EXAMINING CUSTOMERS' INTENTION OF CONTINUED USE AND CROSS-BUYING ON INTERNET-ONLY BANKS

by

Annie Tsui

Submitted in partial fulfilment of the requirements
for the degree of Master of Science

at

Dalhousie University
Halifax, Nova Scotia
December 2022

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Internet-only banks (IOB) refer to financial institutions which provide services entirely through online digital platforms without physical branches. Although IOBs have been around for over 25 years, there is still room for investigating what factors motivate customers to use them continuously and extensively. Therefore, this study aims to examine what factors lead to customers' intention of continued use and cross-buying on IOBs by extending the Post-Acceptance Model of IS Continuance (PAMISC). The result shows that perceived economic benefit and ongoing trust have significant relationships with intention of continued use and that ongoing trust has significant direct and mediating relationships with intention of cross-buying. Also, personal innovativeness positively moderates the relationship between ongoing trust and the intention of cross-buying. This study sheds light on the literature on branchless financial services and PAMISC. IOB practitioners should revisit the effectiveness of customers' economic benefits to establish ongoing trust with customers.

LIST OF ABBREVIATIONS USED

IOB	Internet-only bank
PAMISC	Post-Acceptance Model of IS Continuance
PU	Perceived usefulness
ASU	Adaptive system use
AVE	Average variance extracted
CR	Composite reliability
MTurk	Amazon's Mechanical Turk
PLS	Partial Least Squares
CMB	Common method bias
LMF	Latent method factor
R^2	Explained variance
β	Path coefficients
PI	Personal innovativeness
Conf	Confirmation
Ontrust	Ongoing trust
PEB	Perceived economic benefit
ContInt	Continuance intention
CBInt	Cross-buying intention
EduLevel	Education level

ACKNOWLEDGEMENTS

I am here to express my utmost gratitude to my supervisor, Dr. Kyung Lee. With his guidance and inspiring comments, I overcame all the difficulties during this research. Without his provision of efficient and helpful assistance to me, I would not have finished this thesis. Thanks for his timely and patient responses to my enquiries even though I often came up with some ideas during weekends.

Also, I would like to express my gratitude to my committee members, Dr. Bo Yu and Dr. Paola Gonzalez. They have provided inspiring comments to my thesis topic. With their invaluable comments, I amended the inadequacy of the thesis draft.

CHAPTER 1   INTRODUCTION

Internet-only banks refer to the financial institutions which provide services entirely through online digital platforms without physical branches (Yoon & Lim, 2020). It is also known as a "virtual bank", "direct bank", "branchless bank" and "forward bank". It provides services by using different technology-enabled channels including phone banking, mobile banking, online banking and automated teller machine without any physical branches or rarely with some exceptions that there are a few physical customer centers launched (Yoon & Lim, 2021). For this study, I use the term "Internet-only banks" (IOB, hereinafter) to represent this type of bank.

The first IOB, Security First Network Bank, was established in the US in 1995 (Lee & Kim, 2020). Afterwards, IOBs have been actively operating in Europe, Japan, China, Canada, and the US, and continue to be established around the world (Yoon & Lim, 2020). Based on the report published by Bank for International Settlements in Jan 2022 (Chen et al., 2022), the percentage of weekly active users in Korea increases from around 6% in 2018 to around 13% in 2021; that of Japan increases from 6% in 2018 to 12% in 2021; that of India even increases from 1.5% in 2018 to 17% in 2021. In 2022, 27% of banking customers in the US use IOBs (Effler & Roderick, 2022). These figures show that the adoption of IOBs around the world is drastically increasing. The rise of the IOB penetration rate until the 2010s can be explained by the wide adoption of mobile devices (Kaabachi, Mrad & Petrescu, 2017).

Without the cost of running physical branches, IOBs could have the financial capability to charge zero (if not very low) transaction fees, offer higher interest rates for customers' deposits and provide lending at a lower interest rate than those of traditional banks to attract customers (Lee & Kim, 2020). IOBs have been widely adopted in different countries, so they are believed to pose significant threats to traditional banks. As per the IBM report released in August 2019, IOBs cause disruptive changes to the Asian financial service sector, so traditional banks are suggested to leverage their customer bases, resources, and reputations to increase their competitive advantage (Wagle &

Biswas, 2019). While IOB is considered a competitor of traditional banks, some traditional banks have manipulated the rise of IOBs to generate benefits. It is worth mentioning that many IOBs are affiliated companies with traditional large financial institutions. For example, Tangerine Bank in Canada is actually owned by Scotiabank; Simplii Financial in Canada is owned by CIBC; Mox Bank in Hong Kong is partially owned by Standard Chartered Bank; aiBank in China is partially owned by China CITIC Bank. Establishing IOBs is a way for some large-scale traditional financial institutions to better manage profitable customers by processing standardized and low-value-added transactions via the channel of IOBs and processing specialized and high-value-added transactions via branch channels (Lee & Kim, 2020). By running IOBs simultaneously, these traditional financial institutions can exercise service differentiation and target different types of customers without incurring extra fixed costs of physical branch operations. For example, based on Scotiabank's annual report as of 2021, the positioning of Tangerine Bank, which has over 2 million customers in Canada, is to provide day-to-day banking products to self-directed customers. Also, one of the strategies of Scotiabank is to deliver consistent and stable long-term earning growth by enhancing their return on equity of Tangerine Bank (Scotiabank, 2021). Therefore, the success of an IOB in some cases could contribute to the success of its parent company, a large-scale traditional bank.

Apart from traditional banks, big technology or fintech firms are some of the largest shareholders of IOBs in Asia (Zhang, Chen, Liu & Zhu, 2018). These firms formed a partnership with financial institutions to form IOBs. For example, Kakao Bank is owned by both Kakao, a South Korean Internet company, and Korea Investment Value Asset Management; aiBank in China is owned by both Baidu, a Chinese big technology company, and China CITIC Bank. As per a report published by Bank for International Settlements in Jan 2022 (Chen, D'Silva, Packer & Tiwari, 2022), this partnership is a win-win situation for both traditional financial institutions and technology firms. These technology companies have the capabilities in managing modular platforms, data analytics and security risk mitigation, so traditional banks can revamp legacy IT infrastructure, reduce capital costs and capture new customer segments by establishing

IOBs with those technology firms. Also, those technology firms gain an opportunity to expand their business to the financial industry.

Although IOBs are recently gaining some interest from academia with about a dozen of recently published empirical papers on users' adoption, there is still room for investigating what factors motivate customers to use this type of financial service continuously and 'extensively' (i.e., 'extensive' usage means that customers use multiple services offered by a service provider.). Extant studies of IOBs mostly examined the influencing factors of initial adoption while little empirical effort has been made to examine the intention of continued use or cross-buying. *Cross-buying* is defined as the customers' propensity to make cross-category purchases (Estrella-Ramon, Sánchez-Pérez & Swinnen, 2016). It is an extension of the relationship with customers rather than merely retaining their intention to purchase (Liu & Wu, 2007). Nowadays, it is common for banks to cross-sell different banking, insurance and investment products, e.g., "bancassurance" is to cross-sell insurance products to bank customers (Hong & Lee, 2012). Dandapani & Lawrence (2008) pointed out that the past failure of IOBs is due to high non-interest expenses which refer to operating costs of running a bank, e.g. IT expenses, legal and administration expenses, marketing expenses, etc., (CFI Team, 2020). Many IOBs provide some types of monetary welcome rewards to attract first-time users, which have helped them attract initial customers but at the same time greatly increased their operating costs. If those IOB service providers do not know what factors lead to their existing or newly acquired customers' continued use or cross-buying intention, they cannot retain the customers who had been attracted by the welcome rewards. Together with heavy technology-related costs, IOBs face difficulties in sustaining themselves or making profits. Therefore, understanding the influencing factors for current customers' continued use and cross-buying intentions is important to the survival of IOBs (Bhattacherjee, 2001b).

Although Lee & Kim (2020) investigates the factors leading to both adoption and continuance intention to use IOBs, this study did not show the multi-stage effects of facilitating factors for intention to adopt or continue to use IOB and also did not make a

distinction between the factors influencing initial adoption and those for use continuance. However, Bhattacherjee (2001b) posits that continuance should not be treated as an extension of acceptance behaviours. If we merely extend the factors for users' initial adoption, we cannot explain why some users give up the use of an information system after their initial adoption. I argue that if attracting customers' continuance intention to use is a way for IOBs to survive, inducing customers' cross-buying intention is an essence for IOBs to expand. Therefore, this study proposes a model that investigates the relationships among current IOB users' degree of confirmation, perceived economic benefits, ongoing trust and their intention of continued use and cross-buying on IOBs based on the PAMISC.

