

FACTORS INFLUENCING CUSTOMER'S INTENTION TO USE SELF-COLLECTION SERVICE VIA AUTOMATED PARCEL LOCKER IN BANGKOK METROPOLITAN AREA, THAILAND

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ABSTRACT

Automated Parcel Locker (APL) offers an effective and efficient way to respond to increase in volumes of parcel delivered from the rising of E-commerce. Prior research in Self-service Technology (SST) and self-collection service are integrated. Conceptual model is proposed which combine Technology acceptance model and other external variables. The study found that Trialability, Perceived Ease of Use, Perceived Usefulness have positive impact on Attitude, and Attitude has positive impacts on Intention to Use APL. While Technology Anxiety, Perceived Control, and Transaction Cost have no significant impact to Intention to use APL. This study offers valuable theoretical and managerial implications. Logistics service providers should concentrate on their marketing force and customize their services to encourage customer to try on this service and promote the service in such a way that make them feel ease of use and get them aware of service advantages over home delivery.

Keywords: *Intention to use, Technology Acceptance model, Structural Equation Model, Automated parcel locker, self-collection service, last mile deliveries, consumer behavior*

บทคัดย่อ

ผู้รับพัสดุอัตโนมัติ เป็นการบริการที่มีประสิทธิภาพและประสิทธิผลในการตอบสนองกับความต้องการส่งพัสดุที่เพิ่มมากขึ้น ซึ่งเป็นผลมาจากพาณิชย์อิเล็กทรอนิกส์ โดยงานวิจัยนี้ได้มีการค้นคว้าและรวบรวมงานวิจัยที่เกี่ยวข้องในกลุ่มเทคโนโลยีการบริการตนเอง และการรับพัสดุด้วยตนเอง แบบจำลองโมเดลในงานวิจัยฉบับนี้ได้รวมทฤษฎีการยอมรับเทคโนโลยี และตัวแปรอื่นๆ ที่เกี่ยวข้อง ซึ่งผลจากงานวิจัยพบว่าความสามารถในการลองใช้งาน การรับรู้ความง่าย การรับรู้ประโยชน์ ส่งผลเชิงบวกอย่างมีนัยยะสำคัญทางสถิติต่อทัศนคติ และ ทัศนคติส่งผลเชิงบวกอย่างมีนัยยะสำคัญทางสถิติต่อเจตคติการใช้งานผู้รับพัสดุอัตโนมัติ ทั้งนี้ผลจากงานวิจัยฉบับนี้ยังพบว่า ความกังวลใจต่อเทคโนโลยี การรับรู้ถึงการควบคุมพฤติกรรม และต้นทุนธุรกรรม ไม่ส่งอิทธิพลต่อเจตคติการใช้งาน ทั้งนี้ผลจากงานวิจัยฉบับนี้สามารถนำมาปรับใช้กลยุทธ์ทางการตลาด เช่น การให้ทดลองใช้งาน หรือการโฆษณาเพื่อเน้นย้ำการบริการถึงกลุ่มลูกค้าเป้าหมาย ถึงความง่ายในการใช้งานและประโยชน์ของผู้รับพัสดุอัตโนมัติ

คำสำคัญ: เจตคติการใช้งาน โมเดลการยอมรับเทคโนโลยี โมเดลสมการโครงสร้าง ผู้รับพัสดุอัตโนมัติ การรับพัสดุด้วยตนเอง การขนส่งขั้นตอนสุดท้าย พฤติกรรมผู้บริโภค

Received May 10, 2021; Revised May 23, 2021; Accepted May 31, 2021

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INTRODUCTION

Recently, E-commerce marketplaces have seen an increase in freight volume worldwide, with products ranging from high-end to low-end consumer items. Other than changing in retail landscape, it also changes consumer activities. In delivery, the increasing volume of goods has created significant logistical issues for delivery businesses at the last mile (Morganti, Dablanc, & Fortin, 2014). Home delivery becomes costly and creates first time failure deliveries which incur cost to carriers as well as opportunity cost for customers such as waiting time, late delivery, or self-collection at the carrier hub (Moroz & Polkowski, 2016). To address increased volumes of delivered and returned goods, rising customer expectations, and intensifying market competition, merchants and logistics service providers are investigating and implementing novel solutions such as self-service solutions (SSTs). Automated parcel lockers (APL) are being implemented to address these difficulties as an alternative to home delivery. This service enables carriers to deliver parcels to nearby destinations such as supermarkets, office buildings, condominiums, transportation hubs, or post offices. Typically, customers designate their preferred locations and are notified when deliveries arrive. They can then get the delivery using the OTP from the mobile application at any time (Chen, White, & Hsieh, 2020)

