nevertheless, many researchers have cited the Technology Acceptance Model (TAM) because of the simplicity of the model without considering the actual applications in their studies, which may mislead young researchers and deprive them of the opportunity to apply the theoretical model in a real organizational context. TAM is that this model excludes external factors that influence technology adoption, such as demographic variables, user motivation, organizational strategies or policies, etc. (Ajibade, 2018). TAM are limited in explaining perceived ease of use and usefulness as customer attitudes.

Thus, if there is an external factor in the model, other theories should be used for further consideration. Conversely, it could be argued that measuring behavior is extremely problematic because hidden personality traits often motivate behavior. Similarly, TAM is used to explain about the organizational level perspective, which is not focused on individual interactions. (Ajibade 2018). Ajibade (2018) recommends that TAM is not appropriate for use with technology in business, academia, and organizations, but is primarily designed to study human cognition.

Social cognitive theory (SCT)

According to social cognitive theory (SCT), this theory is used to explain how individuals acquire and maintain certain habits and also serves as a basis for intervention strategies. Previous studies have shown that SCT suggests that personal and situational factors influence behavior through a self-regulatory process in which people make evaluations and form cognitive beliefs. According to presence research, people who are confronted with a sophisticated shopping mechanism evaluate their ability to understand it and the potential outcomes of its use (Sun et al., 2020).

However, few studies have used and integrated this theory in the retail and marketing literature to explain customer behavior in the age of the digital revolution. SCT examines the socioeconomic determinants of human ideas, feelings, and behaviors by establishing reciprocal, triadic, and interactive causal relationships among people, actions, and the environment. From this point of view, SCT is an effective model to overcome some limitations of TAM in terms of technology use. Therefore, this theory SCT has been applied as one of the theories in in-store research to explain the marketing in the present study. However, SCT is loosely organized and based entirely on the complicated interaction between a person's behavior and the environment in which they live.

Expectation-confirmation model (ECM)

This study applied the expectation-confirmation model (ECM) proposed by Bhattacherjee (2001) to study post-purchase customer behavior and post-purchase technology acceptance to bridge the gap of TAM and SCT. In addition, ECM has been used to examine consumer behavior from a marketing perspective, including customer attitudes toward in-store technology, e-commerce, and online repurchase intentions (Polcharoensuk & Yousapornpaiboon, 2017).

However, there are few scholars who have integrated ECM to study customer experiences supported by the technology acceptance model (TAM) and social cognitive theory (SCT) in the cosmetics and countertop brand industries. To understand how the adoption of smart in-store technologies affects customers repurchase intentions, this study focused on customers who used and purchased skin care products from a counter brand that adopted smart in-store technologies (SIST). In this study, the ECM was used as a theoretical basis to construct the behavioral pattern of in-store smart technology adoption in relation to repurchase intention, integrated with TAM and SCT, both of which were used to explain customers' attitudes and internal and external factors related to the adoption of new technologies.

Conceptual Framework Hypothesis testing

Usability and Repurchase Intention

Usability or perceived ease of use refers to the attitude of consumers who accept and perceive new technologies and innovations as replacements for existing processes or previous products and services. Then, the acceptance of a new innovation from the perspective of its usefulness is evaluated based on its usability. Numerous studies have shown that usability of use has a direct impact on consumer purchase intention in various industries, such as beauty and cosmetics, apparel, and retail (Moslehpour et al., 2018). Moslehpour et al. (2018) found that usability had a positive, significant impact on purchase intention in a panel of Taiwanese consumers in online stores. Similarly, Hossain et al. (2018) found that customer satisfaction with quick response codes (QR) had a positive effect on the direct and indirect purchase intention of e-commerce customers. Accordingly, the hypothesis for this research is as follows:

> *H1a: Usability has a positive and direct influence on repurchase intention for counter-brand skin care products.*

Perceived usefulness and Repurchase Intention

Perceived usefulness mentions consumers' attitudes toward new technology or innovation that the technology can improve their productivity. Davis (1989) asserts that a high level of perceived helpfulness indicates a positive linkage between process use and achievement. Perceived usefulness explains the extent to which a customer is able to use a system or technology without difficulty or effort. In addition, the perceived usefulness of online shopping could change consumers' attitudes toward purchasing (Wang & Hsiao, 2012). In different research contexts, perceived usefulness has been found to have a significant impact on behavioral intentions to adopt new technologies, such as quick response codes (QR), augmented reality technology (AR) (Alam et al., 2021), digital signage. Previous research has confirmed that consumers or potential customers who are convinced that these information technologies are beneficial to their daily lives, brand, company, retail store, or online business may be encouraged to adopt these technologies for themselves. Accordingly, the hypothesis for this research is as follows:

> *H2a: Perceived usefulness have a positive and direct influence on repurchase intention for counter-brand skin care products.*

Brand Image and Repurchase Intention

Brand image is consumers' perception, belief, and attitude toward a brand that is remembered through association with the brand (Kotler & Keller, 2012). Therefore, a better and positive brand image influences purchase decisions. In addition, the perception of a brand image may also result from experience. Previous studies have found that consumers with higher brand image perceptions are more likely to repurchase products and services (Lien et al., 2015). Therefore, a strong brand image of counter-brand skin care products mediates the relationship between smart in-store technology (SIST) application adoption (usability and perceived usefulness) and repurchase intention for counter-brand skin care products. Accordingly, the hypothesis for this research is as follows:

> *H1b: Brand Image of counter-brand skin care products mediates the relationship between usability and repurchase intention for counter-brand skin care products.*
>
> *H2b: Brand Image of counter-brand skin care products mediates the relationship between perceived usefulness and repurchase intention for counter-brand skin care products.*

Customer experience and Repurchase Intention

Customer experiences are described as the consequences of interactions between consumers and companies in the form of physical, psychological, sensory, sensory, or emotional experiences (Jain et al., 2017). Several studies have defined customer experiences as consumers' feelings during direct and indirect interactions with companies (Park et al., 2017). Moreover, customer experience includes information acquisition, purchase, consumption, satisfaction, and other related responses (Becker & Jaakkola, 2020). In addition, some researchers have explained online customer experience as the interaction between consumers and businesses through online channels, for example, searching for information, subscribing to current information, and purchasing products or services (Bilgihan et al., 2016). In addition, an excellent customer experience creates a significant competitive advantage over competitors to provide the company with a profit, build a lasting relationship with consumers (Lemon & Verhoef, 2016), and encourage consumers to repurchase. Accordingly, the hypothesis for this research is as follows:

> *H1c: Customer experience positively mediates the relationship between usability and repurchase intention for counter-brand skin care products.*
>
> *H2c: Customer experience positively mediates the relationship between perceived usefulness and repurchase intention for counter-brand skin care products.*

Repurchase intention and Serial Mediation Model

Repurchase intention refers to consumers' need to buy a product or service again and again in a given time. In omnichannel retailing, repurchase intention refers to the consumer's or user's intention to select and use the same online retailer again after having some experiences with the service through online, offline, and omnichannel channels (Pasaribu & Pasaribu, 2021). In addition, there is a wealth of research examining the use of in-store technologies in relation to consumer behavior in omnichannel retailing. For example, Keni (2020) found that in-store technology adoption has positive direct effects on consumers. Both consumer-perceived usefulness and perceived convenience impact consumer purchase intentions via consumer satisfaction and trust in e-commerce websites. Previous research has shown that perceived usefulness has a positive impact on online trust and repurchase intention among online businesses (Lukito & Ikhsan, 2020). Accordingly, the hypothesis for this research is as follows:

H1d: *The impact of usability on repurchase intention for counter-brand skin care products is sequential mediated by brand image and customer experience.*

H2d: *The impact of perceived usefulness on repurchase intention for counter-brand skin care products is sequential mediated by brand image and customer experience. Hence, the conceptual model shown in Figure 1 was created and examined as follows*
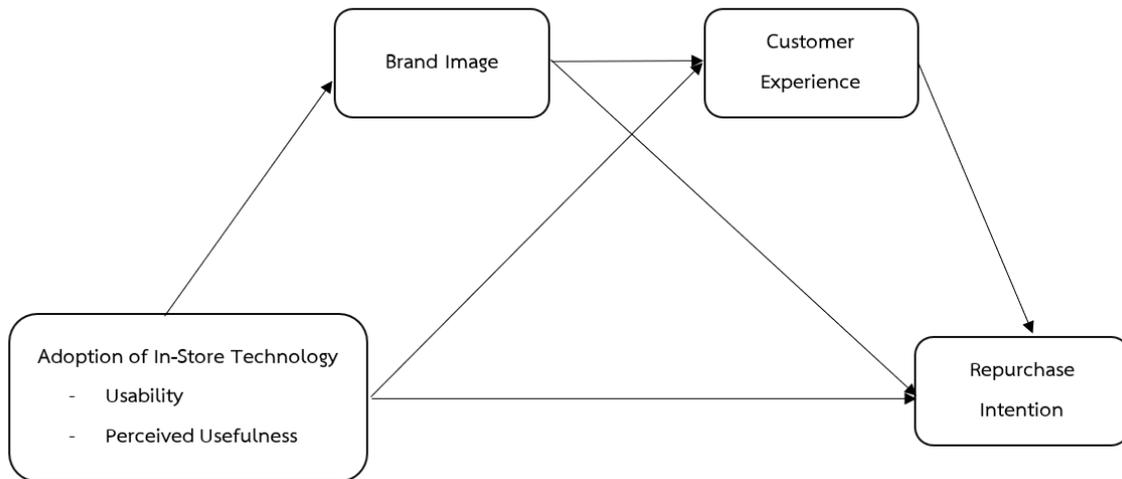

