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FACTORS INFLUENCING INTENTIONS TO RETURN EXPRESS DELIVERY PACKAGES FOR NEXT USE IN A DEVELOPING COUNTRY

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Abstract

The rapid growth of the e-commerce and logistics industries has generated considerable express packaging waste, which is steadily harming the environment. Thus, achieving a sustainable e-commerce system has become crucial. This study aims to identify the factors that affect intentions to return Express Delivery Packages (EDPs) for next use by applying the extended Theory of Planned Behaviour (TPB) in a developing country context. The research data were gathered through an online survey in Thailand. In total, 426 responses were obtained using convenience sampling. This paper presents the constructed model and results of the empirical data analysis which utilized a Covariance-Based Structural Equation Modelling (CB-SEM) approach. The results reveal that attitude, subjective norms, perceived behavioral control, and awareness of consequences, significantly impact intentions. Surprisingly, the hypotheses for convenience, incentive, and risk perception, did not affect intentions to return. The contributions to the literature on reverse logistics include improving understanding of the consumer perspective as well as providing insights to the government and express delivery operators for understanding the relative magnitude of factors that lead to intentions to return EDPs, which can provide guidance in forming strategies that will encourage the involvement of more enviormentally friendly practises, in line with circular goals.

Keywords: Theory of Planned Behaviour, Circular Economy, Reverse Logistics, Package, Intention to Return

1. INTRODUCTION

With the exponential growth of e-commerce business in recent years, the logistics industry has been required to closely follow with a tremendous increase in demand for courier and delivery services. According to data from Lebow (2021), almost half of the countries with the fastest growth in e-commerce in 2020 were developing countries. While delivery packages were recognized as the backbone of last-mile delivery services, the rise of e-commerce can lead to a significant increase in delivery package waste

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when the recycling management system is ineffective.

Reusing Express Delivery Packages (EDPs) is becoming more important for protecting the environment as it can reduce waste and extend the product's life cycle (Lai, Kuah, Kim, & Wong, 2022). Several people would agree that after delivery, most packing materials, particularly corrugated cardboard boxes, are still in good shape. Abejón, Bala, Vázquez-Rowe, Aldaco, and Fullana-i-Palmer (2020) indicated that single-use cardboard boxes are less environmentally beneficial than reusable plastic containers. However, Koskela, Dahlbo, Judl, Korhonen, and Niininen (2014) discovered that corrugated cardboard boxes may be preferable to reusable plastic crates if a thorough recycling policy is adopted. As a result, these materials are reusable for numerous delivery cycles.

In response to this situation, proper management is essential, which may be executed more effectively using reverse logistics. Reverse logistics (RL) is the process of moving goods backwards from the point of consumption to the point of origin to regain the value of the products or ensure proper disposal methods (Govindan, Soleimani, & Kannan, 2015). To accomplish long-term sustainable development, RL is a crucial element of green supply chain management, which aims to reduce waste and mitigate negative consequences of economic activity (M. Wang, Wang, & Chan, 2021). Return EDP activities require the involvement of every member of society, particularly consumers, who are the first connection in the RL chain (Valle, Rebelo, Reis, & Menezes, 2005). Therefore, understanding the customers' intentions in take-back programmes is crucial for the effective implementation of RL management (Budijati, Subagyo, Wibisono, & Masruroh, 2016).

Additionally, the consumer viewpoint is considered the least important when considering RL (Khan, Ahmed, & Najmi, 2019). RL focuses primarily on the supplier's or manufacturer's perspective. Many countries have conducted research and analysis on consumers' intentions with various products, such as plastic packaging (Khan *et al.*, 2019; Reijonen, Bellman, Murphy, & Kokkonen, 2021), and e-waste (Kianpour *et al.*, 2017; Kumar, 2019; Mokkhamakkul, 2022). However, in a developing country context, there may be some unique behaviors impacting consumers' intentions to return EDPs. For this reason, it is crucial to thoroughly examine consumers' intentions in a developing country.

Thus, this paper intends to close this gap by investigating perspectives on RL for consumers who own EDPs. This research aims to provide the government and express delivery operators with a basic understanding of how consumers intend to return EDPs for next use. Additionally, this research intends to pinpoint insights that inspire customers to contribute more to the return of EDPs. Furthermore, this research contributes to formulating strategies that may be implemented to increase participation in EDP return activities and encourage appropriate management of express packages, leading to more sustainable online shopping. With this foresight in mind, this investigation is conducted to determine the answer to the question, "What are the factors influencing the intentions of customers towards the return of EDPs?"

This study is organised into five sections. Section 1 outlines the research background. Section 2 discusses the literature review, which includes the theoretical background and hypothesis development. The research methodology is explained in Section 3. Section 4 presents the research results. Section 5 covers the discussion, theoretical contributions, and practical implications. Lastly, the conclusion and limitations are described in Section 6.

2. LITERATURE REVIEW

2.1 Theoretical Background

The Theory of Planned Behavior (TPB) has been widely adopted by numerous researchers as a framework to elucidate consumer behavior (Ajzen, 1991). According to the TPB, behavior is predominantly

influenced by three key factors: attitude, subjective norms, and perceived behavioral control. The TPB represents an extension of the Theory of Reasoned Action (TRA) proposed by Ajzen and Fishbein in 1980. TRA posits that intentions are the proximal antecedents of behavior, and previous meta-analyses have consistently demonstrated a robust and significant association between intentions and behavior (Klockner, 2013).

Various researchers (German et al., 2022; Ertz, Huang, Jo, Karakas, & Sarigöllü, 2017) have effectively utilized extended models of the TPB to investigate sustainability and environmental concerns. These models have enhanced our understanding of the TPB's role in addressing specific sustainability challenges. Singh, Chakraborty, and Roy (2018) extended the TPB model by adding environmental commitment and green economic incentives (GEI) to explore circular economy readiness in manufacturing enterprises. However, GEI was found to have no direct effect on a firm's environmental commitment. The Pro-environmental Planned Behavior model (PEPB) was later introduced to assess environmental concern in consumer behavior. It extended the TPB model by incorporating two additional factors, perceived environmental concern (PEC) and perceived authority support (PAS), to determine an individual's behavioral intention in specific situations (Lin, Nadlifatin, Amna, Persada, & Razif, 2017). Building upon the PEPB, German et al. (2022) further extended the model, identifying that environmental concern influences attitudes, which in turn affects behavioral intentions (Saari, Damberg, Frömbling, & Ringle, 2021). Ertz et al. (2017) expanded the TPB model by introducing two distinct elements: motivation and context. Within this extended model, motivation was observed to exert both direct and indirect effects on intentions, with attitude serving as a mediating factor, ultimately influencing consumption behaviour in relation to reusable containers. Furthermore, the perception of the context's favorability was identified as another significant factor, impacting motivation, attitude, perceived behavioral control, and subjective norms, in the decision-making process.