LITERATURE REVIEW AND THEORETICAL DISCUSSION

Under SSTs, various studies are conducted on customer's acceptance in different innovation such as self-service checkouts, mobile service, banking self-service, web-based self-service, AI, and automated vehicles (De Luca & Di Pace, 2014; H.-J. Lee, Jeong Cho, Xu, & Fairhurst, 2010; Lu, Chou, & Ling, 2009; Proença & Antonia Rodrigues, 2011; Yuen, Wang, Ng, & Wong, 2018). Most of the papers use innovation theory-based model such as Technology Acceptance Model (TAM), Innovation Diffusion Technology (IDT), Diffusion of Innovation (DOI) and technology planned behavior (TPB).

The characteristics that influence APL acceptance are also extensively examined in alternate delivery systems. Numerous scholars have examined the aspects that influence consumers' inclination to use and attempted to analyze and understand why customers are eager to use it. In practice, firms frequently employ SSTs to organize self-service streams. Distinct industries, academic communities, and consumers have all paid attention to these diverse technical instruments. SSTs reduce service time and costs (Irtema, Ismail, Borhan, Das, & Alshetwi, 2018), location convenience, (Blut, Wang, & Schoefer, 2016), service efficiency, and enjoyment (Chen, 2019).

Trialability

Wang, Yuen, Wong, and Teo (2018) provided theoretical framework to examine consumers' decision to adopt using collection delivery points. The framework is based on Innovation Diffusion theory (IDT) indicating five factors influencing customers' intention; which are relative advantage, compatibility, complexity, trial ability and observability. Among five variable, relative advantage and compatibility are significant positive influence on customers' intention to use, in which, trialability has lower significant positive relationship. In contrast to

complexity, it has a negative influence on customer's intention and observability on customer's intention is insignificant.

Numerous studies stated that if the user got the opportunity to try a new technology, this would be decreasing a feeling of fear concerning the usage of the technology by customers (Al-Ajam & Nor, 2013; Barua, Aimin, & Hongyi, 2018; Nor, Shanab, & Pearson, 2008). From the analysis, trialability can be used as a strategic tool, to help the participants through the different stages of the behaviors change process (Strömberg, Rexfelt, Karlsson, & Sochor, 2016). However, a study of intention to use APL from X. Wang et al. (2018) showed that trialability of an APL system are perceived as attractive attributes that contribute to the consumers' favorable attitude of towards the system, but they are not sufficiently strong to invoke the consumers' adoption intention. Many studies have empirically tested in understanding the association between trialability and the intention to use the system (Petschnig, Heidenreich, & Spieth, 2014)), they found that trialability has a positive impact on the intention to use the technology. In addition, trialability has also positively impact perceived usefulness and perceived ease of use (Y.-H. Lee, Hsieh, & Hsu, 2011). It concluded that the higher users perceive trialability, the higher the level of the usefulness and ease of use. As such, we hypothesis that:

H1: Trialability has positive impact on Perceived ease of use

H2: Trialability has positive impact on Perceived usefulness

Technology Acceptance Model

Technology Acceptance Model (TAM) is widely used in technological adoption context, for examining the acceptance, in which, this gives a high degree of prediction power regarding to technology use (Chen & Chao, 2011). The most important factors to explain the use are perceived east of use and perceived usefulness. The wide application of importance and application of TAM have been examined in many studies in several fields such as transportation mode and other self service technology (Blut et al., 2016; Chen, 2019; Demoulin & Djelassi, 2016; Wang, Wong, Teo, Yuen, & Li, 2019; Yuen, Wang, Ma, & Wong, 2019). From the psycho-socio perspective, a study on behavioral theories was conducted by X. Wang, Yuen, Wong, & Teo (2019) to explore customer cognitions and affects which explain how customers think and how they feel when using APL. Cognitive service attributes are convenience, functionality, design and security, where affects consist of address expectations (convenience, fun, design, security), feel (enjoy, assurance, customized) which all impact intention to use. The literature review on individuals using technology also reveals the ease with which users can handle the technology positively affects their attitude toward it. Thus, we adopt this and hypothesize that:

H3: Perceived ease of use has positive effect on Perceived usefulness

H4: Perceived ease of use has positive effect on Attitude towards APL

H5: Perceived usefulness has positive effect on Attitude towards APL

H6: Attitude towards APL has positive effect on Intention to use APL

Perceived Control (PC)

Theory of planned behavior (TPB) is used to examine the factors influenced customer intention in many areas: transport mode use, SST intention to use and specifically to parcel lockers

(Bjerkan, Sund, & Nordtømme, 2014; Chen & Chao, 2011; Moták et al., 2017; Zailani, Iranmanesh, Masron, & Chan, 2016; Zoellick, Kuhlmeiy, Schenk, Schindel, & Blüher, 2019). The main component of the TPB consist of own attitudes, subjective norms and perceived behavioral control, intention, and behavior (C-F.Chen & Chao, 2011). Perceived control has been considered as a strong determinant to adopting of SST (Barua et al., 2018). It is an individual 's confidence to command the technology to obtain the desired consequence from technology. Numerous studies showed that control is significant factor and the more control over SST, the more the use of SST (Barua et al., 2018; Demoulin Nathalie & Djelassi, 2016). Therefore, we hypothesis that:

H7: Perceived control has positive effect on Intention to use APL

Technology Anxiety

Technology anxiety (TA) is a significant factor influencing customers decision to engage, adopt and try on new technology (Venkatesh, Morris, Davis, & Davis, 2003). It is conceptualized as the level of anxiety experienced by individual confronted with the decision to use a technological innovation. The association between anxiety and usage or intention to use has been studied intensively and findings indicated that higher levels of anxiety are associated with lower levels of usage (Demoulin & Djelassi, 2016; Jia, Wang, Ge, Shi, & Yao, 2012; Meuter, Bitner, Ostrom, & Brown, 2005). Chen et al. (2020) also stated that technology anxiety has a strong negative impact on intention to use APL. Moreover, it is reported that younger consumers reduced the effects of technology anxiety but for older consumers, promotions and communications can be the strategies to encourage the intention to use. We adopt this position and hypothesis that:

H8: Technology anxiety has negative effect on Intention to use APL

Transaction Cost

Transaction cost is significant factor for users considering whether to use SST, in which a study from Lule, Omwansa, and Waema (2012) reveals that transactions cost impact the attitude towards technology and adoption. This also showed that it has significant influence on an adoption of SST (Lu et al., 2009). Specifically on APL aspect, Yuen et al. (2019) showed that transaction cost has significant impact on intention to use in which, transaction cost associated to the cost of searching, learning and effort cost related to the use of APL. We, thus, hypothesis that:

H9: Transaction cost has negative effect on Intention to use APL

Figure 1 displays the relationships between the constructs that form the conceptual model.