Figure 1: Conceptual Framework

Research Methodology

Research Design

In this study, quantitative analysis using covariance-based structural equation modeling was conducted to examine and confirm the existing theory (Dash & Paul, 2021). In addition, the research data were analyzed and evaluated using statistical software. This includes both descriptive and inferential data for the purpose of validating the sequential serial mediation model. In this study, the regression bootstrapping technique was used in Hayes' PROCESS module (Model 6). This study was conducted using an online survey as the research instrument. The sample studied was customers who used and purchased skin care products from a counter brand which adopted Smart In-Store Technology (SIST). Between April 1 and May 1, 2022, data were collected from customers who used and purchased skin care products from a countertop brand with smart in-store technology (SIST). 300 online surveys were distributed to selected study participants via selected online channels such as social media platforms (Facebook, Instagram, Line applications). At the end of data collection, 250 responses were returned, of which 194 were considered valid for hypothesis analysis. The data showed that there were issues with an unqualified sample that had not passed the screening questions.

As a general rule, the minimum number of observations for an observable construct should be about 5 times per measured variable (Kock & Hadaya, 2018). If this study contains 38 observations, the sample size should be approximately 190 (38*5). For this study, an online survey was sent to approximately 300 individuals, of which approximately 250 returned, and 194 usable records were collected for this study.

Research Instruments

There was a total of 34 items introduced in the first part of the questionnaire. These items were rated on a seven-point Likert scale, with 1 representing "strongly disagree" and 7 representing "strongly agree" (7). The items included in the study were empirically validated. Table 1 lists the items of the questionnaire. Davis (1989) used four measures to assess usability. The perceived usefulness of eight items was one of the independent factors. Davis (1989) used perceived uncertainty as an independent variable. The first mediator was the brand image, which included three items; the scale was adopted from Martínez et al (2009) and Alić et al. (2020). The second mediator was customer experience, which consisted of three subscales with a total of 34 components. The scale was developed using the scales of Maklan and Klaus (2011) and Lemon and Verhoef (2016). Hellier et al. (2003) used four items to assess repurchase intention.

Data Collection

The five retail brands were selected primarily because they specialize in using Smart In-Store Technology (SIST) for private label skin care products and are more familiar with it than other brands. For the purposes of this study, the five brand names are not identified for confidentiality reasons (hereafter referred to as Brand A, Brand B, and Brand C, Brand D, and Brand E). A non-probability sample was used in this study, with an emphasis on using judgment sampling. In addition, screening questions were added to confirm the qualification of the sampling unit. Due to the coronavirus pandemic (COVID -19), primary data were collected via an online link to the questionnaire sent to the sampling unit via Facebook Messenger, Instagram Messenger, LINE, and so on. In addition, the researchers asked the respondents to distribute the questionnaire in their own communities. Then, a total of 250 questionnaires were sent out and participants were selected from the 194 completed questionnaires.

Data analysis

In this study, research data were analyzed and evaluated using statistical software. Both descriptive and inferential statistics were used in this study. First, descriptive statistics are performed and mean, and standard deviation are calculated. Then, inferential statistical techniques such as bivariate correlation, internal consistency, factor analysis, exploratory and confirmatory factor analysis approach, and bootstrapping method are used for mediation analysis. Then, serial mediation studies were conducted using Hayes' PROCESS macro model 6 (Hayes et al, 2017) to conduct the expected study of mediation models A and B, as shown in Figures 1, 2, and 3. As recommended by Hayes, the models were evaluated with 5,000 bootstrap samples and a random number seed to allow for repeated bootstrapping across studies (Hayes et al, 2017). It is worth noting that bootstrapping is a nonparametric statistical technique that does not depend on the assumption of a normal distribution (Hayes et al, 2017). Preacher and Hayes (2008). claim that bootstrapping is the most critical assumption.