The purpose of this study is to examine what factors lead to customers' intention of continued use and cross-buying on IOBs by extending the Post-Acceptance Model of IS Continuance (PAMISC). The findings of this study will provide the practitioners in IOBs with some pieces of advice on what they can do to induce their customers' intention of continued use and cross-buying. This study begins with the similarities and differences between 'IOBs' and 'online and mobile banking services provided by traditional banks', which are considered similar to IOBs and studied widely in the last 2 decades. Then, I review the literature on the studies on the adoption of IOBs; continuance intention to use online and mobile banking; the cross-buying intention of financial services. After that, I propose a research model on the influencing factors for current IOB customers' continuance and cross-buying intentions and empirically validate the proposed research model, followed by discussions and future research suggestions.

CHAPTER 2   LITERATURE REVIEW

2.1 SIMILARITIES AND DIFFERENCES BETWEEN IOBS AND ONLINE BANKING SERVICES BY TRADITIONAL BANKS

Some people may treat IOBs as the same as online banking. The term, online banking, is originated from the fact that traditional brick-and-mortar banks prepared a web-based channel to serve their customers on top of physical banking services. It can be considered a combination of conventional banking and web technology, being increasingly developed by worldwide banking sectors (Sikdar, Kumar & Makkad, 2015). As such, it is a complementary channel for existing brick-and-mortar branches of conventional banking (Lee & Kim, 2020). It enables customers to access their bank accounts, pay bills, request credit cards, and fulfil other banking needs through their laptops or mobile devices from anywhere at any time (Shaikh & Karjaluoto, 2015). Online banking has offered customers access to financial services without visiting branches and helped financial institutions save on rental and labor costs (Zhang et al., 2018). However, online banking cannot exist without branches because some of the functions (e.g., account opening, lending, etc.) are available in branches only.

On the contrary, IOBs provide all the services without branches, which can help the service providers save branch operating costs and significantly reduce the burden of hiring staff. In fact, IOBs may integrate all the above-mentioned technology-enabled banking channels, including the Internet, mobile, automated teller machines, and call centers to provide financial services through non-face-to-face authentication (Yoon & Lim, 2021). Moreover, the mobile applications of IOBs greatly enhance convenience for consumers in a way that they provide a choice for customers to use biometric authentication, such as fingerprints or face, to open an account or apply for a loan without visiting a branch (Lee & Kim, 2020). Another difference is that IOBs often offer customers with higher interest rates for their savings, provide lower interest rates for lending products, charge zero or lower transaction fees and provide more attractive welcome rewards than traditional banks (Yoon & Lim, 2020). In sum, IOB should be considered a financial institution while online banking is only a customer-serving channel

established by traditional banks on top of face-to-face interactions, phone banking, and ATMs.

2.2 LITERATURE REVIEW ON THE INITIAL ADOPTION OF IOB

Seven studies that focus on the intention to adopt IOB services were reviewed and four categories of factors leading to the initial adoption of IOBs were identified; (1) System-related factors; (2) overall benefits; (3) user's personal traits; (4) social factors. These four categories of factors help me to identify key factors that can be related to the ongoing adoption of IOB services. Table 1 summarizes the influencing factors in each category.

First, regarding system-related factors, system quality, information quality and service quality are three aspects to measure the quality of IOB application design (Yoon & Lim, 2021). These three aspects are derived from the updated DeLone & McLean Information Systems Success Model (DeLone & McLean, 2003). System quality measures response time, ease of use, system reliability, and security. Information quality measures relevance, usefulness, up-to-date information, and ease of understanding. Service quality measures the responsiveness, assurance, and reliability of information system providers.

We can see that reliability applies to both system and service quality. Kaabachi et al. (2017) defined it as structural assurance, i.e., how the users believe that contextual conditions such as promises, contracts, regulations, and guarantees are in place. In the financial service context, reliability is directly related to customers' trust (Llewellyn, 2005). That is, without a certain level of trust in the service, customers might not take a risk of using IOBs, because customers have to provide IOBs with their personal and financial information before they receive the actual services and returns from IOBs. In general, trust is defined as the extent to which one party is willing to be vulnerable to another party to perform a specific task toward the expected and promised level (Dimitriadis & Kyrezis, 2010; Grabner-Kräuter & Kaluscha, 2003; Zhang et al., 2018). In terms of adopting a new technology-enabled financial service, initial trust is found to be a

significant factor for first-time users adopting such a service (Kaabachi et al., 2017; Lee & Kim, 2020; Zhang et al., 2018). Based on these findings, I propose that trust in the services will also play an important role in current IOB customers' ongoing adoption in the following section.

Second, regarding customers' benefits, IOBs can provide both economic and non-economic benefits to customers and service providers. IOBs play an important role in increasing the economic benefit of financial services by reducing the cost of branch operations (Ahn & Lee, 2019; Lee & Kim, 2020; Yoon & Lim, 2021). Due to no branch operation cost, not only do IOBs charge zero (if not, very low) transaction fees for most of their services, but also offer high interest rates for deposits and low interest rates for loans to attract customers. Apart from economic benefits, IOBs also allow customers to access all banking services without time or space constraints (Ahn & Lee, 2019; Kaabachi et al., 2017; Lee & Kim, 2020). Also, Li et al. (2021) found that emotional value, defined as the perceived enjoyment of using IOBs, is important to the adoption of IOBs. Yoon & Lim (2021) identified two factors related to users' benefits; 1) perceived usefulness, which refers to users' perception that a technology-enabled service can help them with their tasks (Davis, 1989), and 2) relative advantage, which measures the degree to that an innovation is perceived as being better than its precursor or substitutes (Rogers, 2003). As such, the economic benefits and convenience have been found to be the relative advantages brought by IOBs which supersede online banking. However, since the pandemic lockdown, many traditional banks start to provide contactless and paperless services to their customers, so the relative advantages of IOBs in terms of non-economic benefits (i.e., convenience) have been diminished (Asif, Dallerup, Hauser, Parpia, & Taraporevala, 2020). Therefore, this study focuses only on users' *perceived economic benefits* from IOBs, which refer to 'users' perceptions of the economic value of using IOBs', as an important factor for the ongoing adoption of IOB in the following section.

Third, as for users' personal traits, personal innovativeness and computer self-efficacy are identified as important factors for the initial adoption of IOB (Yoon & Lim, 2020, 2021). Personal innovativeness is defined as the degree to which an individual is willing

to adopt a new idea earlier than other people (Rogers, 2003). Yoon & Lim (2020) finds that users with higher personal innovativeness will perceive more usefulness of the technology and enjoyment from the use, thus having more intention to use IOBs. Second, computer self-efficacy is defined as a person's belief in his or her capability to perform a given task (Compeau & Higgins, 1995). The users who have higher computer self-efficiency are less afraid of using new technologies to achieve their expected goals, so they tend to enjoy and perceive IOBs as useful. Kaabachi et al. (2017) also posit that users who are more familiar with online banking tend to have higher initial trust towards IOBs because they will have more confidence in their capabilities to use IOB applications. Based on Montazemi & Qahri-Saremi (2015)'s literature review on online banking, personal innovativeness is rarely studied in the post-adoption stage. Therefore, I will propose to study the importance of *personal innovativeness* rather than computer self-efficacy for the ongoing adoption of IOB in the following section.

Finally, for social factors, perceived critical mass refers to the degree to which an individual perceives that most peers are using the same system (Van Slyke, Ilie, Lou, & Stafford, 2007). Critical mass is a social factor for IOB adoption because when more people use the services, knowledge and information can be easily shared, making it easier to improve service quality (Lee & Kim, 2020). When more people use IOBs, the reputation of IOBs increases and thus raises non-users' initial trust towards IOBs (Kaabachi et al., 2017). In addition, as abovementioned, Zhang et al., (2018) posit that potential users' trust in the brand of technology companies which developed the IOB applications might form their initial trust towards IOBs, which can influence initial adoption.

Taken together, the literature review on the initial adoption of IOB helps find relevant factors for the ongoing adoption of IOB; *trust*, *perceived economic benefits*, and *personal innovativeness*, which will be further elaborated on in the following section.