This research extends the TPB model by introducing the risk perception factor. According to Zhong, Lomas, and Worth (2022), who investigated customer preferences regarding online purchases in the context of last mile delivery, the study highlights the significant impact of delivery reliability on customers' intentions to adopt express delivery services. Due to the pivotal role of packaging quality in safeguarding products and fostering customer confidence, the current study investigates the risk perception related to the reuse of EDPs. In addition, this study incorporates risk perception as related to health concerns in light of the COVID-19 pandemic (Li, Cao, Chen, and Guo, 2022).

Furthermore, the existing literature on the environmental and economic benefits of reusable packaging suggests that reusables may not always exhibit superior sustainability outcomes. Instead, their environmental and economic justification depends on various factors, including effective collaboration among multiple parties and high levels of consumer cooperation or return rates (Mahmoudi & Parviziomran, 2020; Grimes-Casey, Seager, Theis, & Powers, 2007; Pålsson, Finnsgård, & Wänström, 2013). To contribute to this line of inquiry, the present study introduces an incentive factor to examine how individuals perceive reusable incentives and how this influences their intentions to return EDPs (Mokkhamakkul, 2022).

Moreover, this research integrates the awareness of consequence factor, which is linked to individuals' motivations for environmental concern. The investigation encompasses both the direct and indirect effects on intentions, with attitude serving as a mediating variable (Khan et al., 2019). Additionally, the convenience factor is introduced, referred to as context awareness in the processes and channels of returning used packages (Kumar, 2019; Singh et al., 2018; Ertz et al., 2017).

As previously stated, this study enriches the extended TPB model by integrating

convenience, incentive, awareness of consequence, and risk perception. Notably, limited research has focused on risk perception concerning both product protection and health and safety, particularly in the context of reusable EDPs and their potential impact during the COVID-19 pandemic. Furthermore, the investigation of behavioral intentions regarding the return of EDPs is scarce in developing country settings. Hence, the proposed model incorporates seven variables that may influence customer intentions to return EDPs.

2.2 Hypotheses Development

2.2.1 Attitude

Attitude refers to an individual's positive or negative emotional response to a behavior, which is formed by the conceptualization of his or her evaluation of that action (Ajzen & Fishbein, 1980). Numerous studies have demonstrated that an individual's attitude positively influences their behavior (Cattapan, Vilaisri, & Chinchanachokchai, 2023; Kumar, 2019; Tsai & Tiwasing, 2021; Q. Wang, Zhang, Tseng, Sun, & Zhang, 2021). Furthermore, according to Zhu and Thøgersen (2023), attitude emerges as the primary determinant influencing consumers' purchase intentions for sustainable products. However, a few studies have revealed an insignificant correlation between attitude and return intentions (Khan et al., 2019; Kianpour et al., 2017; Mokkhamakkul, 2022). Nevertheless, based on a majority of supporting evidence, it is hypothesized that an individual's attitude towards the behavior will impact their intention to return EDPs.

H1: Attitude has a significant impact on the intention to return EDPs.

2.2.2 Subjective Norms

Subjective norms refer to the social pressures a person has toward committing or not committing to a particular action (Ajzen, 1991). The impact of family, friends, and colleagues on behavioral intentions is inevitable. A person is more likely to act in a manner that is liked by those who are important to them. The concept of subjective norms has been utilized in different studies on human conduct. A number of research studies have demonstrated a substantial positive relationship between subjective norms and the intention to recycle or return (Khan *et al*., 2019; Kumar, 2019). In contrast, Mokkhamakkul (2022) indicated that subjective norms had a negative impact on return intentions. It is thus essential to investigate this relationship to verify these assertions. Therefore, the second hypothesis is proposed accordingly:

H2: Subjective norms have a significant impact on intentions to return EDPs.

2.2.3 Perceived Behavioral Control

Perceived behavioral control refers to a person's perception of their control over the performance of specific behaviors. Ajzen (2002) indicated that perceived controllability and self-efficacy are two lower-level components relating to behavioral intentions. Self-efficacy refers to an individual's confidence in their capacity to accomplish a certain task. While the level of control a customer has over their behavior influences the customer's intention to act. Several research studies have identified a positive relationship between perceived behavioral control and return or recycling intentions (Kumar, 2019; Mokkhamakkul, 2022). In contrast, few studies have demonstrated that perceived behavioral control has an insignificant relationship with return intention (Khan et al., 2019).

H3. Perceived behavioral control has a significant impact on the intention to return EDPs.

2.2.4 Convenience

Tonglet, Phillips, and Read (2004) emphasized that convenience is a significant predictor of return and recycling behavior. When recycling is perceived as convenient and uncomplicated, and recycling drop-off locations are familiar, recyclers are more likely to utilize them (Sidique, Lupi, & Joshi, 2010; Gonul Kochan, Pourreza, Tran, & Prybutok, 2016). Moreover, previous studies have revealed a significant correlation

between convenience and perceived behavioral control (Kumar, 2019; Worasatepongsa & Prakthayanon, 2022), as well as between convenience and intentions (Kitjaroenchai & Chaipoopiratana, 2022). Additionally, convenience has been recognized as a crucial determinant influencing behavioral outcomes, thus assuming a prominent driver of behavior (Ding et al., 2018).

H4: Convenience has a significant impact on perceived behavioral control.

H5: Convenience has a significant impact on intentions to return EDPs.

2.2.5 Incentive

There are divergent opinions regarding financial incentives. Some argue that financial incentives are insufficient to stimulate motivation and intentions (Voorberg, Jilke, Tummers, & Bekkers, 2017). Some indicate that incentives obviously work in the short term, but the desired change in behavior can disappear in the long term (Gneezy, Meier, & Rey-Biel, 2011; Zeiske, van der Werff, & Steg, 2021). Nevertheless, in the context of environmental considerations and waste reduction, extensive research has consistently demonstrated that incentives serve as supplementary benefits or inducements that promote environmentally friendly behavior (Singh *et al*., 2018). Specifically, numerous studies have identified financial incentives as the primary driver for behavioral change, encouraging individuals to actively participate in waste management activities such as recycling and waste reduction, all of which are crucial for the establishment and sustainability of a circular economy (Abila, 2018; Maki, Burns, Ha, & Rothman, 2016; Mokkhamakkul, 2022; Singh *et al*., 2018). In this research, incentives were incorporated into the framework as a variable of interest in order to investigate their impact on individuals' return intentions.

H6: Incentives significantly impact intentions to return EDPs.