Although SEM Amos can also be used to analyze the serial mediation model, there are many limitations and reasons not to use it in this study. First, previous researchers have claimed that using SEM Amos requires a relatively large sample size to calculate and interpret the hypotheses. The results should include at least 200 samples (Kline, 2015), which is not compatible with the conditions of the present study. However, in confirmatory factor analysis, the minimum sample size is about 150 samples, which is the standard threshold (Muthén & Muthén, 2002). In addition, SEM AMOS requires special software or additional statistical knowledge to use a certain command about syntax, which is complicated for researchers who do not have in-depth knowledge of statistics in analyzing the multiple mediation model, compared to PROCESS Macro, which is convenient and simple for research in analyzing multiple mediation in a few steps without knowledge of syntax (Hayes et al., 2017), with the model already created and represented by numbers, which is easy for all researchers and analyzes the results in a short time and reliably. The software was developed by Hayes et al (2017), who was the first researcher to propose this program and discussed the alternative technique of serial mediation analysis using a software package that can be used by anyone and analyzed in a short time compared to SEM AMOS.

Results and Discussion

Research Results

This study employed exploratory factor analysis (EFA) techniques, which are typically used to determine the structural model of a data set and to examine its internal reliability. In addition, EFA was used in this study to examine common method bias (CMB) using the one-factor Harman test. Due to the cross-sectional design of the study, there is a possibility of common method bias (CMB)-an unintentional variation in the measurement of the constructs-that could affect the reliability of the scientific results. Therefore, it was necessary to test for the possible presence of CMB bias prior to data analysis in the present study (Lindell & Whitney, 2001). In this study, an experiment was conducted to detect CMV bias: the use of the SPSS version of Harman's single factorial test. Therefore, in the present study, we first conduct Harman's single factorial test via principal component analysis using exploratory factor analysis in the statistical software. In the present study, all 34 Likert scale items in Harman's single factorial test converged to a single non-rotated factor, and the single factor explained more than 43.73% of the total variance, which is below the threshold of 50% (Kock & Hadaya, 2018) indicating that CMB bias was not a problem in this study, according to the results.

Then followed the further method of exploratory factor analysis, the results of which yielded a Kaiser-Meyer-Olkin value of 0.93, which is above the industry standard of 0.8. (Hutcheson & Sofroniou, 1999). The results indicate that the sample size was appropriate. The present study also examined the standardized factor loading to assess the reliability of each item. As a rule of thumb, the value of the standardized factor loading for each factor should be above the standard value of 0.5. The measured items that are below 0.5 are then cut out before further hypothesis testing (Samuels, 2017). According to the results, out of the total 38 items in the first part of the questionnaire, 10 items were cut out, namely Perceived Usefulness (PU) No. 3, 4, 5, 6, Customer Experience (CEPM) No. 6, Results Orientation (CEOF) No. 4, Moments of Truth (CEMT) No. 2, 3, Product Experience (CEPE) No. 4, and Repurchase Intention (RI) No. 4, and the remaining items were presented in Table 1 Exploratory Factor Analysis. Therefore, the data were divided into five groups based on the following main constructs: Thus, the remaining items for hypothesis testing in this study are 28 items.

Table 1 Exploratory Factor Analysis

Constructs/ Variables	Usability (1)	Perceive usefulness (2)	Brand image (3)	Customer experience (4)	Repurchase intention (5)
Construct 1: Usability					
US1	0.78				
US2	0.57				
US3	0.74				
US4	0.92				
Construct 2: Perceive usefulness					
PU1		0.85			
PU2		0.68			
PU7		0.66			
PU8		0.79			
Construct 3: Brand Image					
BI1			0.76		
BI2			0.85		
BI3			0.52		
Construct 4: Customer ExperiencePeace of mind					
CEPM1				0.55	
CEPM2				0.66	
CEPM3				0.66	
CEPM4				0.61	
CEPM5				0.60	
Outcome focus					
CEOF1				0.53	
CEOF2				0.52	
CEOF3				0.97	
Moments of-truth					
CEMT1				0.52	
CEMT4				0.53	
CEMT5				0.53	
Product experience					
CEPE1				0.67	
CEPE2				0.69	
CEPE3				0.60	
Construct 5: Repurchase Intention					
RI1					0.67
RI2					0.70
RI3					0.60