Table 1   Independent variables affecting trust or satisfaction towards the adoption of IOBs

Categories	Influencing factors for the adoption of IOB	Citations
System-related factors	Number of services provided	Lee & Kim (2020)
	Risks (including security and privacy risk)	Lee & Kim (2020); Li et al. (2021)
	Perceived website quality	Kaabachi et al. (2017), Kaabachi, Mrad & Fiedler (2020)
	Perceived structural assurance	Kaabachi et al. (2017); Li et al. (2021); Yoon & Lim (2021)
	System quality, Complexity or Compatibility	Yoon & Lim (2020); Yoon & Lim (2021), Kaabachi et al. (2020)
	Information quality	Yoon & Lim (2021), Kaabachi et al. (2019)
	Service quality	Yoon & Lim (2021), Kaabachi et al. (2019)
	Trialability	Yoon & Lim (2020)
Overall benefits	Convenience or perceived usefulness	Ahn & Lee (2019); Lee & Kim (2020); Yoon & Lim (2021)
	Economic efficiency	Ahn & Lee (2019); Lee & Kim, (2020); Yoon & Lim (2021)

Categories	Influencing factors for the adoption of IOB	Citations
	Perceived relative advantage	Kaabachi et al. (2017); Li et al. (2021); Yoon & Lim (2020)
	Emotional value	Ahn & Lee (2019)
User's personal traits	Personal innovativeness or interest	Li et al. (2021); Yoon & Lim (2020); Yoon & Lim (2021)
	Computer self-efficacy or familiarity with internet banking	Kaabachi et al. (2017); Yoon & Lim (2020)
Social factors	Critical mass, image or Peer influence	Lee & Kim (2020); Yoon & Lim, (2020); Yoon & Lim (2021)
	Brand trust in the internet enterprise	Zhang et al. (2018)
	IOB's reputation	Kaabachi et al. (2017)

2.3 LITERATURE REVIEW ON THE CONTINUANCE INTENTION TO USE ONLINE BANKING SERVICES

While the former section only focuses on the factors leading to the initial adoption of IOBs, this section focuses on the factors of continuance intention to use. As mentioned, due to the scarcity of extant studies on the continuance intention to use IOBs (Lee & Kim, 2020), this section reviews studies on the continued use of online and mobile

banking services (i.e., including those provided by branch-based traditional banks), in order to gain more insight about what factors might lead to continued use of IOBs. Table 2 shows the influencing factors of continuance intention to use online banking services.

Similarly, system-related factors and overall benefits of online banking, user's personal traits and social factors are identified as influencing factors for continuance intention to use online banking services. However, the definition and significance of the influencing factors under each category are different between those for pre-adoption and post-adoption. Montazemi & Qahri-Saremi (2015) finds that the significance of system quality, information quality, and service quality in the post-adoption of online banking is different from that of pre-adoption. The reason is that after adoption, these factors are based on users' direct experience with the online banking system (Montazemi & Qahri-Saremi, 2015).

Another difference is that *confirmation* is the most studied variable of continuance intention to use online banking. Many studies find that confirmation is an important variable of continuance intention to use online banking (Chen & Li, 2017; Eriksson & Nilsson, 2007; Foroughi, Iranmanesh & Hyun, 2019; Hoehle, Huff & Goode, 2012; Lin, 2011; Poromatikul, De Maeyer, Leelapanyalert & Zaby, 2020; Susanto, Chang & Ha, 2016; Vedadi & Warkentin, 2016; Yuan, Liu, Yao & Liu, 2019). *Confirmation* is defined as a cognitive belief based on the extent to which users' expectation of IS use is realized during actual use (Bhattacherjee, 2001b). Confirmation can be formed or enhanced when the performance after the usage is greater than or equal to the prior expectation from a service, resulting from a user's post-use evaluation of her/his use experience of a technology-enabled service (Lin, 2011; Bhattacherjee, 2001b). The Post-Adoption Model of Information System Continuance (PAMISC) posits that confirmation is the key concept that forms IS users' beliefs, affect, and behavioral intention after their initial use (Bhattacherjee, 2001b) (Figure 1). The next section will explain how the PAMISC can be modified to fit the context of IOB, while *confirmation* will be kept as a key variable for the proposed research model.

The third major difference is that trust plays a more significant role in continuance intention to use than in initial adoption. Continuance intention to use is tightly related to customers' loyalty, which refers to a customer's repurchasing behavior because they like a brand or service after continuous use (Kaabachi et al., 2019; Thakur, 2014). Therefore, the type of trust we discuss here is a continuous or *ongoing trust* which develops over time as a result of continuing interactions between users and IOBs (Hoehle et al., 2012; Lee & Kim, 2020). *Ongoing trust* plays an important role in online banking continuance because it acts as mental protection against potential risks and unexpected actions associated with an online banking service (Yu, Balaji & Khong, 2015). Similar to those factors identified in section 2.2, the factors of *ongoing trust* are mostly about reliability, i.e., users' believe that legal, regulatory, business and technical environments exist to mitigate the chance of any negative outcomes from the use of technology (Chen & Li, 2017; Kaabachi et al., 2019; Ofori, Boateng, Okoe, Gvozdanovic, 2017; Sharma & Sharma, 2019; Zhou, 2013). After the first usage, if the performance of the information systems fulfills users' expectations (i.e., confirmation), users will be satisfied with the information systems (Bhattacherjee, 2001b). However, what is more important to induce users' continued use is the fact that customers will get to know the traits and characteristics of the service and thus evaluate its trustworthiness, which is an antecedent of customers' ongoing trust leading to the subsequent continuance intention to use (Yu et al., 2015). Based on Social Exchange Theory, if a service is proven trustworthy, users are more likely to believe that the benefit of continuous use of this service is larger than its associated risk (Cook, Cheshire, Rice & Nakagawa, 2013). Therefore, satisfaction measures the degree to which a system can meet users' expectations while ongoing trust measures customers' expectations of a system's future behaviour (Zhou, Zhang & Ji, 2010). In other words, ongoing trust can only be formed when users have satisfaction with a system. This study focuses on not only the intention of continued use but also the intention of cross-buying which is mainly related to users' expectations of the financial service's future behaviour after purchasing a new product category. Also, I found that financial institutions are dedicated to building customers' loyalty and thus employ many professionals and adopt different marketing and administrative strategies to build a

reliable image in a bid to build customers' ongoing trust. Therefore, the research model focuses on *ongoing trust* rather than satisfaction in the original PAMISC.
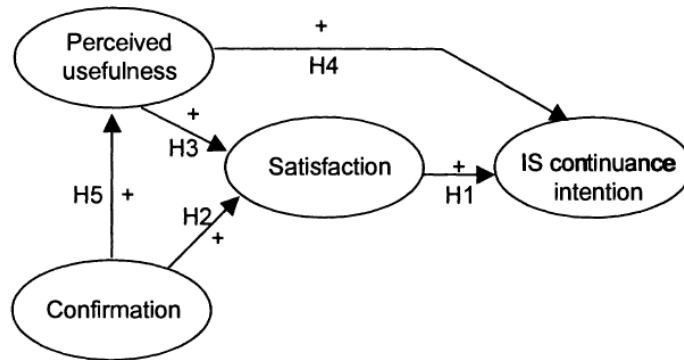
Figure 1   Post-Acceptance Model of IS Continuance (Bhattacherjee, 2001b)

Table 2   Independent variables affecting trust or satisfaction towards continued use of online banking

Categories	Influencing factors for the adoption of IOB	Citations
System-related factors	System quality, information quality, service quality, competence, integrity	Chung & Kwon (2009), Kaabachi et al. (2019); Montazemi & Qahri-Saremi (2015); Ofori et al. (2017); Poromatikul et al. (2020); Sharma & Sharma (2019); Shergill & Li (2005); Thakur (2014); Yu et al. (2015); Zhou, Zhang & Ji(2010); Zhou (2013)
	Customization, interactivity or personalization	Kaabachi, et al. (2020); Oertzen & Odekerken-Schröder (2019); Vatanasombut, Igbaria, Stylianou & Rodgers (2008)
	Security and privacy	Chan (2001); Hernandez & Mazzon(2007); Ofori et al. (2017); Shergill & Li (2005);

Categories	Influencing factors for the adoption of IOB	Citations
		Susanto et al. (2016); Vatanasombut et al. (2008); Zhou et al. (2010); Yu et al. (2015)
	Results demonstrability, trialability	Chan (2001); Hernandez & Mazzon(2007)
	Opportunistic behaviour control, structural assurance	Asnakew (2020); Hernandez & Mazzon(2007); Montazemi & Qahri-Saremi (2015); Ofori et al. (2017); Shergill & Li (2005)
Overall benefits	Perceived usefulness	Asnakew (2020); Chan (2001); Chang, & Ha (2016); Chen & Li (2017); Foroughi et al. (2019); Lin (2011); Hoehle et al.(2012); Montazemi & Qahri-Saremi (2015); Oertzen & Odekerken-Schröder (2019); Susanto et al. (2016); Yuan et al. (2016),
	Compatibility with lifestyle or Perceived task-technology fit	Hernandez & Mazzon(2007); Yuan et al. (2016)
	Convenience, economic benefits, relationship termination cost	Hernandez & Mazzon(2007); Poromatikul et al. (2020); Vatanasombut et al. (2008); Yuan et al, (2019)