METHODOLOGY

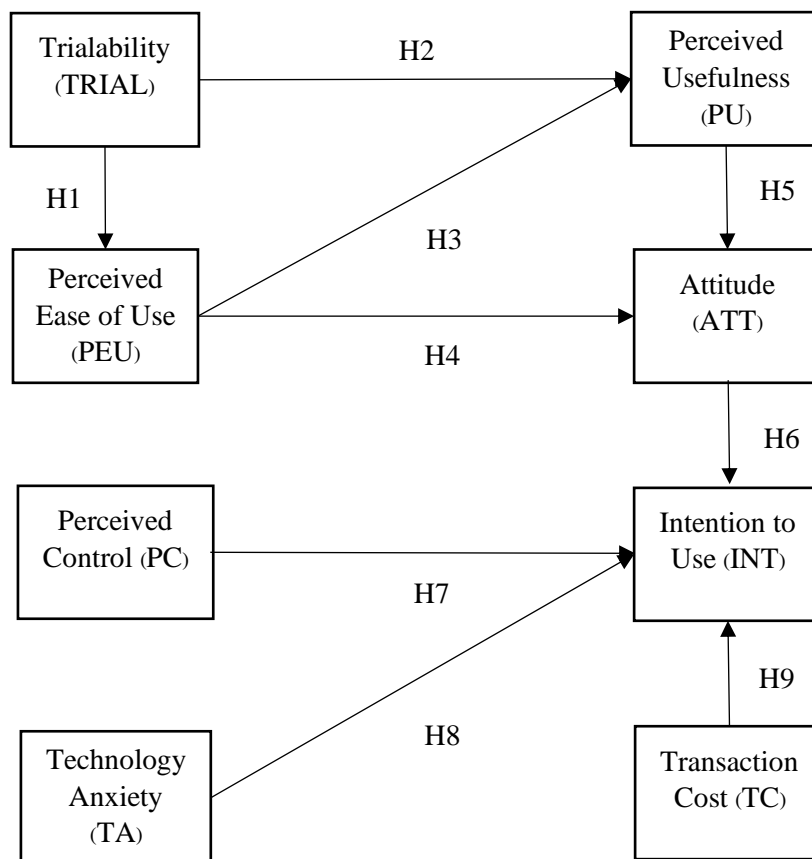
To validate the model, this study uses structural equation modeling to validate the research model and hypotheses, as it is deemed the most appropriate method. This methodology examines correlations between multidimensional latent components. The sections that follow describe the measurement items used to operationalize the constructs, the survey and administration techniques, and the demographics of respondents.

Measures

The questionnaire had a series of measures that assessed respondents' attitudes toward APL and their desire to use it. To validate the model, this study uses structural equation modeling, as it is judged the most appropriate way. Correlations between multidimensional latent components are investigated using this methodology. The sections that follow describe the measurement items used to operationalize the constructs, the survey and administration techniques, and the demographics of respondents. First part is about the construct items designed to test the degree of the respondent's agreement with the items. Multi-item scales from previous research were employed to test the hypotheses, which are illustrated in Appendix.

The constructs of the model consist of eight constructs: Perceived usefulness, Perceived ease of use, Perceived control, Attitude towards APL, Trialability, Technology anxiety, Transaction cost and Intention to use.

Figure 1: Conceptual Framework and Hypotheses



Along with the aforementioned indicators, the questionnaire included a sociodemographic section that included gender, age, marital status, education, occupation, and income. Respondents were asked to score their intentions and the extent to which they concurred with a specific statement. The framework was evaluated and validated by industry experts. Prior to

questionnaire distribution, validity was tested using face validity, which involves asking experts to determine whether the generated survey measures the intended content.

The questionnaires were presented to experts from relevant field for suggestion for improvement by using item-objective congruence (IOC). In this process, the questionnaire was checked by three experts. The items that had scores lower than 0.5 were revised. On the other hand, the items that had scores higher than or equal to 0.5 were reserved.

The reliability of the questionnaire was determined to ensure that the responses collected through the instrument were reliable and consistent. A pilot study is used to correct any lack of the required quality, to ensure the clarity of the questionnaire items, and to eliminate wording problems (Sekaran & Bougie, 2016). It is significant to conduct a pilot study in the case of online surveys as there will not be a person present to clarify any ambiguities (Bryman, 2016). The questionnaire was tested with 40 respondents that are not in the sample group. Following the data collecting procedure, reliability refers to the internal consistency of constructs and their capacity to produce the same results under identical conditions. Hair (2009) claim that reliability values between 0.6-0.7 are acceptable for exploratory research. The Cronbach's alpha coefficients of the remaining items range from 0.803 to 0.898. All these alpha coefficients are greater than 0.7, which is the minimum cut off value (Y. Chen et al., 2018), the result indicates good reliability. According to the pre-test, the Cronbach's Alpha was greater than 0.8, therefore, this questionnaire was reliable.