In the present study, a validity test was conducted according to the recommendations of Campbell and Fiske (1959), who proposed two criteria for determining the construct validity of a test: Convergent validity and discriminant validity. Convergent validity is the degree of certainty that the indicators of an attribute can measure it reliably. In contrast, discriminant validity refers to the degree to which measurements of different attributes are unrelated. Generally, confirmatory factor analysis is used to assess construct validity in structural equation modeling (Jöreskog, 1969). Then confirmatory factor analysis (CFA) is another statistical tool used in structural equation modelling that allows the examination of the factor structure of a set of observable or predictive variables (Schuberth et al., 2018). This approach was used to hypothesize relationships among variables in the measurement model. In this study, model fit is assessed using the absolute values of Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI) and Adjusted Goodness-of-Fit (AGFI), Standardized Root Mean Square Residual (SRMR) and incremental construct validity; Comparative Fit Index (CFI), which are presented in Table 3 below;

Table 2 Confirmatory Factor Analysis Fit indices

Model	CMIN	DF	CMIN/DF	CFI	GFI	AGFA	SOME	RMS
Initial model	1562.53	499	3.13	0.78	0.66	0.57	0.85	0.11
Adapted model	1514.27	467	3.24	0.78	0.66	0.55	0.87	0.06

Notes: CFI=The comparative fit index, GFI=The goodness-of-fit index, AGFI=The Adjusted Goodness-of-Fit Index, SRMR=Standardized Root Mean Square Residual, RMSEA=The Root Mean Square Error of Approximation

Table 3 shows the results of the original model and the fitted model. According to previous research, the process of model modification is emphasized by the information needed to create appropriate models (Chou & Bentler, 2002).

Despite the presence of a common belief from a basic statistical perspective, exploratory factor analysis (EFA) is a technique to test for dimensionality to determine if the items adopted in the survey as a group have a similar response pattern to understand the interrelationship of these variables (Hair et al., 2014). Confirmatory factor analysis (CFA) is a statistical method used to validate the construct structure of the observed variables. CFA can provide valuable information about the fit of the data to the specific theoretical constructs and measurement model, and is likely to provide clues about possible inadequacies of some items before hypothesis testing is conducted (Hancock, 2001).

However, recent research has shown that CFA techniques alone are not sufficient to identify the best-fitting model, especially in scale-fitting research that relates to the fact that a study's scales were conducted in a different context, such as a different country, culture, or setting. For example, Orcan (2018) has shown that translation errors may occur in an adaptation study when attempting to translate a questionnaire or scale from the original language to the new language, and that the use of CFA alone could result in a situation that differs from the actual situation, causing the model to bias the results (Orcan, 2018). Therefore, the study shows that a good-fitting CFA model for a dataset does not necessarily mean that it is the optimal model, which is consistent with the reasoning of a previous study (Orcan, 2018). Scale-fitting studies may experience structural changes due to cultural differences and item translation.

In addition, a dataset may fit multiple CFA models, so it would be better to conduct an EFA first to account for possible cultural differences. If no EFA is conducted, a researcher cannot test a second model because the first model fits the data. Therefore, it is essential to first perform an EFA to identify the potential error.

After that, the reliability and discriminant validity of the instruments was determined. The results are summarized in Table 4 Composite reliability (CR), the square root of the average variance extracted (AVE) (boldface). Furthermore, Fornell and Larcker's threshold (1981) is frequently employed to evaluate the degree of shared variance among the latent variables in the model employed in this study. The average variance extracted (AVE) and the composite reliability (CR) can be used to evaluate the convergent validity of the measurement model, as shown in Table 4, which depicts the correlation between the main strut and the results of AVE and CR. Hair et al. (2014) recommended an acceptable range of CR greater than or equal to 0.70 and an acceptable range of AVE greater than or equal to 0.5. Consequently, as shown in Table 4, all constructs satisfy the standard threshold. Similarly, discriminant validity can be assessed using the Fornell-Larcker test procedure by comparing the proportion of variance captured by the construct (AVE) with the variance shared with other constructs. Therefore, the values of the square root of AVE for each construct must be greater than their respective correlations. If not, the values of AVE for each construct should exceed the squared correlation between the constructs. Thus, according to the results in Table 4, most constructs are discriminant validity.