Categories	Influencing factors for the adoption of IOB	Citations
	Confirmation or disconfirmation Perceived ease of use	Chen & Li (2017); Foroughi et al. (2019); Poromatikul et al. (2020); Yuan et al. (2016) Asnakew (2020); Chan (2001); Foroughi et al. (2019); Lin (2011); Montazemi & Qahri-Saremi (2015); Yuan et al. (2016)
User's personal traits	Attitude, subjective norm, preference	Asnakew (2020); Chan (2001); Foroughi et al. (2019); Hernandez & Mazzon (2007); Oertzen & Odekerken-Schröder (2019)
	Self-efficacy or anxiety	Chan (2001); Foroughi et al. (2019); Hernandez & Mazzon (2007); Susanto et al. (2016); Yuan et al. (2019)
	Calculative commitment, Affective commitment	Yuan et al. (2019)
Social factors	Receiving WOM	Oertzen & Odekerken-Schröder (2019)
	Image	Chan (2001); Hernandez & Mazzon (2007); Poromatikul et al. (2020)
	Quality of alternatives	Yuan et al. (2019)

Categories	Influencing factors for the adoption of IOB	Citations
	Brand reputation or institutional trust, multichannel satisfaction	Asnakew (2020); Chen & Li (2017); Eriksson & Nilsson (2007); Montazemi & Qahri-Saremi (2015); Shergill & Li (2005); Zhou et al. (2010)

2.4 BEYOND THE CONTINUED USE: CROSS-BUYING OF FINANCIAL SERVICES

Cross-buying is about customers' propensity to make cross-category purchases (Estrella-Ramon et al., 2016). The term 'cross-buying' is different from cross-selling because the former is on the demand side while the latter is on the supply side. It is also a slightly different customer behavior from the continued use. From a service provider's perspective, while customers' continued use of a service is about retaining the customers with the same service, customers' cross-buying behavior is an extension of the supplier's relationship with customers (Liu & Wu, 2007). Even if a customer uses a service continuously, s/he will not necessarily cross-buy other services from the same service provider (Liu & Wu, 2007). For example, a customer who opened a savings account on an IOB could continue to use the account but s/he may not necessarily borrow money (i.e., a loan service) from the IOB even if s/he has such a financing need. Similarly, even if another customer quits the savings account, s/he may still cross-buy other services from the same IOB because, for example, s/he had a positive experience with that service provider. Therefore, the intention of 'continued use' and the intention of 'cross-buying' are not the same and thus should be treated as two separate intentions for usage and purchasing.

Nowadays, it is common for banks to cross-sell different banking, insurance, loan, and investment products. For example, "bancassurance" is a term to describe cross-selling insurance products to bank customers (Hong & Lee, 2012). The services provided by IOBs include current account and savings accounts, credit cards, investments, loans and

insurance. Current customers of an IOB could have various products or have the intention to cross-buy different types of financial service products in near future from the same IOB. Indeed, increasing customers' cross-buying intention could be a great way to help IOBs expand their market shares and make a profit. Therefore, I propose another dependent variable – *cross-buying intension*, on top of the intention of continued use, in order to extend the PAMSIC in the context of IOB. In this study, the *cross-buying intention* is defined as the customers' propensity to make a cross-category purchase of different financial products from the same IOB (Estrella-Ramon et al., 2016).

CHAPTER 3   THEORETICAL BACKGROUND AND HYPOTHESIS

PAMISC (Figure 1) explains how cognitive and affective beliefs affect users' intention to continue using information systems (IS) (Bhattacherjee, 2001b). Based on the literature review on both adoption of IOBs and continuance intention to use online and mobile banking, I found that the level of significance and definition of some variables are different between those of initial adoption and those of continued use. Therefore, simply applying the variables of IOB adoption to the model of continued use of IOBs cannot explain why some users give up the use of IOB after their initial adoption. PAMISC is the first model to address the abovementioned difference in the factors influencing initial adoption and use continuance and has been used for many contexts of IS-enabled services (Lee, Sheehan, Lee & Chang, 2021). Therefore, this study adopts, modifies, and extends the PAMISC in the context of IOB.

The PAMISC posits that when the extent of *confirmation* from using an IS increases, a user's *perceived usefulness (PU)*, a cognitive belief salient to (i.e., a post-use assessment of instrumentality of) IS use (Davis et al., 1989), increases. It also posits that the extent of confirmation and perceived usefulness are positively related to her/his *satisfaction*, an affective belief formed by her/his experience of using an IS (Bhattacherjee, 2001b) and that both perceived usefulness and satisfaction will *influence the use continuance intention*.

PU is defined as "*the degree to which a person believes that using a particular system would enhance his or her job performance*" (Davis, 1989, p.320). As such, it focuses mainly on a system's utilitarian value perceived by the users which can enhance their productivity (Susanto et al., 2016). Due to the rather narrow scope of perceived usefulness, many studies have modified PAMISC by including more post-use instrumentality variables or replacing PU with other variable(s) to suit their research contexts (e.g., Lee et al., 2021; Susanto et al., 2016). In the context of IOB as well, the concept of perceived usefulness may not be suitable to represent the economic incentives provided by contemporary IOBs, as detailed in section 2.2. The reason why the economic

benefit is used in this model is that most of the IOBs attract customers by providing more economic benefits than those of traditional banks. In fact, since the pandemic lockdown, many traditional banks start to provide contactless and paperless services to their customers, so the relative advantages of IOBs in terms of non-economic benefits (i.e., convenience) have been diminished (Asif, Dallerup, Hauser, Parpia, & Taraporevala, 2020). Therefore, I propose *perceived economic benefit* as an important instrumentality assessment variable (instead of PU) for this study (Lee & Kim, 2020). After a while of their initial use, users can assess their level of confirmation, i.e., whether the use of IOBs has met or exceeded their initial expectations in various aspects based on the values provided by the use of an IOB, which could be mainly the economic values. Therefore, a high level of confirmation in the context of IOB should be positively associated with perceived economic benefits to them. Therefore, this study posits that:

H1: Users' confirmation is positively associated with perceived economic benefit.

PAMISC posits that confirmation can determine user satisfaction which is the affective belief before the behavioral intention. If users' expectation towards an IOB is realized (i.e., confirmation), their affective belief in IOBs should increase. However, what is more important to induce users' continued use is the fact that customers get to know the traits and characteristics of the service and thus evaluate its trustworthiness, which is an antecedent of customers' ongoing trust leading to the subsequent continuance intention to use (Yu et al., 2015). Based on Social Exchange Theory, if a service is proven trustworthy, users are more likely to believe that the benefit of continued use of this service is larger than its associated risk (Cook, Cheshire, Rice & Nakagawa, 2013). As abovementioned, satisfaction only measures the degree to which a system can meet users' expectations while ongoing trust measures customers' expectations of a system's future behaviour (Zhou, Zhang & Ji, 2010) and financial institutions are dedicated to building customers' loyalty. Thus, I argue that IOB users' *ongoing trust*, which refers to an experience-based trust that is formed through repeated interactions between users and IOBs, should be used as a more suitable affective belief about the use of IOBs. If users'

expectations towards an IOB are confirmed after the repetitive experience of using it, they will establish ongoing trust towards IOBs because ongoing trust is an experience-based trust. Therefore, this study posits that:

H2: Users' confirmation is positively associated with customers' ongoing trust.

PAMISC posits that perceived usefulness is positively associated with satisfaction (i.e., A positive relationship between instrumentality assessment and affective assessment). In the same vein, I argue that perceived economic benefit is positively associated with ongoing trust. The underlying reason is that if users perceive that IOBs can provide expected economic benefits to them, they will be more willing to be vulnerable to IOBs to perform a specific task (e.g., placing time deposits with a higher interest rate, getting financing with a lower interest rate, investing in treasure products, purchasing insurance products, etc.,) as trust is defined as the extent to which one party is willing to be vulnerable to another party to perform a specific task toward the expected and promised level (Dimitriadis & Kyrezis, 2010; Grabner-Kräuter & Kaluscha, 2003; Zhang et al., 2018). Also, some studies found that the economic benefit brought by technology-enabled banking channels is positively associated with trust (e.g. Kaabachi et al., 2017; Yuan et al., 2019). Therefore, this study posits that:

H3: Perceived economic benefit is positively associated with ongoing trust toward IOBs.