During January 2021, data were collected using a web-based survey. A total of 500 questionnaires were distributed using Google Form to both offline and online channels. It provides a number of advantages for online surveys, including the reduction of missing data and the elimination of interviewer effect, which may influence response. The sample frame was primarily designed to target clusters in the Bangkok area between the ages of 18 and 60, who have independent mobility and the ability to make their own decisions, as well as those who had made an online purchase in the last three months. The item completion rate was high in this survey, at 100%, as all respondents were required to complete all questions in order to submit their responses.

RESULTS AND DISCUSSION

Respondents Demographics

The participants of the survey were 500 responses, in which there were 39.6% of male and 60.4% of female. While 73% are single and the rest are married. Among the respondents, the highest age group was age between 26-35, which is accounted for 34.4%, followed by age group of 18-25, 36-45, 46-55, and more than 55 respectively (34.2%, 24.6%, 6% and 1%).

For individual income, most of the responses are having an individual income less than THB 15,000. Where most respondents have education level below bachelor's degree (41%) and individual income less than THB 15,000 (36.8%), followed by THB 15,000-30,000 range, which is almost 28%. From occupation aspect, the highest percentage is full time employee, almost 55%, followed by student (34%).

Result

We begin to study the structural mode after determining the measurement model with satisfactory result. The structural Equation Modelling was employed to state the relationships between the constructs. The relationships are demonstrated by using one-headed arrows in the path diagrams. The model was analyzed using AMOS and the maximum likelihood estimate (MLE) method. Multiple criteria were used to interpret the Structural Regression Model. Overall fit of the hypothesized to the data of the current study is employed and numerous indices were examined. There were CMIN/DF, GFI, CFI, RMR, and RMSEA and their criteria presented in table 1. The chi-square value was significant (194.115, $p > 0.05$), indicating that the model predicted relations that differed considerably from those seen in the data. The normed chi-square score was 1.109, indicating that the data were reasonably well fitted. Consistently, GFI = 0.965 suggested a reasonably acceptable fit of the model to the data, while NFI = 0.941 suggested that interest improves fit by 95% compared to the null model. CFI = 0.994 and RMSEA = 0.015 demonstrated a reasonably excellent fit of the target model to the fit of the independent model.

Hypothesis testing results are also shown in table 2. Attitude ($\beta = 1.061$, $p < 0.01$) has significant positive impact to intention to use. Whereas the rest do not have significant impact on Intention of use: Perceived Control, Technology Anxiety, and Transaction Cost. According to the hypothesis presented, results revealed that H1 and H2 are supported. This means that Trialability has significantly positive impact on perceived usefulness ($\beta = 0.684$, $p < 0.01$) and perceived ease of use ($\beta = 0.773$, $p < 0.01$). In Trialability, providing a trialability information, and make them feel that it's easy to experience the function will increase Perceived usefulness and Perceived Ease of use. However, from standardized regression weight, this indicated that Trialability has better impact on Perceived ease of use than Perceived usefulness. This means that as Trialability increases by one standard deviation, Perceived usefulness increases by 0.684 standard deviation and Perceived ease of use increase by 0.773 standard deviation.

Table 1: Goodness of Fit and Results

Model Fit Criteria	Name	Acceptable Threshold	Interpretation	Result
X ²	Model Chi-square	p-value > 0.05	Assess overall fit	0.11
CMIN/DF	Chi-square/ DF	≤3.5 to 0 (perfect fit)	Assess overall fit and the discrepancy between sample and fitted covariance matrices	1.109
GFI	Goodness of Fit	≥0.9	The proportion of variance accounted for by the estimated population covariance.	0.957
NFI	(non) Normed Fit index	>0.95	The model of interest improves the fit by 95% relative to the null model.	0.933
CFI	Comparative Fit Index	≥0.9	Comparison of the fit of a target model to the fit of an independent model	0.993
RMSEA	Root Mean Square Error of Approximation	≤ 0.08	A parsimony-adjusted index. Values closer to 0 represent a good fit.	0.015