2.2.6 Awareness of Consequences

When studying customer intentions, it is essential to evaluate the consequences caused by a particular action (Khan *et al*., 2019). When an individual feels that an action will result in favorable outcomes, it is probable that they will keep a positive outlook and continue the behavior (Khan *et al*., 2019). Several studies have demonstrated the beneficial impact of consequence awareness on return intentions (Khan *et al*., 2019; Wan, Cheung, & Qiping Shen, 2012; Z. Wang, Guo, & Wang, 2016). Few studies, however, have identified an adverse connection between consequence awareness and intentions (Kumar, 2019; Q. Wang *et al.*, 2021).

H7: Awareness of consequences has a significant impact on attitude.

H8: Awareness of consequences significantly impacts intentions to return EDPs.

2.2.7 Risk Perception

Risk perception is the sense of unpredictability or the possible adverse repercussions of a certain occurrence (Jacobs & Worthley, 1999). It is impacted by a number of variables, including the severity of perceived consequences, cautious behavior, and concerns resulting from risks (Champion & Skinner, 2008). The research shows that throughout the COVID-19 pandemic, individuals perceived an extremely high risk of infection, and the whole population was filled with tension, anxiety, and fear (Cori, Bianchi, Cadum, & Anthonj, 2020). Moreover, previous research has consistently shown that risk perception has a positive impact on both intentions and behavior across various contexts (Li *et al*., 2022; Poolsawat, 2021). This article, therefore, discussed risk perception in health and safety to explore the impact of COVID-19 on consumers' intentions to return EDPs.

H9: Risk perception significantly impacts intentions to return EDPs.

As aforementioned, this study includes convenience, incentive, awareness of consequence, and risk perception in the extended TPB model. Therefore, the proposed model includes seven constructs synthesised from academic literature that may impact intentions to return EDPs.

3. METHODOLOGY

To examine the hypotheses outlined in the previous section, a structured questionnaire and measurement procedures were employed to collect and analyze survey responses.

3.1 Questionnaire Design

The questionnaire was structured according to the extended TPB. The first draft of the questionnaire was validated by three academic experts. Subsequently, 50 respondents were chosen for pre-declaration. The relevance and diversity of questions in the research data were assessed. The final draft was adjusted and finalized based on the comments collected to create the final version of the questionnaire.

The questionnaire was divided into three sections. The first section consisted of questions relating to the measurement variables, as shown in Table 1. The question naire employed a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) to scale responses to the TPB constructs. Demographic information about the respondents, such as gender, age, education level, and income level, was contained in the second

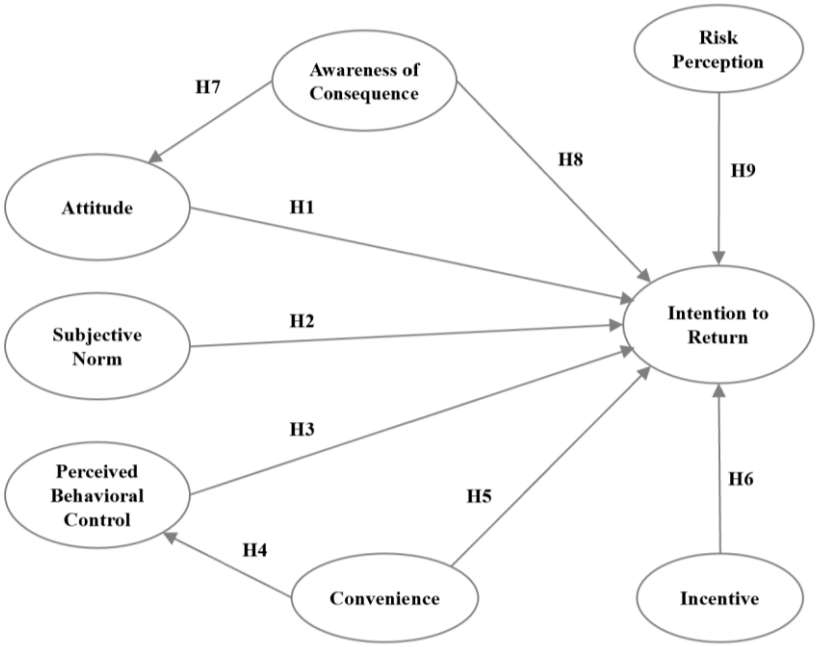

Figure 1 The Conceptual Framework for an Extended TPB model

Table 1 Instrument Source

Constructs	Items	References
Attitude	4	(Kumar, 2019; Tonglet *et al*., 2004; Q. Wang *et al*., 2021)
Subjective Norms	4	
Perceived Behavioral Control	3	
Convenience	4	(Kumar, 2019; Sidique, Lupi, & Joshi, 2010)
Incentives	5	(Abila, 2018; Nduneseokwu, Qu, & Appolloni, 2017)
Awareness of Consequences	4	(Q. Wang *et al*., 2021)
Risk Perception	5	(Li *et al.*, 2022)
Intentions to Return	4	(Kumar, 2019; Q. Wang *et al.*, 2021)

section. The third section concentrated on the respondents' characteristics, including the frequency of express deliveries received and the condition of delivery packages.

3.2 Data Collection and Sample

The research was conducted in Thailand to investigate customers' intentions to return used delivery packages in developing nations, as Thailand had the ninth-fastest e-commerce retail sales growth in the world in 2020, at 40%, and the largest increase in this market segment among developing countries in Southeast Asia. Moreover, Thailand generated 27.06 million metric tonnes of waste in 2016, with the number expected to rise annually. Furthermore, nearly half of Thailand's waste is inappropriately disposed of (Prasertwit and Kanchanasuntorn, 2021).

Respondents were selected through a convenience sampling method. The sample population included people with an age of 18 and over, who had purchased online and received parcels. Data collection began after approval by the Ethics Committee in Human Research at Walailak University (WUEC-22-195-01). The questionnaire was submitted online through Google Forms; it was directly sent to all respondents via Facebook, LINE Chat, and Instagram. A total of 480 questionnaire responses were gathered. After removing invalid and logically confusing questionnaires, 426 valid questionnaires were obtained. The sample size met the minimum requirement of at least 385 according to the appropriate sample size for a 95% confidence level (Cochran, 1977).

3.3 Data Analysis

Covariance-Based Structural Equation Modelling (CB-SEM) using AMOS was employed to validate the questionnaire's rationality, which primarily tests the data's reliability and validity (Hair, Sarstedt, Pieper, & Ringle, 2012). In addition, this analysis was used to evaluate the model's prediction abilities and degree of fit. Reliability was utilized to evaluate the model's internal consistency, while validity testing was primarily classified into convergent and discriminant validity (Carmines & Zeller, 1979). SPSS was used for descriptive statistics throughout this study.