PAMISC posits that post-use instrumentality is also positively associated with users' intention of continued use. The cognitive belief of users will motivate them to have a higher behavioral intention to use an IS. It has been supported by a lot of extant studies in similar contexts of IS-enabled customer services (e.g. Foroughi et al., 2019, Hoehle et al., 2012, Montazemi & Qahri-Saremi, 2015, Vedadi & Warkentin, 2016). In the case of an IOB as well, when a user finds a high level of instrumentality (i.e., perceived economic benefit in this case), they will more likely have the intention to continue using the

services they have with the IOB. Moreover, the relationship between economic benefit and continuance intention has been supported by a lot of extant studies in similar IS-enabled customer services (e.g., Hernandez & Mazzon, 2007; Poromatikul et al., 2020; Vatanasombut et al., 2008; Yuan et al, 2019). Therefore, this study posits that:

H4: Perceived economic benefit is positively associated with intention of continued use of IOBs.

Kaabachi et al., (2019) posit that online trust is one of the main antecedents of e-loyalty because even if customers are satisfied with the system, they still do not have any loyalty to it without trust. In fact, the behavioral intention of continued use entails the concept of loyalty, which refers to a customer's repurchasing intention because they like a brand or service (Kaabachi et al., 2019). Trust is like protection against potential risk (Yu et al., 2015). With users' ongoing trust in an IOB, they are more willing to believe that using the IOB continuously will not cause harmful risks to their interests. As such, the study posits that:

H5: Ongoing trust is positively associated with customers' intention of continued use of IOBs.

Cross-buying a new product from the same seller of previously purchased products may involve a buyer with a higher level of risk with the same seller than before (Liu & Wu, 2007). Trust can act as protection against potential risks and unexpected actions associated with the further use of IOBs (Yu et al., 2015). Thus, when a customer has established ongoing trust with an IOB based on their repetitive use of the IOB, the perceived uncertainty associated with cross-buying on IOBs may be lower (Liu & Wu, 2007). Then, users will have more confidence and willingness to explore other services provided by IOBs. Therefore, this study posits that:

H6: Ongoing trust is positively associated with customers' intention of cross-buying.

Personal innovativeness is defined as the individual's willingness to adopt a new idea earlier than other people (Rogers, 2003). It is also defined as a risk-taking propensity for a new idea (Lu, 2014). Based on Montazemi & Qahri-Saremi (2015)'s literature review on online banking, personal innovativeness is rarely studied in the post-adoption stage in the online banking context, while personal innovativeness has been used as one of the significant factors of IOB adoption (Yoon & Lim, 2020, 2021). Based on Aldás-Manzano et al. (2009)'s argument, without considering personal traits, the study of intention formation is too rational to be true, so I propose personal innovativeness as an important moderating factor that affects the relationship between ongoing trust and two behavioral intentions in this study.

The post-adoption stage is not a static situation. Systems often launch new features in order to fit the current needs of users. Also, users actively revise their use of system features in the post-adoption stages to complete their tasks. This behavior is called adaptive system use (ASU) (Sun, 2012). When users encounter unfamiliar things, personal innovativeness is found as a positive moderator for the relationship between this unfamiliar situation and ASU (Sun, 2012). It implies that users with higher personal innovativeness can get used to this unfamiliar situation and revise their use of system features more quickly.

IOBs keep on enhancing existing features and launching new features to optimize their functions. Since IOBs are still emerging in most countries, the users' willingness to explore new features of IOBs is a concern for IOBs to grow in those countries. Users with higher personal innovativeness are more willing to discover and accept new features after the system has been adopted (Lu, 2014). As posited in H4, users with more ongoing trust towards an IOB will have more loyalty toward the IOB and thus have a higher intention of continued use of the IOB. As for H5, ongoing trust acts as a protection against potential risks during cross-buying because users actually encounter some risks to buy new products from existing systems. For user with higher personal innovativeness, they have a higher risk-taking propensity to accept a new idea. As such, users with higher personal innovativeness should be able to revise and adapt to the new features of the IOB

more quickly and thus have higher intentions of continued use of IOBs and even cross-buying on the IOB, as long as they have a good level of ongoing trust with the IOB. Therefore, this study posits that:

H7: Personal innovativeness is positively moderating the relationship between ongoing trust and intention of continued use of IOBs.

H8: Personal innovativeness is positively moderating the relationship between ongoing trust and intention of cross-buying on IOBs.

Buyers in the later stages of a relationship with a seller have more confidence in the evaluations of the seller than in the earlier stage (Verhoef et al., 2001). As such, an IOB user should have more confidence in evaluating IOB in the later stage of the relationship with the IOB. As mentioned in the argument of H6, cross-buying a new product from the same seller of previously purchased products may involve a buyer with a higher level of risk with the same seller than before (Liu & Wu, 2007). Therefore, if a user has more intention of continued use, they should have more confidence to believe that the associated risk of cross-buying from the same IOB is low based on their repetitive use experience. Therefore, this study posits that:

H9: Intention of continued use of IOBs is positively associated with intention of cross-buying on IOBs.

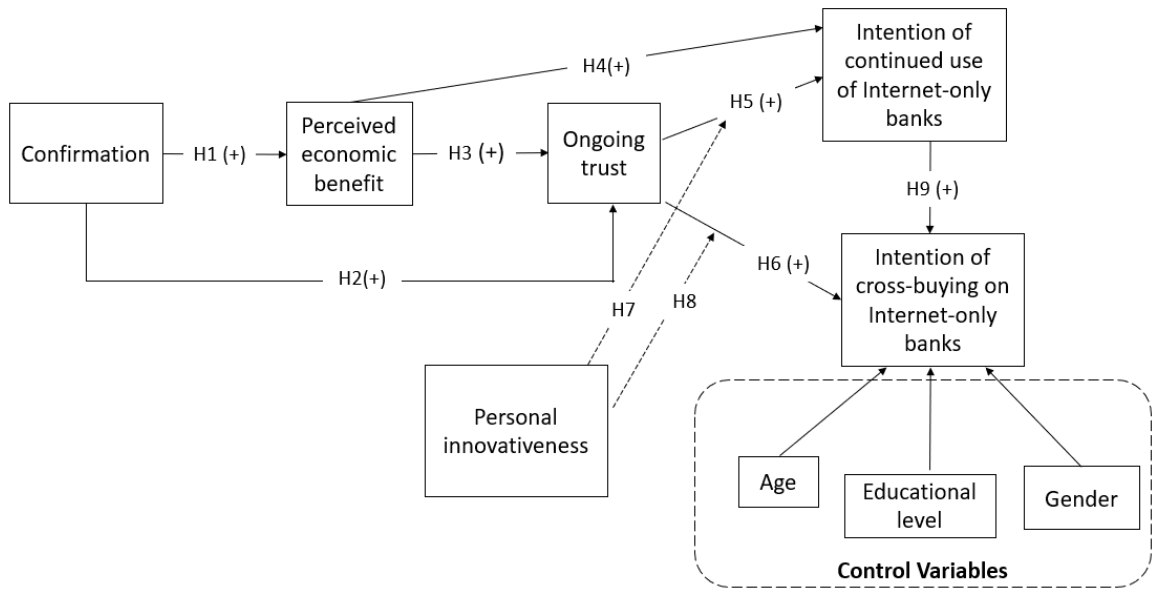Figure 2 shows the research model.

23

Figure 2   Research model

CHAPTER 4   RESEARCH METHODOLOGY

To test the hypotheses, an online survey was conducted to collect data in North America. The Partial Least Squares (PLS) technique was used to analysis the data collected.

4.1 SAMPLES AND DATA COLLECTION

The data was collected by using Amazon's Mechanical Turk (MTurk), an online crowdsourcing platform designed to recruit workers to complete tasks for business and research purposes (Follmer et al., 2017). The target population is the customers who maintain an account(s) with IOBs in the US and Canada. The sampling frame is those existing customers of any of the 15 IOBs in the US and 13 IOBs in Canada (as listed in Appendix I) among the MTurk workers. A screening question, "Do you currently maintain (an) account(s) with any of the following Internet-only banks?", was asked before the start of the survey. Only those answering "Yes" could continue the survey. Each participant could get USD 1.00 for the completion of the survey.

IOBs have long development history and customer penetration rate in the US and Canada. In 2022, 27% of banking customers in the US use IOBs (Effler & Roderick, 2022). Moreover, IOB has 27-year development history in the US (Lee & Kim, 2020) and 25-year history in Canada (Achieva Financial, 2018). In 2022, there are over 15 IOBs in the US while there are over 13 IOBs in Canada, including 3 of them owned by Canadian traditional branch-based banks. The services provided by IOBs in the US and Canada include checking and savings accounts, credit card, mortgage, investment, insurance, line of credit, etc., Such a wide range of services represent that IOB markets in the US and Canada are well-developed. Well-developed IOB markets in the two countries can help me gather relevant data on customers' intention of continued use and cross-buying. Thus, the survey data from these 2 markets can provide good generalizability and inform the emerging IOB markets in other countries.