H3 is supported since Perceived ease of use has significantly positive impact on Perceived usefulness ($\beta = 0.299$, $p < 0.01$). This means Perceived ease of use increases by one standard deviation, it increases Perceived usefulness by 0.299 standard deviation. Moreover, Perceived ease of use has significant positive impact on Attitude ($\beta = 0.246$, $p < 0.05$). For Perceived ease of use, it's important to ensure that customers must feel that it is easier to get parcel from APL, application must be user-friendly, and providing how to use is the essential key. Moreover, Perceived usefulness has significant positive impact on Attitude ($\beta = 0.641$, $p < 0.01$). This means that while perceived ease of use increases by one standard deviation, Attitude toward APL increases by 0.246 standard deviation, while perceived usefulness improves by 0.613 standard deviation. As a result, H4 and H5 are accepted. To maximize perceived utility, it's critical to ensure and identify that customers will not be need to wait for delivery, as they would with home delivery. Additionally, it is beneficial to emphasize the carbon emissions savings associated with this delivery method and the decreased likelihood of damaged items.

In addition, Attitude has significantly positive impact ($\beta = 1.061$, $p < 0.01$), thus H6 is supported. The result can be interpreted that as Attitude towards APL increases one standard deviation, Intention to use APL increases by 1.061 standard deviation. This indicates that when a customer believes that receiving parcels from APL is faster than home delivery, more convenient, and that this method is a good idea to adopt, it increases the likelihood of recommending APL to friends, considering APL as a future delivery option, choosing to try this new service, and possibly using this for future delivery.

Table 2: Examining Results of Hypothesized Causal Effect of the Constructs

Hypothesis	Path	Estimate	Estimate		S.E.	C.R.	P-Value	Hypothesis Results
			Unstandardized Estimate	Standardized Estimate				
H1	TRIAL → PEU	1.165	0.773	0.114	10.23	***	Supported	
H2	TRIAL → PU	0.848	0.684	0.125	6.784	***	Supported	
H3	PEU → PU	0.247	0.299	0.074	3.348	***	Supported	
H4	PEU → ATT	0.212	0.246	0.091	2.315	0.021	Supported	
H5	PU → ATT	0.641	0.613	0.119	5.4	***	Supported	
H6	ATT → INT	0.968	1.061	0.105	9.24	***	Supported	
H7	PC → INT	0.06	0.057	0.242	0.247	0.805	Not supported	
H8	TA → INT	-0.262	-0.224	0.534	-0.49	0.624	Not supported	
H9	TC → INT	0.239	0.242	0.273	0.876	0.381	Not supported	

Note: TRIAL: Trialability, PEU: Perceived Ease of use, PU, Perceived Usefulness, ATT: Attitude, PC: Perceived Control, TA: Technology Anxiety, TC: Transaction cost, INT: Intention to use. *** $p < 0.001$, ** $p < 0.05$

H7, H8, and H9 are not supported as Perceived control doesn't significant impact Intention to use ($\beta=0.06$, $p=0.805$), Technology anxiety doesn't also significant impact Intention to use ($\beta=-0.262$, $p=0.624$). Lastly, Transaction cost doesn't impact significantly on Intention of use ($\beta=0.239$ with $p=0.381$).

To examine the amount of variance in each latent variable that was explained by the mode, the squared multiple correlation (R^2) coefficients for latent variables were inspected. The result showed that hypothesized model explained statistically significant amount of variance for each latent variable. The R^2 for Perceived usefulness, perceived ease of use, Attitude and Intention to use are 0.87, 0.60, 0.69, 0.62 respectively, and therefore indicate, for instance, that the Attitude error variance is about 69% of the Attitude variance. In other words, 69% of the variance in Attitude is due to its 2 predictors, namely Perceived usefulness, and perceived ease of use. The overall results show that all R^2 values meet the conditions for the cut-off value of 0.10 (Quaddus & Hofmeyer, 2007).

Result Discussions

The main purpose of the present study is also to investigate what factors influence Intention to use APL. Research findings reported in this study suggest that Attitude towards APL is a direct predictor of intention to use APL, similar to Wang et al. (2018), whereas Trialability, Perceived ease of use and Perceived usefulness are indirect influence Intention to use via Attitude. This can be interpreted that Trialability, Perceived ease of use, and Perceived usefulness are perceived as attractive attributes that contribute to favorable attitude towards APL. This can be concluded that the more the ability to try on this new service, the more they feel that it is useful service and easy to use/understand. However, this finding is contradicted to the previous study from Y.-H. Lee, Hsieh, and Hsu (2011) that Trialability has negative significant to Perceived Usefulness, due to perhaps the difference in technology (LMS) used and year.