4. RESULTS

4.1 Preliminary Data Analysis

4.1.1 Respondents' Descriptive Statistics

A sample of 426 respondents was examined. Appendix A summarises the respondents' characteristics. According to the findings, 68% of the respondents were female. The majority of respondents (52%) were between the ages of 21 and 30, while 64% held a bachelor's degree. Regarding monthly income, the highest number of respondents (46%) earned less than 20,000 Thai Baht. The average monthly number of delivery packages was less than 5 (54%). It is worth noting that more than 90% of parcels were in good to excellent condition.

Four components of returning the EDPs were examined: the intention to return, the establishment of a regular return plan, the desire to persuade others to return, and readiness to support a return program, if one exists. According to the findings, 70.2% and 69.3% of respondents, intended to return EDPs, or persuade others to do the same, respectively. Furthermore, if a return program is offered, 80.6% of respondents indicated that they would be eager to support it. It has been observed that consumer desire to return is unaffected by gender, age, education level, income level, or the quantity of express delivery items received. As a result, it is important to uncover the factors that influence return intentions in order to make any return program sustainable and effective.

4.1.2 Reliability and Validity Analysis

In order to ensure the reliability and validity of the constructs, the first step is to evaluate internal consistency by using composite reliability and Cronbach's alpha (α). It is generally accepted that a reliability threshold of above 0.70 is required for both

composite reliability and Cronbach's alpha (α) when assessing internal consistency (Hair Jr *et al*., 2014). As shown in Table 2, the composite reliabilities of the constructs ranged from 0.8141 to 0.9615, while the Cronbach's alpha values ranged from 0.766 to 0.935, both of which exceed the acceptable thresholds. As a result, each construct can be said to have a high internal reliability. In order to test convergent validity, inter-correlations between indicators within the same constructs were evaluated using factor loadings and average variance extracted (AVE). The factor loadings (λ) for all constructs in the measurement model were found to be highly significant ($p < 0.001$) and surpassed 0.5. These results indicate sufficient reliability and a strong association with the respective constructs (Sarstedt, Ringle, & Hair, 2017). Furthermore, the AVE values ranged from

Table 2 Reliability and Validity of Construct Indicators

Constructs	Labels	Factor Loading (λ)*	Cronbach's Alpha (α)	Average Variance Extracted (AVE)	Composite Reliability (CR)
Attitude (ATT)	ATT1	0.897	0.864	0.6205	0.9019
	ATT2	0.825			
	ATT3	0.891			
	ATT4	0.622			
Subjective Norms (SN)	SN 1	0.668	0.865	0.5940	0.8906
	SN 2	0.741			
	SN 3	0.887			
	SN 4	0.852			
Perceived Behavioral Control (PBC)	PBC1	0.896	0.766	0.5983	0.8141
	PBC2	0.774			
	PBC4	0.627			
Convenience (CON)	CON1	0.872	0.857	0.5736	0.8838
	CON2	0.752			
	CON3	0.885			
	CON4	0.610			
Incentives (INC)	INC1	0.810	0.935	0.7521	0.9615
	INC2	0.893			
	INC3	0.896			
	INC4	0.862			
	INC5	0.847			
Awareness of Consequences (AC)	AC1	0.934	0.894	0.7307	0.9311
	AC2	0.931			
	AC3	0.673			
	AC4	0.766			
Risk Perception (RSK)	RSK1	0.812	0.918	0.6680	0.9456
	RSK2	0.829			
	RSK3	0.708			
	RSK4	0.903			
	RSK5	0.911			
Intentions to return (ITR)	ITR1	0.865	0.910	0.7519	0.9394
	ITR2	0.852			
	ITR3	0.884			
	ITR4	0.797			

Note all values (*$p < 0.001$)

0.5736 to 0.7521, with all being greater than 0.5 (Ab Hamid, Sami, & Mohmad Sidek, 2017). As a result, convergent validity was established.

4.1.3 Discriminant Validity

The concept of discriminant validity in volves examining the difference between each of the latent variables (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). Establishing discriminant validity is crucial to ensuring that results are accurate and free from statistical discrepancies (Henseler, Ringle, & Sarstedt, 2015). To determine whether there is discriminant validity, the Fornell-Larcker criterion, Heterotrait-Monotrait ratio, and cross loading between the items were utilised. According to the Fornell-Larcker criterion, a specific variable should demonstrate greater variability with its own items compared to with other variables. That is, the correlation between any two constructs is less than the square root of the AVE. As demonstrated in Table 3, discriminant validity was established.

Table 3 Discriminant Validity through the Square Root of AVE with the Fornell-Larcker Criterion

	RSK	ATT	SN	CON	INC	ITR	AC	PBC
RSK	**0.817**							
ATT	0.078	**0.788**						
SN	0.228	0.428	**0.771**					
CON	0.267	0.411	0.612	**0.757**				
INC	0.209	0.413	0.286	0.448	**0.867**			
ITR	0.233	0.657	0.537	0.683	0.459	**0.867**		
AC	0.133	0.616	0.263	0.321	0.465	0.586	**0.855**	
PBC	0.242	0.526	0.606	0.753	0.392	0.732	0.491	**0.774**

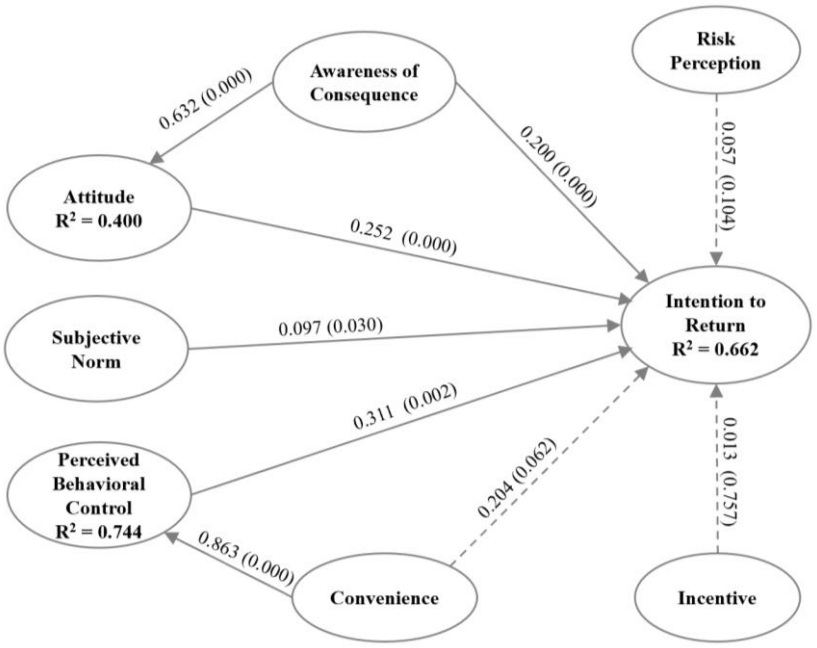

Figure 2 Results of the Structural Equation Model
Note The values on the path indicate the β-coefficients and p-values

4.2 Hypothesis Testing Results

The model fit indices with Relative Chi-Square = 1.959, GFI = 0.900, NFI = 0.931, TLI = 0.954, CFI = 0.965, RMSEA = 0.047, and RMR = 0.080, suggest that the model has an appropriate fit. The path coefficients, t-statistics, and explained variance of the structural equation model were investigated. Figure 2 displays the results of the analysis conducted to evaluate the strength of the proposed model through path significance and hypothesis testing.