MTurk was used for the following reasons. First, this platform can reach the target population more easily. Not only does MTurk have a large number of users, but also help

researcher select participants based on demographic information (Lee et al., 2021). Second, the reliability of survey data obtained from MTurk participants is supported by many previous studies (Follmer, Sperling & Suen, 2017). Third, providing small extrinsic rewards to encourage survey completion can increase the participants' willingness to survey completion without placing a significant impact on the effectiveness of sampling. (Lowry, D'Arcy, Hammer & Moody, 2016)

According to the "10-times rule" recommendation for the data required for statistical analysis using PLS (Hair, Ringle, & Sarstedt, 2011), the minimum number of survey data required for a study can be calculated by 10 times the number of relationships (i.e. arrows in Figure 2) between variables. Without considering the control variables, there are 9 relationships. Therefore, the minimum number of samples is 90 (9*10). However, to ensure sufficient statistical power, the number of usable samples is no less than 200.

A total of 300 completed survey responses were collected. However, some of the respondents have low attentiveness toward the questions. To avoid respondent bias toward the result, the sampled data, which are completed within 2 minutes and of which the standard deviation of answers with the 7-point Likert scale is lower than 0.2, were removed. After that, 233 survey responses are usable, which is still above the minimum required sample size (Hair et al., 2011). The respondents consist of 57.51% male and 42.49% female. The mode of age group lies in the 30s. Over 83% of the respondents have an undergraduate degree or above. The details of demographic information are shown in Table 3.

Table 3   Descriptive statistics: participant characteristics (N=233)

Variable	Category	Frequency	Ratio (%)
Gender	Male	134	57.51%
	Female	99	42.49%
Age	18-29	71	30.47%
	30-39	73	31.33%
	40-49	55	23.61%
	50-59	25	10.73%
	>60	9	3.86%
Education	Middle school degree or equivalent	0	0.00%
	High school degree	17	7.30%
	Vocational college degree	21	9.01%
	Undergraduate (University) degree	113	48.50%
	Graduate (University) degree	82	35.19%

4.2 MEASUREMENT

All variables including control variables are reflectively measured by multiple items. The definitions of these constructs are shown in Table 4. All constructs are measured with the measurement items retrieved from extant studies and modified based on the features of IOBs. The measurement items for all constructs are summarized in Appendix II. A closed-end survey is designed. Most questions use a seven-point Likert-scale ranging from "strongly disagree (1)" to "strongly agree (7)" with a neutral point "Neither Agree nor Disagree (4)" as item responses although some questions have different scales such as multiple-choice. Reverse-coded items are added to some of the constructs, so that researcher can filter out those responses with low attentiveness of the respondents. In this research, the demographic information of participants including age, gender and education level are treated as control variables.

Table 4   Conceptual definitions of all constructs

Constructs	Definition	Reference
Confirmation	Users' cognitive beliefs based on the extent to which users' expectation of IOBs is realized during actual use	Bhattacherjee (2001b)
Perceived economic benefit	Users' perceptions of the economic value of using IOBs	Lee & Kim (2020)
Ongoing trust	Experience-based trust formed through repeated interactions between users and IOBs	Lee & Kim (2020)
Intention of cross-buying	Users' propensity to make cross-category purchases in IOBs	Estrella-Ramon et al. (2016)
Continuance intention to use	Users' intention to continue using IOBs	Bhattacherjee (2001b)
Personal innovativeness	The degree to which the user is willing to adopt a new idea earlier than other people	Rogers (2003)

4.3 DATA ANALYSIS

After collecting the data from Amazon Mturk, PLS was employed to validate the research results using SmartPLS 4.0. PLS analysis aims at maximizing the explained variance of the dependent variables and evaluating the measurement quality (Hair, Sarstedt, Hopkins & Kuppelwieser, 2014). This analysis method has been widely applied in marketing, information systems, and business research. Since PLS can work well with non-normal data and complex models, it fits with this research with 9 hypotheses with some non-normal data. That is, PLS can address the study's primary objectives of identifying the

significance of the relationships presented in Figure 2 and ensuring the quality of measurement properties of data collected from a survey data collection. Therefore, PLS is the suitable data analysis method for this research.

- *Testing the Internal Reliability*

When multiple measurement items are used to measure one construct, internal reliability should be calculated to assess the consistency of the relationship between each measurement item and the construct. For internal reliability, Cronbach's alpha for all the variables is calculated. If the results exceed the minimum acceptability of 0.70 (Gefen & Straub, 2005; Henseler et al., 2016), they indicate that this set of variables is consistent in its intended measure, and measures are internally reliable. As shown in Table 5, Cronbach's alphas for all the variables are over 0.7 which indicates that all the measures are internally reliable.

- *Testing Construct Validity*

Convergent validity is a way to evaluate construct validity, i.e., how well the survey measures the construct it was supposed to measure. To measure convergent validity, the factor loadings, the composite reliability (CR) values, and the average variance extracted (AVE) values of each variable were checked. As shown in Table 5, the factor loadings are greater than 0.70 which is the ideal threshold showing the correlation between the original variables and the items (Hair, Anderson, Babin & Black, 2010). Secondly, each CR value is greater than the acceptable criteria of 0.70, which means that the variables have enough internal consistency (Aguirre-Urreta, Marakas & Ellis, 2013). Thirdly, the average variance extracted (AVE) values are above 0.5, indicating the level of variance captured by our variables is high enough compared to that from measurement errors (Fornell & Larcker, 1981).

As for the discriminant validity, the researcher confirmed it by checking the square roots of the AVE values for all the variables shown in the Fornell-Larcker criterion in SmartPLS 4.0. The square root values should exceed their inter-correlations with other variables to demonstrate that each variable is uniquely measured by its own constructs. As shown in

Table 6, only the correlation with ongoing trust (0.875) is slightly higher than confirmation itself (0.854). However, the difference is not so significant (0.021). Also, the surface meanings of confirmation and ongoing trust are different, which does not demonstrate a serious problem with discriminant validity. Other than that, the square root values of variables exceed their inter-correlations with other variables. Taken together, all the results of the above tests suggest that our measurement model is sufficiently reliable and valid.

Table 5   **Measurement of internal reliability and convergent validity**

Construct	Loadings	Cronbach's α	Rho	Composite reliability	Average variance extracted
Cross-buying intention	CBInt01: 0.856 CBInt02: 0.895 CBInt03: 0.894 CBInt04: 0.876	0.903	0.905	0.932	0.775
Continuance intention	ContInt01: 0.882 ContInt02: 0.912 ContInt03: 0.895	0.877	0.881	0.924	0.803
Ongoing trust	Ontrust01: 0.881 Ontrust02: 0.885 Ontrust03: 0.875 Ontrust04: 0.848	0.895	0.895	0.927	0.761
Perceived economic benefit	PEB01: 0.795 PEB02: 0.817 PEB03: 0.827 PEB04: 0.837	0.837	0.838	0.891	0.671
Confirmation	Conf01: 0.848 Conf02: 0.849 Conf03: 0.864 Conf04: 0.855	0.876	0.877	0.915	0.729
Personal innovativeness	PI01: 0.844 PI02: 0.796 PI03: 0.829 PI04: 0.831	0.844	0.845	0.895	0.681

Table 6   **Fornell-Larcker Criterion: Construct inter-correlation matrix and the square roots of AVE with reflective measures**

	CBInt	Conf	ContInt	PEB	Ontrust	PI
CBInt	0.880					
Conf	0.558	0.854				
ContInt	0.585	0.713	0.896			
PEB	0.560	0.845	0.710	0.819		
Ontrust	0.507	0.875	0.692	0.777	0.872	
PI	0.517	0.785	0.616	0.727	0.796	0.825

- *Common Method Bias (CMB) test*

As this study collected cross-sectional data and employed a self-rated survey for both the dependent and independent variables, this study might have an issue with common method bias (Podsakoff, 2003). To check the CMB of this study, the method suggested by Liang et al. (2007) has been adopted. This test is conducted in PLS by employing a latent method factor (LMF). First, each indicator is converted into a single-indicator construct. Then, the constructs of my study are converted into second-order constructs and linked with all the single-indicator constructs. After that, all the single-indicator constructs are linked with an LMF. Finally, PLS calculates and evaluates the ratio of substantive variance to method variance. As shown in Table 7, the average of substantively explained variances was 0.744 while the average of method-based variances was 0.008. The ratio of substantive variance to method variance was approximately 93:1, indicating that the magnitude of the method variance identified was tiny. This LMF test suggests that CMB is not a big concern.