Perceived ease of use and Perceived usefulness have significant positive impact on Attitude, which is similar to numerous studies in APL and SST fields (Blut et al., 2016; Chen, 2019; Y.-H. Lee et al., 2011; Yuen et al., 2019; Zhou et al., 2020). However, the intensity of the effect of Perceived Usefulness on Attitude is greater in this study than the effect of Perceived Ease of Use. This could be because the majority of respondents had not yet encountered application or service; they were only aware of it through the instruction given. This indicates that the more satisfied they are with the ease with which this APL service is used/understood and the benefits it provides over home delivery, the more satisfied they are with this new service and believe it is a superior idea to utilize. One of the critical components of Perceived Usefulness is the customer's perception that they are not required to wait for the parcel to be delivered to their home, but can go and pick it up whenever it is convenient for them. This finding is similar to Collier, Moore, Horky, and Moore (2015) in the context that it safe time and customers can have more efficiently experience when they have SST in place. Finally, attitude has a significant impact on the intention to use APL. This is consistent with other studies on TAM in a variety of disciplines, including SST and transportation behavioral change. (Blut et al., 2016; Collier, Sherrell, Babakus, & Horky, 2014; Curran, Meuter, & Surprenant, 2003; Y.-H. Lee et al., 2011; Lin & Chang, 2011; Lule et al., 2012; Rauniar, Rawski, Yang, & Johnson, 2014). This means

that the more satisfied potential consumers are with APL's service, the more likely they are to utilize it, or that this will increase their intention to use APL.

However, contrary to the proposed hypothesis, the result indicates that perceived control has no effect on intention to use APL, in contrast to a study on intention to use SST, in which perceived control has a significant effect on intention to use (Demoulin & Djelassi, 2016). This means that beliefs about internal and external limits on behavior, such as the assumption that customers can choose their own pickup time or location, are unrelated to intention to purchase.

Next, Technology anxiety is not influence Intention to use APL as well, in contrast with a study about intention to use APL from C.F. Chen et al., (2020) and Blut et al., (2016). In this study applied technology Anxiety is defined as a lack of confidence in one's competence to operate a new automated system and apprehension when utilizing APL. This would be the idea that APL technology is uncomplicated, as it simply requires the use of a mobile application to receive OTP or unlock APL and is simple to grasp how to interact with Parcel lockers. Additionally, because this is a mobile application, consumers are already familiar with it, and hence do not find it difficult to use. The discrepancy with another study could be due to the effect of age, as those studies suggested that the majority of old persons will feel anxious when required to use new SST.

Lastly, Transaction cost is not significantly influencing Intention to use unlike another study from Yuen et al., (2019) which mentioned that transaction cost significantly impact customer intention to use. The transaction cost in this study is comparable; it includes the work required to learn how to use APL and the effort required to travel to pick up a parcel from APL. However, the results were inconsistent. This could be for a variety of reasons: first, the majority of customers will use APL when they are unable to wait for home delivery or other options. Second, because the location and time are convenient for them, and no additional distance is traveled. As a result, consumers do not have to exert much effort to pick up their parcels from APL. Third, based on interviews with consumers who have used APL, the majority indicated that there is little likelihood of them incurring additional costs, as the parcel is already on its way home or to their place of employment when they pick it up. According to some, there are no additional delivery costs associated with using APL as a delivery method because the expense is already covered by the delivery fee.