The model's predictive ability is a crucial indicator of its quality. Hair, Sarstedt, Pieper, and Ringle (2012) stated that when the coefficient of determination (R^2) value for behavioral intentions is greater than 0.6, it is regarded as having a high predictive ability. In the extended TPB model, the fit index indicated a strong fit with $R^2 = 0.662$ for intentions to return EDPs. The strong R^2 value demonstrates that the amount of variance in intentions to return could be predicted by attitude, subjective norms, perceived behavioral control, and awareness of consequences, as independent constructs. Furthermore, an indirect effect of convenience moderating perceived behavioral control was observed with an $R^2 = 0.744$ for this path. This strongly indicates that convenience can explain variances in perceived behavioral control. Moreover, the findings show that there was an indirect effect of awareness of consequences on intentions to return through attitude, with an $R^2 = 0.400$ for this path.

Table 4 shows the correlation coefficients. All paths were significant at $p < 0.05$, except for the path coefficients for convenience ($\beta = 0.204$, $p > 0.05$), incentives ($\beta = 0.013$, $p > 0.05$) and risk perception ($\beta = 0.057$, $p > 0.05$). The test results showed that attitude, subjective norms, perceived behavioral control, and awareness of consequences, were positively and statistically significant for intentions to return ($\beta = 0.252$, $p < 0.001$; $\beta = 0.097$, $p < 0.05$; $\beta = 0.311$, $p < 0.01$; $\beta = 0.\ 0.200$, $p < 0.01$, respectively). Although convenience did not have a significant direct effect on intentions, it had an indirect effect via perceived behavioral control ($\beta = 0.863$, $p < 0.001$). In contrast, awareness of consequences had a significant direct effect on behavioral intentions, as well as an indirect effect through attitude ($\beta = 0.632$, $p < 0.001$). Thus, hypotheses H1–H4 and H7–H8 were supported, while H5-6, and H9 were not supported based on the test results.

5. DISCUSSIONS

Using an enhanced TPB model, this study investigated the factors that influence the desire to return EPDs for future usage. Even though the express delivery sector has been expanding dramatically and there is a growing need to protect the environment, returning EDPs from the perspective of customers has not been widely adopted in a developing country context, particularly in Thailand. As a result, it presents an excellent opportunity for express delivery firms and the

Table 4 Hypothesis Test Results

Hypothesis	Path	Path coefficients	T Statistic	P Values
H1	ATT → ITR	0.252	5.347	0.000***
H2	SN → ITR	0.097	2.173	0.030*
H3	PBC → ITR	0.311	3.132	0.002**
H4	CON → PBC	0.863	16.188	0.000***
H5	CON → ITR	0.204	1.866	0.062
H6	INC → ITR	0.013	0.309	0.757
H7	AC → ATT	0.632	13.752	0.000***
H8	AC → ITR	0.200	3.900	0.000***
H9	RSK → ITR	0.057	1.625	0.104

Note *p < 0.05, **p < 0.01, ***p < 0.001

government to develop policies to encourage the return of EDPs for future usage.

The findings show that attitude has a significant impact on return intentions, which is consistent with earlier research on behavioral intentions (Cattapan *et al*., 2023; Kumar, 2019; Tsai & Tiwasing, 2021; Q. Wang *et al*., 2021). However, not everyone with a positive mindset will have a strong desire to return. In this case, the findings show that persons who are more aware of environmental issues are more likely to engage in return activities. As a result, awareness of consequences predicts both attitudes and return intentions (Khan *et al*., 2019; Wan *et al*., 2012; Z. Wang *et al*., 2016). The evidence suggests that people are more likely to participate in the provided activities when they are aware of the environmental consequences.

Meanwhile, subjective norms were found to influence return intentions positively. This means that people are more likely to get involved in return actions if they receive support and encouragement from those who are significant to them. This findling is consistent with previous studies (Kumar, 2019; Mokkhamakkul, 2022).

Perceived behavioral control had a considerable positive impact on intentions to return. Perceived behavioral control essentially represents customers' perceptions of the ease of performing particular behaviors, combined with their ability to manage them. This aligns with prior findings (Kumar, 2019; Mokkhamakkul, 2022; Q. Wang *et al.*, 2021). Difficulties in implementing a certain activity will impact a person's final decision. This data shows that convenience is a significant contributor to the results for perceived behavioral control.

Furthermore, despite its insignificant direct effect, convenience was found to have an indirect effect on return intentions via perceived behavioral control. Environmental concerns and sustainability attitudes are the main drivers of consumers' intentions to return EDPs. While convenience may not be directly associated with environmental considerations, it can indirectly influence intentions through perceived behavioral control. When consumers perceive convenient return options as facilitating their environmental goals, this enhances their perceived control over the return process, ultimately strengthening their intentions to return. As perceived behavioral control mediates individuals' perceptions of their ability to perform the behavior, considering factors such as self-efficacy, available resources, and the perceived ease or difficulty of the return process, convenience can influence these mediating factors, subsequently shaping the intention to return EDPs. Moreover, previous studies (Kumar, 2019) have revealed that limitations to consumers' information about the available return options or the simplicity of the return process can overshadow the influence of convenience, resulting in reduced significance in shaping return intentions. As a result, the direct impact of convenience alone on intentions to return EDPs might be relatively modest. However, when consumers become knowledgeable about convenient return methods, their perception of control over the return process may be enhanced, subsequently positively influencing their intentions to return.

In contrast, incentive and risk were found to be insignificant predictors of return intentions. This is certainly intriguing in a developing country. Many studies have shown that an individual's incentives and risks directly affect their initial choice. However, the results of this study suggest an opposite view on whether financial incentives can be considered effective motivators. It was found that incentives are not a very cost-effective tool for stimulating behavioral change, meaning that a lack of incentives would not discourage individuals from returning their EDPs if they intended to do so. This result is consistent with Voorberg *et al*. (2017). While, some papers did not find that the financial incentive influences the significance of other motivations that people may have for engaging in the behaviour, this suggests that the incentive did not cause people to recognize other reasons for conducting certain actions more in the long

run (Gneezy *et al*., 2011; Zeiske *et al*., 2021). Particularly for the behavior of returning their EDPs, where the intention to return is generally motivated by environmental awareness rather than monetary incentives, the stimulant of personal cash rewards is less essential.