Table 7   **Common method bias test using the modelling of the latent method factor (LMF)**

Construct	Indicator	Substantive factor loading (R1)	R1²	Method factor loading (R2)	R2²
Confirmation	Conf1	0.831***	0.691	0.023	0.001
	Conf2	0.930***	0.865	-0.089	0.008
	Conf3	0.911***	0.830	-0.049	0.002

| Construct	Indicator	Substantive factor loading (R1)	R1²	Method factor loading (R2)	R2²
	Conf4	0.745***	0.555	0.115	0.013
Perceived	PEB1	0.725***	0.526	0.08	0.006
Economic	PEB2	1.016***	1.032	-0.213*	0.045
Benefit	PEB3	0.729***	0.531	0.102	0.010
	PEB4	0.803***	0.645	0.034	0.001
Ongoing Trust	Ontrust1	0.814***	0.663	0.073	0.005
	Ontrust2	0.966***	0.933	-0.087	0.008
	Ontrust3	0.948***	0.899	-0.078	0.006
	Ontrust4	0.757***	0.573	0.097	0.009
Continuance	ContInt1	1.005***	1.010	-0.141**	0.020
Intention	ContInt2	0.864***	0.746	0.053	0.003
	ContInt3	0.821***	0.674	0.086	0.007
Cross-buying	CBInt1	0.905***	0.819	-0.061	0.004
Intention	CBInt2	0.905***	0.819	-0.013	0.000
	CBInt3	0.908***	0.824	-0.021	0.000
	CBInt4	0.801***	0.642	0.096*	0.009
Personal	PI1	0.840***	0.706	0.003	0.000
Innovativeness	PI2	0.888***	0.789	-0.103	0.011
	P3	0.754***	0.569	0.086	0.007
	PI4	0.822***	0.676	0.01	0.000
Average			0.744		0.008

Note(s): $* = p < 0.05$, $** = p < 0.01$, $*** = p < 0.001$

- *Testing the structural model*

The path analysis of the structural model is conducted. The explained variance (R^2), path coefficients (β) and their levels of significance (t-values) using a bootstrapping method with re-sampling (n=5000) and PLS algorithm are measured to assess the significance of the hypothesized relationships.

The path coefficient measures the sensitivity of the relationships between independent variables & dependent variables. If the path coefficient is high, the variation of the dependent variable is more sensitive depending on the variation of the independent

variable. T-values are used to assess each estimated parameter (e.g., beta)'s significance. Figure 3 shows the explained variances (R^2), the path coefficients (β) and the levels of significance (t-values). All hypotheses, except H4 and H7, are supported. As for the control variables, none of them has a significant relationship with the dependent variable, the intention of cross-buying.

R^2 shows the amount of variation of endogenous variables that is explained by the exogenous variables. It is an indicator of the predictive power of the model. (Chin, 1998; Gefen et al., 2000). As shown in Figure 3, 71.4% variance of perceived economic benefit, 77.0% variance of ongoing trust, 55.4% variance of the intention of continued use of Internet-only banks and 41.8% variance of the intention of cross-buying on Internet-only banks can be explained in this model. Since all the R^2 are greater than 10%, these results indicate that this model is substantive and satisfactory (Falk and Miller, 1992).
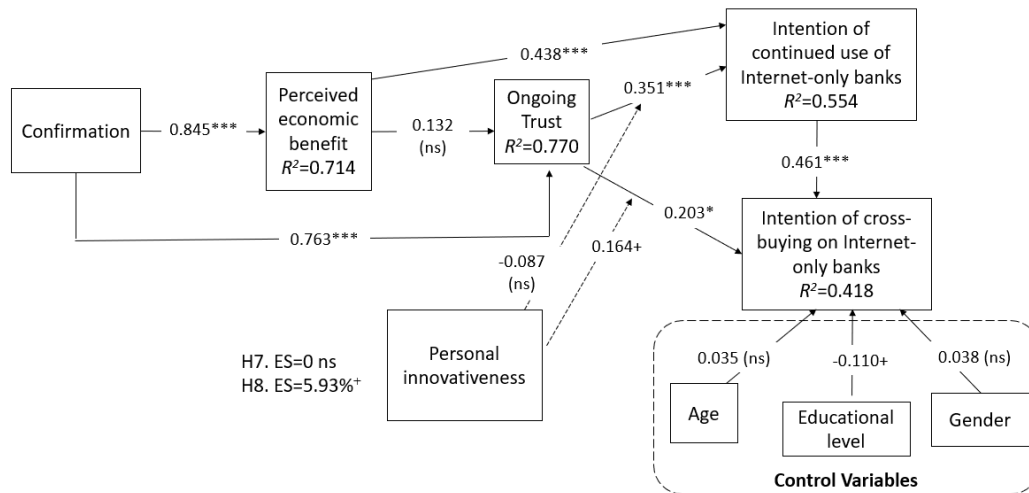
Note(s): + = p <0.1, *=p <0.05, **=p <0.01, ***= p <0.001

Figure 3 Structural test result (N=233)

CHAPTER 5   DISCUSSION

5.1 FINDINGS

Confirmation is significantly and strongly associated with perceived economic benefit and ongoing trust (β=0.845 and 0.763 respectively at the significance level of 0.001) so the H1 and H2 are supported. It implies that if customers' expectation towards the IOBs is fulfilled, they will perceive more economic benefit generated from IOBs, i.e., higher post-use instrumentality. Also, they will establish more ongoing trust towards IOBs, i.e., affective belief.

The perceived economic benefit is significantly associated with intention of continued use of IOBs (β=0.438 at the significance level of 0.001) so H4 is supported. However, the perceived economic benefit does not have a significant relationship with ongoing trust (β=0.132 and p-value > 0.1) so H3 is not supported. It implies that only the perceived economic benefit is not sufficient for the formation of ongoing trust in IOBs. Instead, some other factors, like the functionality of the application, service quality, etc., which could have been embedded in the assessment of confirmation by users, could also be taken into consideration. However, as long as IOBs continue to provide economic benefits to users, they are more likely to use them continuously.

Ongoing trust is significantly associated with intention of continued use of IOBs (β=0.351 at the significance level of 0.001) so H5 is supported. It shows that if users have more experience-based trust based on positive interactions with IOBs, they will have more intention to use IOBs continuously. The relationship between ongoing trust and intention of cross-buying on IOBs is also significant (β=0.203 at the significance level of 0.05) so H6 is supported. It implies that when users establish ongoing trust with IOBs, they are more likely to consider that the risk associated with cross-buying on IOBs is lower and thus have more intention to do so.

The intention of continued use of IOBs is significantly associated with intention of cross-buying on IOBs so H9 is supported (β=0.461 at the significance level of 0.001). It implies that if the users have more intention to use IOBs continuously, they will be more willing to explore new products in IOBs because they are more familiar with IOBs after continuous use and thus think that the associated risk of cross-category purchases is lower. Here, this relationship is stronger than the positive relationship between ongoing trust and intention of cross-buying on IOBs. The reason can be that the establishment of ongoing trust first motivates users to use IOBs continuously. After that, users gradually accept new product categories sold on IOBs. These results suggest a possibility that the intention of continued use of IOBs could partially mediate the relationship between ongoing trust and the intention of cross-buying intention.

In order to examine the inter-relationships among ongoing trust, continuance intention, and cross-buying intention, a post-hoc test of the mediating effect of the intention of continued use on the link between ongoing trust and cross-buying intention is conducted. Before adding the intention of continued use of IOBs, the association between ongoing trust and intention of cross-buying on IOBs is significant with a path coefficient of 0.508 and t-value of 7.984 by running bootstrapping in PLS. After adding the intention of continued use of IOBs and running bootstrapping again, the path coefficient of ongoing trust and intention of cross-buying on IOBs decreases to 0.196 with a t-value of 2.286. It indicates that the association between ongoing trust and intention of cross-buying is partially mediated by the intention of continued use. Also, PLS shows that the indirect effect of the intention of continued use towards the relationship between ongoing trust and intention of cross-buying is significant at a t-value of 4.992. Therefore, the relationship between ongoing trust and intention of cross-buying is partially mediated by the intention of continued use of IOBs. The results of mediating effect are shown in Table 9.

As for the moderating effect of personal innovativeness (PI), it is tested by the procedure introduced by Chin et al. (2003) with a calculation of effect sizes (Cohen, 2013), path coefficients and the level of significance of the interaction term (predictor

variable*moderator variable) in PLS. As shown in Table 8, the moderating effect of personal innovativeness on the relationship between ongoing trust and intention of continued use of IOBs is not significant. Also, there is no change in explained variance after adding personal innovativeness, so the effect size is 0% (H7 not supported). As for PI's moderating effect on the relationship between ongoing trust and intention of cross-buying on IOBs, the t-value is 1.95 with the effect size is 5.93% (= (0.413-0.376)/ (1-0.376)), which indicates that H8 is marginally supported with small effect size. It means that a unit increase in the PI marginally increases the path coefficient of ongoing trust on the intention of cross-buying on IOBs by β=0.164. It shows that users with higher personal innovativeness can get used to the unfamiliar situation and revise their use of system features more quickly, so they are more willing to accept and purchase new products of IOBs as long as they have high level of ongoing trust with IOBs.