CONCLUSTION AND LIMITATIONS

Conclusion

This research also benefits academic researchers and practitioners by conceptualizing and validating consumer adoption of APL. From an academic standpoint, this research fills in the gaps on adoption behavior and intention to use APL in Thailand, which have not been examined previously. According to the structural equation analysis, the primary influence on intention to use APL is Attitude toward APL, which is influenced by perceived ease of use and perceived usefulness. Customers must have the impression that the associated function, e.g. Application, information on utilizing APL, and the benefits are clearly presented. Trialability is the primary component that influences both perceived usefulness and perceived Ease of Use. Additionally, it demonstrates for the first time that Trialability has a significant effect on

indirect intention to use. Additionally, attitudes about APL are operationalized and empirically validated in relation to consumer intention to use APL, including Trialability, Perceived ease of use, Perceived usefulness, and Attitude toward APL. Apart from that, it demonstrates that transaction costs have little influence on intention to use. As with Perceived control and Technology anxiety, this has no effect on Intention to use.

From a managerial perspective, this study sheds light on the administration of APL from a commercial standpoint, which may be applied broadly to the management of this innovation. For APL, successful implementation necessitates that the proposed theories are complementary and each contributes some unique to the explanation of customer intention to use APL.

Additionally, this research provides suggestions to APL providers on how to increase APL users' intention to use APL. In comparison to conventional home delivery, APL provides a number of advantages that can benefit users. This should be highlighted in terms of perceived utility and perceived ease of usage. Customers must be informed of improved service and faster service. The program must be user friendly in order to acclimate potential customers to its use. APL's business hours must be extended to accommodate after-hours customers. These benefits have a substantial impact on APL's intention to use, such as preventing items from being lost or damaged during home delivery.

Limitations

Despite the research study's contribution, there is a limitation due to the sample's type. The sample's age distribution is not representative of the population, particularly when the sample's lowest and highest age groups are small, as well as the fact that the study was done in Bangkok and over a narrow area. Another point to consider is the possibility that using will not result in actual behavior (De Marco, Mitrea, & Zenezini, 2020; Lemke, Iwan, & Korczak, 2016). Thus, caution should be exercised when interpreting the results for other contexts such as other forms of self-service technologies, suburban or rural regions. Those differences may give different results and implication. Thus, it is suggested to expand the research to cover the differences that are mentioned. Third, the study was done with the one who really wanted to participate. Therefore, there might be non-response biased in the parameter estimation (Yuen et al., 2019). Furthermore, similar to Vakulenko, Hellström, and Hjort (2018), customer intention to use in relation to automated parcel lockers may differ across markets with different levels of automated parcel locker penetration. Bangkok was selected as a representative of a province with increasing use of parcel locker services and a significant volume of parcels delivered. Future research can supplement the knowledge gained in this study by doing research in a variety of market environments.

APPENDIX

Latent	Indicators
Trialability	TRIAL1 -I think that I would use APL if I know where I can try
	TRIAL2 -I think I would use if I know it is easy to experiment functions
	TRIAL3 -I think I would use APL if I can try it when necessary
Perceived Usefulness	PU1 - I think APL is the way to get my parcel delivered faster
	PU2 - I think that using APL, I don't need to wait for delivery at home or ask someone else to do it
	PU3 - I think delivery to APL reduce carbon emission
	PU4 - I think that delivery to APL reduce chance parcel get damaged
Perceived Ease of use	PEU1 - I think to get my parcel at the time I'm convenient make it easier
	PEU2 - I think it is easy to use the application to get my parcel
	PEU3 - I think I can understand easily to get parcel from APL
Attitude	ATT1- overall, I think receiving parcel from APL is faster than delivery to home
	ATT2- overall, I think receiving parcel from APL increase convenience to get delivered parcel
	ATT3- overall, I think receiving parcel from APL satisfy me
	ATT4- overall, I think receiving parcel from APL is a good idea
Perceived Control	PC1 -I think that delivery to APL allow me to select APL location that I'm convenient
	PC2 -I think that I can travel to get my delivered parcel
	PC3 -I think that I can control when to go and get my delivered parcel
Technology Anxiety	TA1 -I feel not confident in my ability to use new automated system
	TA2 -I feel apprehensive about using APL
Transaction cost	TC1-I feel that I have to make a significant effort to learn how to use APL
	TC2-I feel that I have to make a significant effort to travel to get parcels at APL
Intention to use	INT1-I would recommend APL to my friends
	INT2-I consider the use of APL to be the first choice for receiving parcel
	INT3-I would choose to try this APL service in the future
	INT4-I think it is possible for me to use APL next time

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