Table 3 Composite reliability (CR), the square root of the average variance extracted (AVE) (boldface) and correlations between constructs

	(1)	(2)	(3)	(4)	(5)
(1) Usability	**0.89**				
(2) Perceived usefulness	0.78**	**0.77**			
(3) Brand image	0.57**	0.75**	**0.77**		
(4) Customer experience	0.60**	0.81**	0.71**	**0.79**	
(5) Repurchase intention	0.49**	0.65**	0.60**	0.72**	**0.81**
Mean	5.94	5.91	6.04	5.73	5.81
S.D.	0.96	0.83	0.59	0.76	0.88
Internal consistency	0.85	0.89	0.75	0.93	0.76
CR	0.87	0.80	0.62	0.91	0.70
AVE	0.79	0.59	0.59	0.62	0.65

Hypothesis testing Results

The statistical results of the study are shown in Figures 2 and 3. The summary and results of the hypothesis tests are presented in Table 5. They show that the direct and indirect effects of usability and perceived usefulness on repurchase intention for counter-brand skin care products are influenced by brand image and customer experience as follows;

The direct and indirect effect of usability on repurchase intention for skin care products

The direct effects of each construct are shown in Figure 2. The findings indicate that usability has no substantial direct connection with the desire to repurchase. (β = 0.05, SE = 0.06; 95 per cent CI 5 (-0.06, 0.17) for opposite brand skin care products. Similarly, brand image has no direct impact on repurchase intention (β = 0.22, SE = 0.21, 95 per cent CI 5 (-0.08, 0.52) for opposite brand skin care products. However, the results showed that usability was directly positively related to the brand image (β = 0.35, SE = 0.04; 95 per cent CI 5 (0.28, 0.42). Similarly, the effect of brand image on customer experience for counter brand skincare items (β = 0.70, SE = 0.07; 95 per cent confidence interval [CI] 5 (0.56, 0.85), while the effect of customer experience on repurchase intention (β = 0.68, SE = 0.09; 95 per cent CI 5 (0.51, 0.85). Therefore, H1a was rejected. In addition, the indirect effects of each construct are shown in Table 5. There is no indirect effect of a brand image between usability and intention to repurchase opposite brand skincare products at (β = 0.08, SE = 0.06; 95% CI 5 (-0.03, 0.19). In comparison, customer experience had a full mediation effect between usability and intention to repurchase opposite brand skin care products (β = 0.15, SE = 0.05, 95% CI 5 (0.08, 0.26), H1b was negated while H1c was accepted.
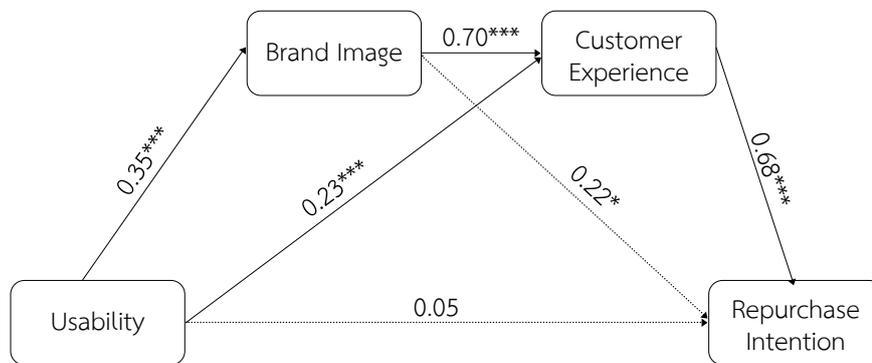

Figure 2: Sequential serial mediation model of brand image and customer experience between usability and repurchase intention

Finally, the results suggest that the indirect effect of usability on repurchase intention for counter-brand skin care products via the serial mediating effect of brand image and customer experience is a significant positive relationship (β = 0.16, SE = 0.03; 95% CI 5 (0.11, 0.22). This supports the serial mediation model. H1d was thus accepted.

The direct and indirect effect of perceived usefulness on repurchase intention for a counter-brand skin care product

Figure 3 summarizes the direct consequences of each construct. For counter-brand skin care products, perceived usefulness is not directly related to repurchase intention (β = 0.14, SE = 0.10, 95% CI 5 (-0.06, 0.33). Similarly, a brand image had no direct effect on repurchase intention for opposite brand skin care products (β = 0.18, SE = 0.11; 95 per cent CI 5 (-0.04, 0.41). There was still a relationship between perceived usefulness and brand image (β = 0.54, SE = 0.03; 95 per cent CI 5 (0.47, 0.61) and a direct relationship between customer experience (β = 0.59, SE = 0.06; 95 per cent CI 5 (0.48, 0.70). There is a similar effect of brand image on customer experience for counter-brand skin care products. The effect of customer experience on repurchase intention for counter-brand skin care products is 0.62 (β = 0.30, SE = 0.08; 95 per cent confidence interval CI 5 (0.14, 0.45), and there is a similar effect of brand image on customer experience for counter-brand products.H2a was then rejected.