Furthermore, this study investigated the possibility that the perception of risk resulting from the COVID-19 epidemic influences intentions to return. During the pandemic, individuals were highly concerned about the risk of infection, leading to increased tension, anxiety, and fear in society. However, in the post-COVID-19 pandemic period, these impacts on risk perception were not shown to affect willingness for returning EDPs. This finding is not consistent with Li *et al*. (2022). Several factors could contribute to this outcome, as listed follows. The Thai government's official vaccination programme marks an important milestone for the country in bringing new cases and deaths down, which has given residents some confidence in their activity. Coupled with the current situation, Thailand classifies COVID-19 as an infectious disease under surveillance, meaning that COVID-19 is treated similarly to a seasonal flu virus and mask wearing is a voluntary practise. Thus, the effect is insignificant. Another reason for this result could be that individuals' risk perception may be reduced if they believe they have adequate control. Control perception acts as a moderator, influencing the desire to return EDPs. As a result, the direct effect of risk perception on intentions may be negligible (Gao & Chen, 2022; Jaengprajak & Chaipoopirutana, 2022; Sriram, Phouzder, Mathew & Hungund, 2019).

5.1 Theoretical Contributions

Although the TPB model was initiated by Icek Ajzen (1991), the findings of this study enrich the existing literature, providing new theoretical insights into predicting behavioral intentions for returning EDPs in a developing country. The awareness of consequences variable in the TPB model affects both the attitude variable and the intention variable. The study's findings reveal specific behaviors that significantly impact intentions to return EDPs in a developing country. Additionally, while the direct impact of the convenience variable on the intentions variable is uncertain, it was found to influence perceived behavioral control, which subsequently affects intentions. The study therefore contributes to an improved understanding of reverse logistics for EDPs from the customer's standpoint, while it is advantageous for enterprises to offer theoretical suggestions when recycling EDPs.

5.2 Practical Implications

Although developing countries are one of the key drivers of the growth of e-commerce, few studies have investigated the behavioral intentions of customers to return EDPs. This research provides five takeaways for policymakers in the government and the operations of express delivery companies. However, it is important to consider these practical implications in conjunction with other contextual factors and industry-specific considerations.

First, companies should consider educating and training their customers on the importance and social acceptability of returning EDPs. This can be done through various channels, such as instructional videos, online tutorials, or informative brochures that highlight the environmental benefits and social responsibilities associated with package returns. By promoting a sense of collective responsibility and normative influence, companies can encourage customers to prioritize and engage in return behavior.

Second, incorporating sustainability messaging in marketing campaigns and packaging materials, such as reducing waste and carbon emissions, can help raise customers' awareness and foster a sense of social responsibility among customers, further strengthening their intentions to return. In particular, celebrity support for return initiatives can be used as a marketing tactic to encourage more people to return. Furthermore, celebrities might serve as role

models for better recycling practises.

Third, companies should aim to provide hassle-free and convenient return options, such as prepaid return labels, drop-off locations, or pickup services. By simplifying the return process and providing clear instructions, companies can indirectly influence customers' intentions to return packages by improving their perceived control. Companies can also leverage technology to provide tracking and status updates, allowing customers to stay informed and maintain a sense of control throughout the return journey.

Fourth, to optimise the effectiveness of strategies aimed at increasing return intentions, companies should regularly collect feedback and evaluate the return process. Soliciting customer opinions and experiences can provide valuable insights for identifying areas for improvement. Monitoring customer satisfaction, addressing concerns promptly, and refining return policies and procedures accordingly can enhance the overall experience and reinforce customers' intentions to return packages.

Last but not least, the government should revise their educational policies to incorporate environmental responsibility teaching and activities. Additionally, to incentivize businesses engaged in EDPs utilization or production, to adopt reverse logistics policies, the government should offer benefits or incentives, such as tax reductions, for the implementation of such initiatives.

6. CONCLUSIONS

The study highlights the significance of consumer return behavior in enhancing waste management initiatives, which align with the principles of green development and the circular economy. However, existing literature on reverse supply chain management has overlooked this area. To address this gap, the study presents an extended TPB model that identifies the key factors that impact consumer intentions to return EDPs for next use rather than dispose of them.

According to the findings, the positively influential factors determining intentions to return EDPs in a developing country are attitude, subjective norms, perceived behavioral control (moderated by convenience), and awareness of consequences, whereas incentives and risk perception constructs were found to be insignificant.

This research also provides insights for the government and express delivery operators with practical implications for take-back campaigns. The government should increase publicity and education in order to raise customer knowledge and foster a positive social environment.

The study presents several limitations that could be addressed in future research. This paper represents the first attempt to comprehend the first link in RL, but to fully understand the structural and operational mechanisms of waste reverse supply chains, it is necessary to explore additional activities, such as network configurations, value production, and financial and information flows. Additionally, this study only examined four factors: convenience, incentives, risk perception, and awareness of consequences, and it was limited to a specific industry (e-commerce). Other aspects should be considered in future studies to fully understand customers' intentions to return EDPs, as well as the applicability of the extended TPB model in other sectors. Finally, because this study was conducted in a developing country, the findings may not be applicable to developed countries with distinct waste management systems and cultural values. Future study might compare these findings to those of studies conducted in developed nations to better understand cross-national variations.

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REFERENCES

Ab Hamid, M. R., Sami, W., & Mohmad Sidek, M. H. (2017). Discriminant Validity Assessment: Use of Fornell &

Larcker criterion versus HTMT Criterion. *Journal of Physics: Conference Series, 890*(1), 012163. doi:10.1088/1742-6596/890/1/012163

Abejón, R., Bala, A., Vázquez-Rowe, I., Aldaco, R., & Fullana-i-Palmer, P. (2020). When plastic packaging should be preferred: Life cycle analysis of packages for fruit and vegetable distribution in the Spanish peninsular market. *Resources, Conservation and Recycling*, *155*, 104666. doi:https://doi.org/10.1016/j.resconrec.2019.104666

Abila, B. (2018). Households' Perception of Financial Incentives in Endorsing Sustainable Waste Recycling in Nigeria. *Recycling*, *3*(2), 28. Retrieved from https://www.mdpi.com/2313-4321/3/2/28

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. doi:https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, *32*, 665-683.

Ajzen, I., & Fishbein, M. (1980). Theory of Reasoned Action in understanding attitudes and predicting social behaviour. *Journal of Social Psychology*.