Table 5 summarizes the indirect effects of each construct. The results show that there is no indirect effect of brand image on perceived usefulness and intention to repurchase opposite brand skin care products (β = 0.10, SE = 0.09; 95 per cent CI 5 (-0.07, 0.28). At the same time, the indirect effect of customer experience showed a significant positive impact and a complete mediation relationship between perceived usefulness and intention to repurchase opposite brand skin care products (β = 0.36, SE = 0.07; 95 per cent confidence interval [CI]: 5 (0.23, 0.51). Consequently, H2b was negated, whereas H2c was accepted.
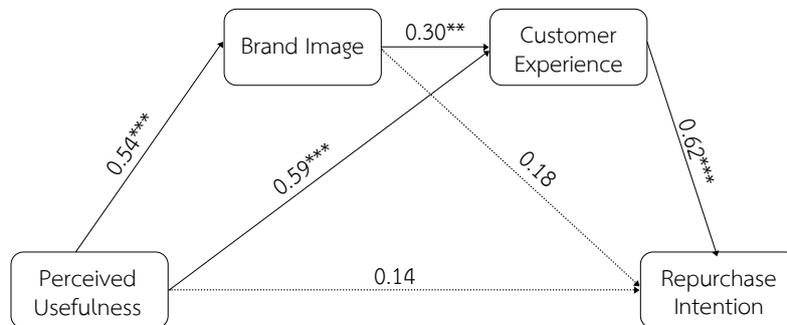

Figure 3: Sequential serial mediation model of brand image and customer experience between perceived usefulness and repurchase intention

Finally, the results indicated that the indirect impact of perceived usefulness on repurchase intention for counter-brand skin care products via the serial mediating effect of brand image and customer experience was a positively significant relationship (β = 0.10, SE = 0.03; 95 percent CI 5 (0.04, 0.17). This supports the credibility of the serial mediation model. Thus, H2d was accepted.

Table 5 Hypothesis testing results

Hypothesis	Relationship	Beta (β)	SE	Bootstrapping 95% Confidence Interval		Results
				Lower	Upper	
H1a:	usability ➜ repurchase intention	0.05	0.06	-0.06	0.17	Rejected
H1b:	usability ➜ brand image ➜repurchase intention	0.08	0.06	-0.04	0.19	Rejected
H1c:	usability ➜ customer experience ➜ repurchase intention	0.15*	0.05	0.08	0.26	Accepted
H1d:	usability ➜ brand image ➜customer experience ➜repurchase intention	0.17*	0.03	0.11	0.23	Accepted
H2a:	perceived usefulness ➜ repurchase intention	0.14	0.10	-0.6	0.33	Rejected
H2b:	perceived usefulness ➜ brand image ➜ repurchase intention	0.10	0.09	-0.07	0.28	Rejected
H2c:	perceived usefulness ➜ customer experience ➜repurchase intention	0.36*	0.07	0.23	0.51	Accepted
H2d:	perceived usefulness ➜ brand image customer experience ➜ repurchase intention	0.36*	0.03	0.04	0.17	Accepted

Note: Standard significance levels were applied as follows *Significance level at p < 005, **Significance level at p < 0.01, ***Significance level at p < 0.001 (Hair et al., 2014).

Discussion and Conclusions

This study examined the direct and indirect effects of usability and perceived benefit fulfillment on repurchase intention for skin care products of another brand via brand image and customer experience. In addition, this study examined a sequential serial mediation model supported by integrated ECM, SCT, and TAM. Nevertheless, there is strong evidence that usability and perceived usefulness have a direct impact on repurchase intention when it comes to technology adoption in many industries (Sun & Chi, 2018). However, in the present study, no significant direct or indirect relationship was found between usability and perceived usefulness in terms of consumers' intention to repurchase skin care products from another brand and no mediating effect via brand image. When consumers adopted technology, only usability or a mediator was found to increase consumer repurchase intention (Asnawati et al., 2022). The model of the present study then examined an additional aspect, customer experience. The results indicated that customer experience acted as a mediator for both usability and perceived usefulness in consumers' propensity to repurchase skin care products from another brand. Similarly, Amoako et al. (2019) found that in the hospitality industry, user experience was the most important construct between consumer adoption of technology and intention to repurchase. Nonetheless, the findings of this study fill a research gap in the retail marketing field. In addition, previous research indicates that serial mediation helps predict outcome variables in complex interactions and examines domino effects in consumer behavior where one treatment triggers a chain of responses (Tofighi et al, 2019). Finally, in contrast to previous research, the results showed that brand image and customer experience have a sequential, serial mediation effect on repurchase intention for skin care products of a counter brand in the relationship between in-store technology adoption, usability, and perceived usefulness. While Khan et al. (2019) discovered that brand image in the form of brand equity is critical in mediating the relationship between social media marketing activities (SSMMAs) and customer response, this model was monitored by smart social media marketing activities (SSMMAs) such as connections, postings, and customizations to improve customer experience and reduce consumer resistance to technology adoption. Therefore, this study recommends that customer experience is another important issue to think about when building and maintaining long-term relationships with customers and brands in retail.