Budijati, S., Subagyo, B., Wibisono, A., & Masruroh, N. (2016). Influence of government and economic drivers on consumers' intentions to participate in a take back program. *International Journal of Logistics Systems and Management*, *23*, 343. doi:10.1504/IJLSM.2016.074716

Cattapan, T., Vilaisri, S., & Chinchanachokchai, S. (2023). The Influence of Social Media Influencers (SMI) on The Pro-Environmental Behavior of Thai Generation Y Regarding the Purchase of Electric Vehicles. *ABAC Journal*, *43*(2), 77-91. https://doi.org/10.14456/abacj.2023.16

Champion, V. L., & Skinner, C. S. (2008). The health belief model. *Health behavior and health education: Theory, research, and practice*, *4*, 45-65.

Cori, L., Bianchi, F., Cadum, E., & Anthonj, C. (2020). Risk perception and COVID-19. In (Vol. 17, pp. 3114): MDPI.

Ding, Z., Jiang, X., Liu, Z., Long, R., Xu, Z., & Cao, Q. (2018). Factors affecting low-carbon consumption behavior of urban residents: A comprehensive review. *Resources, Conservation and Recycling*, *132*, 3-15. doi:https://doi.org/10.1016/j.resconrec.2018.01.013

Ertz, M., Huang, R., Jo, M. S., Karakas, F., & Sarigöllü, E. (2017). From single-use to multi-use: Study of consumers' behavior toward consumption of reusable containers. Journal of Environmental Management, 193, 334–344. https://doi.org/10.1016/j.jenvman.2017.01.060

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

Gao, Y., & Chen, L. (2022). Impact of COVID-19 Risk Perception on Residents' Behavioural Intention towards Forest Therapy Tourism. *Sustainability*, *14*(18). doi:10.3390/su141811590

German, J. D., Redi, A. A. N. P., Prasetyo, Y. T., Persada, S. F., Ong, A. K. S., Young, M. N., & Nadlifatin, R. (2022). Choosing a package carrier during COVID-19 pandemic: An integration of pro-environmental planned behavior (PEPB) theory and service quality (SERVQUAL). *Journal of Cleaner Production*, *346*, 131-123. https://doi.org/10.1016/j.jclepro.2022.131123

Gneezy, U., Meier, S., & Rey-Biel, P. (2011). When and Why Incentives (Don't) Work to Modify Behavior. *Journal of Economic Perspectives, 25*(4), 191-210. doi:10.1257/jep.25.4.191

Govindan, K., Soleimani, H., & Kannan, D. (2015). Reverse logistics and closed-loop supply chain: A comprehensive review to explore the future. *European Journal of Operational Research, 240*(3), 603-626. doi:https://doi.org/10.1016/j.ejor.2014.07.012

Grimes-Casey, H. G., Seager, T. P., Theis, T. L., & Powers, S. E. (2007). A game theory framework for cooperative management of refillable and disposable bottle lifecycles. Journal of Cleaner Production, 15(17), 1618-1627.

Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. (2012). The Use of Partial Least Squares Structural Equation Modeling in Strategic Management Research: A Review of Past Practices and Recommendations for Future Applications. *Long Range Planning, 45*(5), 320-340. doi:https://doi.org/10.1016/j.lrp.2012.09.008

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135. doi:10.1007/s11747-014-0403-8

Jacobs, L., & Worthley, R. (1999). A Comparative Study of Risk Appraisal: A New Look at Risk Assessment in Different Countries. *Environmental Monitoring and Assessment, 59*(2), 225-247. doi:10.1023/A:1006163606270

Jaengprajak, W. & Chaipoopirutana, S. (2022). Determining Antecedents to Omnichannel Shopping Intention Among Fast Fashion Consumers in Thailand: A Mixed Methods Approach. *ABAC Journal,* 42(2), 1-26. https://doi.org/10.14456/abacj.2022.2

Khan, F., Ahmed, W., & Najmi, A. (2019). Understanding consumers' behavior intentions towards dealing with the plastic waste: Perspective of a developing country. *Resources, Conservation and Recycling, 142*, 49-58. doi:https://doi.org/10.1016/j.resconrec.2018.11.020

Kianpour, K., Jusoh, A., Mardani, A., Streimikiene, D., Cavallaro, F., Nor, K. M., & Zavadskas, E. K. (2017). Factors Influencing Consumers' Intention to Return the End of Life Electronic Products through Reverse Supply Chain Management for Reuse, Repair and Recycling. *Sustainability, 9*(9), 1657. Retrieved from https://www.mdpi.com/2071-1050/9/9/1657

Kitjaroenchai, M., & Chaipoopiratana,S. (2022). Mixed Method: Antecedents of Online Repurchase Intention of Generation Y Towards Apparel Products on E-Commerce in Thailand. *ABAC Journal*, 42(1), 73-95. https://doi.org/10.14456/abacj.2022.37

Klöckner, C. A. (2013). A comprehensive model of the psychology of environmental behaviour—A meta-analysis. *Global environmental change, 23*(5), 1028-1038.

Koskela, S., Dahlbo, H., Judl, J., Korhonen, M.-R., & Niininen, M. (2014). Reusable plastic crate or recyclable cardboard box? A comparison of two delivery systems. *Journal of Cleaner Production, 69*, 83-90. doi:https://doi.org/10.1016/j.jclepro.2014.01.045

Kumar, A. (2019). Exploring young adults' e-waste recycling behaviour using an extended theory of planned behaviour model: A cross-cultural study. *Resources, Conservation and Recycling*.

Lai, N. Y. G., Kuah, A. T. H., Kim, C. H., & Wong, K. H. (2022). Toward sustainable express deliveries for online shopping: Reusing packaging materials through reverse logistics. *Thunderbird International Business Review, 64*(4), 351-362. doi:https://doi.org/10.1002/tie.22259

Lebow, S. (2021). Here are the countries with the fastest ecommerce growth in 2020. https://www.insiderintelligence.com/content/countries-with-fastest-ecommerc e-growth-2020

Li, H., Cao, A., Chen, S., & Guo, L. (2022). How does risk perception of the COVID-19 pandemic affect the consumption behavior of green food? *Environ Dev Sustain*, 1-23. doi:10.1007/s10668-022-02819-0

Lin, S. C., Nadlifatin, R., Amna, A. R., Persada, S. F., & Razif, M. (2017). Investigating citizen behavior intention on mandatory and voluntary pro-environmental programs through a pro-environmental planned behavior model. *Sustainability, 9*(7), 1289.

Mahmoudi, M., & Parviziomran, I. (2020). Reusable packaging in supply chains: A review of environmental and economic impacts, logistics system designs, and operations management. *International Journal of Production Economics, 228*, 107730. https://doi.org/10.1016/j.ijpe.2020.107730

Maki, A., Burns, R. J., Ha, L., & Rothman, A. J. (2016). Paying people to protect the environment: A meta-analysis of financial incentive interventions to promote proenvironmental behaviors. *Journal of Environmental Psychology, 47*, 242-255. doi:https://doi.org/10.1016/j.jenvp.2016.07.006

Mokkhamakkul, T. (2022). Factors Affecting Behaviours of Returning E-Waste to Reverse Logistics System in Thailand. *Wireless Communications and Mobile Computing, 2022*, 1-11. doi:10.1155/2022/5307662

Nduneseokwu, C. K., Qu, Y., & Appolloni, A. (2017). Factors Influencing Consumers' Intentions to Participate in a Formal E-Waste Collection System: A Case Study of Onitsha, Nigeria. *Sustainability, 9*(6), 881. Retrieved from https://www.mdpi.com/2071-1050/9/6/881

Pålsson, H., Finnsgård, C., & Wänström, C. (2013). Selection of packaging systems in supply chains from a sustainability perspective–the case of Volvo. *Packaging Technology & Science, 26*(5), 289-310.

Poolsawat, P. (2021). Effects of Risk-Taking Propensity and Psychological Capital on Entrepreneurial Intention: The Mediating Role of Attitude Towards Entrepreneurship in The Southern of Thailand. *ABAC Journal*, 41(2), 82-100.

Reijonen, H., Bellman, S., Murphy, J., & Kokkonen, H. (2021). Factors related to recycling plastic packaging in Finland's new waste management scheme. *Waste Management, 131*, 88-97. doi:https://doi.org/10.1016/j.wasman.2021.05.034

Saari, U. A., Damberg, S., Frömbling, L., & Ringle, C. M. (2021). Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention. *Ecological Economics, 189*, 107155.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial Least Squares Structural Equation Modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of Market Research* (pp. 1-40). Cham: Springer International Publishing.

Sidique, S. F., Lupi, F., & Joshi, S. V. (2010). The effects of behavior and attitudes on drop-off recycling activities. *Resources, Conservation and Recycling, 54*(3), 163-170. doi:https://doi.org/10.1016/j.resconrec.2009.07.012

Singh, M. P., Chakraborty, A., & Roy, M. (2018). Developing an extended theory of planned behavior model to explore circular economy readiness in manufacturing MSMEs, India. *Resources, Conservation and Recycling, 135*, 313-322. doi:https://doi.org/10.1016/j.resconrec.2017.07.015

Sriram, K.V., Phouzder, K., Mathew, A.O., & Hungund, S. (2019). Does E-Marketing Mix Influence Brand Loyalty and Popularity of E-Commerce Websites? *ABAC Journal*, 39(2), 64-81.

Tonglet, M., Phillips, P. S., & Read, A. D. (2004). Using the Theory of Planned Behaviour to investigate the determinants of

recycling behaviour: a case study from Brixworth, UK. *Resources, Conservation and Recycling*, *41*(3), 191-214. doi:https://doi.org/10.1016/j.resconrec.2003.11.001

Tsai, Y.-T., & Tiwasing, P. (2021). Customers' intention to adopt smart lockers in last-mile delivery service: A multi-theory perspective. *Journal of Retailing and Consumer Services, 61*, 102514. doi:https://doi.org/10.1016/j.jretconser.2021.102514

Valle, P. O. D., Rebelo, E., Reis, E., & Menezes, J. (2005). Combining Behavioral Theories to Predict Recycling Involvement. *Environment and Behavior, 37*(3), 364-396. doi:10.1177/0013916504272563

Voorberg, W., Jilke, S., Tummers, L., & Bekkers, V. (2017). *Financial rewards do not stimulate co-production: Evidence from two experiments*.

Wan, C., Cheung, R., & Qiping Shen, G. (2012). Recycling attitude and behaviour in university campus: a case study in Hong Kong. *Facilities, 30*(13/14), 630-646. doi:10.1108/02632771211270595

Wang, M., Wang, B., & Chan, R. (2021). Reverse logistics uncertainty in a courier industry: a triadic model. *Modern Supply Chain Research and Applications, 3*(1), 56-73. doi:10.1108/MSCRA-10-2020-0026

Wang, Q., Zhang, W., Tseng, C. P. M.-L., Sun, Y., & Zhang, Y. (2021). Intention in use recyclable express packaging in consumers' behavior: An empirical study. *Resources, Conservation and Recycling, 164*, 105115. doi:https://doi.org/10.1016/j.resconrec.2020.105115

Wang, Z., Guo, D., & Wang, X. (2016). Determinants of residents' e-waste recycling behaviour intentions: Evidence from China. *Journal of Cleaner Production, 137*, 850-860. doi:https://doi.org/10.1016/j.jclepro.2016.07.155

Worasatepongsa, P. & Prakthayanon, S. (2022). The Influence of Factors Affecting Intention to Purchasing Electric Vehicles (EVs) among Thai Consumers. *ABAC Journal*, 42(4), 94-114. https://doi.org/10.14456/abacj.2022.55

Zeiske, N., van der Werff, E., & Steg, L. (2021). The effects of a financial incentive on motives and intentions to commute to work with public transport in the short and long term. *Journal of Environmental Psychology, 78*, 101718. doi:https://doi.org/10.1016/j.jenvp.2021.101718

Zhong, S., Lomas, C., & Worth, T. (2022). Understanding customers' adoption of express delivery service for last-mile delivery in the UK. *International Journal of Logistics Research and Applications, 25*(12), 1491–1508. https://doi.org/10.1080/13675567.2021.1914563

Zhu, B. & Thøgersen, J. (2023). Consumers' Intentions to Buy Energy-Efficient Household Appliances in China. *ABAC Journal*, 43(1), 1-17. https://doi.org/10.14456/abacj.2023.1

Appendix A

Table A1 Distribution of valid respondents (n = 426)

Characteristics	Demographic	Frequency	Percent (%)
Gender	Male	127	29.81
	Female	290	68.08
	Others	9	2.11
Age	Below 21	54	12.68
	21-30	225	52.82
	31-40	54	12.68
	41-50	44	10.33
	51-60	7	1.64
	Above 60	42	9.86
Educational level	High school and below	30	7.04
	Bachelor	274	64.32
	Master and Doctorate	122	28.64
Average monthly income (THB)	Less than 20,000	199	46.71
	20,001-40,000	114	26.76
	40,000-60,000	47	11.03
	More than 60,000	66	15.49
Occupation	Personnel of public	60	14.08
	Enterprise personnel	100	23.47
	Business	38	8.92
	Retired person/housewife	39	9.15
	Student	169	39.67
	Others	20	4.69
Monthly average number of express delivery packages	0-5	233	54.69
	6-10	149	34.98
	11-15	26	6.10
	More than 15	18	4.23
Condition of express delivery packages	Excellent	63	14.79
	Good	333	78.17
	Quite bad	27	6.34
	Bad	3	0.70