Limitation and Future studies

This study has some drawbacks that may go unnoticed. The scope of the study is limited to smart technologies in stores, such as QR codes, e-payment, e-wallets, and e-coupons. When this study investigated the COVID -19 pandemic, it decided to use only social media to disseminate the survey. This included brand community groups of counter-brand users on Facebook pages, as well as the Line Mobile software and Instagram direct messenger. If you want to learn more about emerging technologies in the beauty and counter-brand industries, as well as in other retailers, you might look into mobile apps, augmented reality (AR) and virtual reality (VR) in the apparel, sports or consumer products industries. Another major shortcoming of this study is that it is based on quantitative research. Therefore, the results can only be interpreted as an overall picture of the views of a single group. A different methodology could then be used to examine the success of each brand's economic sustainability strategies, such as facilitated mediation, mediated facilitation, or similar approaches. This leads to some additional recommendations for the studies that will follow this study. They should use the mix approach to gain a deeper understanding of customer actions, and the new customer group should be broadened and specified rather than limited to demographic characteristics. The next step in developing an effective marketing plan is to identify the group of customers who have similar lifestyles, such as Generation C, Fashionistas, Beauty Block Leaders, or Key Opinion Leaders.

Research Implications

Theoretical implications

This work adds to the existing literature on digital marketing on digital and retail marketing by filling the gap in studying the complexity of consumer behavior and the customer journey in the digital age by using Hayes and PROCESS's macro statistical software model for data analysis. This study validates the latest retail customer experience metrics. Despite the increasing importance of customer experience (CX) from the business perspective, there are few empirical research studies that apply and investigate the customer experience model. The results show not only the importance of usability and perceived usefulness in retail stores, but also the importance of considering the in-store customer experience to improve brand image and the use of smart in-store technology (SIST) on repurchase intent in retail stores. In addition, the results of such a study can also answer and prove the importance of the concept. Frictionless customer experience is on everyone's lips nowadays. Moreover, the results of this study showed that ECM, SCT and TAM can be used to explain the sequential serial mediation effect of brand image and customer experience in the relationship between customer usability and usefulness on repurchase intention in in-store technology in the cosmetics and counter brand industry in Thailand.

Managerial Implications

According to the results of the main hypothesis, this study offers many benefits to marketers and retail managers in improving repurchase intention, especially for private label skin care products, by focusing more on the creation and development of brand image and customer experience. First, the results suggest that the development of customer repurchase intention is not only focused on promoting consumer perceived ease of use and benefits of technology in skin care stores or technological support, but also on developing and promoting brand image and customer experience in stores to achieve consumer desired outcomes. Consequently, stakeholders should consider public relations methods when building brand image through various market channels and marketing communications, such as owned media (corporate websites, brand social media platforms, smart in-store technology (SIST) applications and etc.) and paid media (online advertising, Google Business and etc.). These methods include demonstrating and communicating about the brand award, brand certification, and brand image that the brand has ever received or had in the past. The goal of these methods is to create a brand image that is not only focused on sales, but also conveys high quality and high standards through holistic marketing. In addition, creating a customer experience is critical to communicating the value of the brand to our customers, not only through the perceived ease of use of the technology in the store, but also through each component of the brand strategy when they are in the store such as sensory marketing and personal selling techniques. In this case, stakeholders could develop an in-store sensory marketing strategy to enhance the shopping experience, such as using ambient scents to increase recognition and recall. In addition, marketers should train their sales staff to be not only knowledgeable but also friendly and provide a good shopping experience for customers by recommending products and technologies that are appropriate for them. In addition, gathering customer feedback is another way to improve the customer experience by developing and improving customer service, which in turn affects repurchase intent. Then, the brand should establish a brand loyalty program to collect this feedback.

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