Except for education level, the other 2 control variables do not have a significant relationship with intention of cross-buying. Education level has a marginal but negative significant relationship with intention of cross-buying (β=-0.110 at the significant level of 0.1). It can be explained by the fact that people with higher education levels tend to have a higher income level. They could be a customer of IOB but when they want to extend their banking services other than basic checking or saving account, they may look for traditional (i.e., personalized) banking services but not IOB.

Table 8   Results of hypothesis testing

	Path coefficients	t-values	Supported?
H1: Conf → PEB	0.845	29.345***	Yes
H2: Conf→ Ontrust	0.763	9.176***	Yes
H3: PEB → Ontrust	0.132	1.407 ns	No
H4: PEB → ContInt	0.438	4.681***	Yes
H5: Ontrust → ContInt	0.351	3.938***	Yes
H6: Ontrust → CBInt	0.203	2.285*	Yes, partially mediated by ContInt
H9: ContInt-→CBInt	0.461	5.135***	Yes
Moderator:			
H7: PI * Ontrust → ContInt	-0.087	1.013 ns	No

	Path coefficients	t-values	Supported?
H8: PI * Ontrust → CBInt	0.164	1.953[+]	Yes, marginally supported
Control variables:			
Age → CBInt	0.035	0.773 ns	No
Gender → CBInt	0.038	0.344 ns	No
EduLevel → CBInt	-0.110	1.884[+]	Yes, marginally supported

Note(s): += p < 0.1, * = p < 0.05, **= p < 0.01, ***=p < 0.001

Table 9   Mediating effect of the intention of continued use

	Path coefficient	t-value
Ongoing trust→ Intention of cross-buying	0.508	7.984***
Mediator: Intention of continued use of IOBs		
Ongoing trust→Intention of continued use of IOBs	0.691	12.927***
Intention of continued use→ Intention of cross-buying	0.450	5.033***
Ongoing trust→Intention of cross-buying	0.196	2.286*
Indirect effect		
Ongoing trust→Intention of continued use→Intention of cross-buying	/	4.992***

Note(s): * = $p < 0.05$, **= $p < 0.01$, ***=$p < 0.001$

5.2 THEORETICAL CONTRIBUTIONS

This study brings theoretical contributions to IS literature in several ways.

First, this study can shed light on the literature on contactless financial services by investigating current IOB customers' intention of continued use and cross-buying. Although IOBs have been developed over 25 years, relevant studies are mostly about adoption. Undoubtedly, factors of IOB adoption are important for emerging markets but more studies should be conducted on the intention of continued use and cross-buying, which are more important for IOBs in more developed markets to sustain and develop. In fact, IOBs have been developed in the US and Canada for over 25 years while there are over 15 IOBs in the US and over 13 IOBs in Canada. It is time for researchers to focus further on the post-adoption stage of IOBs.

Second, this study can contribute to the PAMISC (Bhattacherjee, 2001b) by modifying it to fit the IOB context. Four important variables (perceived economic benefit, ongoing trust, personal innovativeness and intention of cross-buying) have been introduced into the model, including a new dependent variable. This study focuses on perceived economic benefits rather than perceived usefulness due to the importance of economic benefits (over system usefulness) for IOBs to attract users. Since financial institutions are eager to establish a long-term relationship with their customers, this study introduced ongoing trust, as an indicator of both satisfaction and loyalty, to explain the post-use cognitive and affective belief. Since inducing customers' intention of continued use can only help IOB sustain but not further grow, the cross-buying intention is added to the model as one of the dependent variables to figure out what factors can help IOBs grow further, especially in more developed markets. The original PAMISC does not consider any personal trait. Without considering personal traits, the study of intention formation is too rational to be true (Aldás-Manzano et al., 2009). Therefore, personal innovativeness is added as a moderator in this study.

Third, this study takes personal innovativeness into consideration. Montazemi & Qahri-Saremi (2015)'s literature review on online banking suggested that personal innovativeness is rarely studied in the post-adoption stage. Lu (2014) also mentioned that researchers have paid insufficient effort to explore the effect of personal innovativeness in a post-adoption context. Post-adoption is not a static stage. Users will keep on exploring new features of the information systems in order to complete a large variety of tasks. Also, technology developers are dedicated to optimizing the features and functions of information systems to better fit the changing needs of users. Personal innovativeness can indicate whether users are willing to accept those new features and functions of the existing systems. Therefore, this study can provide insight about the moderating role of personal innovativeness for the relationship between affective belief and behavioral intention.

5.3 PRACTICAL CONTRIBUTIONS:

This study also brings practical contributions to IOBs in several ways.

First, this study shows that perceived economic benefits can induce customers' intention of continued use of IOB. If IOBs keep on providing economic benefits to their customers, they are more likely to use IOBs continuously. Thanks to the development of information technology, IOBs develop rapidly in the last two decades. However, the strategies used by IOBs are mainly monetary. They provide higher deposit interest rates, charge lower lending interest rates and zero or very low transaction fees to attract customers. However, this tactic will increase IOBs' operating costs and may cause a serious problem in their financial sustainability. Moreover, if financial institutions rely on the provision of economic benefits to maintain a long-term relationship with customers, it may cause a "price war" among IOBs and even traditional banks. Subsequently, the profitability of the whole financial sector may be influenced by this price war.

Second, this study can help IOBs understand that the offer of economic benefits may not necessarily help them gain customers' trust. The result shows that perceived economic benefit does not have a significant relationship with ongoing trust. It is time for IOBs to think about what they can do to establish a long-term relationship with customers other than merely offering economic benefits. For example, some studies found that service quality, including reliability, responsiveness, assurance and empathy, is positively related to customers' trust (Montazemi & Qahri-Saremi, 2015, Zhou, Zhang & Ji, 2010). Since IOBs do not maintain any physical branch, users may find it difficult to seek assistance during usage. Therefore, IOBs should ensure their system reliability in order to reduce customers' need of seeking assistance. Also, IOBs should educate users that they can seek help by phone or email if a problem exists. Moreover, they should ensure that the response rate of these channels is high. Then, users are more willing to use IOBs continuously after being attracted by the initial economic benefits. Since the research is based on the US and Canada where IOBs are well-developed, it can provide a good

reference for other markets with high penetration rates and development history to sustain and for emerging markets to further expand.

Third, this study can highlight the factors that IOBs mainly focus on to improve the continued use of service and ongoing engagement with their customers by proposing the factors related to cross-buying intention. Nowadays, it is common for banks to cross-sell different banking, insurance and investment products. This study shows that intention of continued use is positively associated with intention of cross-buying on IOBs. Also, the intention of continued use partially mediates the relationship between ongoing trust and cross-buying intention. It implies that IOBs should first attract users' continuance intention before inducing their cross-buying intentions. Although satisfaction is constantly found as an antecedent of continuance intention to use (Ofori et al., 2017), Verhoef et al. (2001) found that satisfaction does not have a significant effect on cross-buying. This study demonstrates that ongoing trust, as an indicator of both satisfaction and loyalty, can act as a protection against potential risk towards continued use and cross-buying on IOBs. Therefore, IOBs should focus more on inducing ongoing trust rather than satisfaction only if they would like to attract customers' cross-buying intention.

Fourth, this study shows IOB practitioners how the personal traits of existing users affect the further expansion of IOBs. Although personal innovativeness only has a marginally significant moderating effect on the relationship between ongoing trust and cross-buying intention, it shows that IOB practitioners should also consider the personal traits of users before designing the features and functions of IOBs.

Fifth, the negative association between education level and intention of cross-buying is found to be marginally significant. Customers with higher education levels are less likely to cross-buy other banking products on IOBs. It is believed that more educated people have higher incomes and wealth. They may prefer traditional (i.e., personalized) banking services but not IOB if they look for more complicated services. It shows that IOBs still have an image of merely providing simple banking services. Although IOBs do not have physical branches or provide in-person service to customers, the product range of IOBs is

wide, or even similar to that of traditional banks. Therefore, if IOBs want to get into the market of those high-net-worth customers, they should try to provide more "personalized" service to them. For example, they can apply AI and machine learning to recommend investment products which fit customers' needs and goals. Also, they can enhance their chatbot functionality and response rate of phone banking, so that customers can get assistance on a 24/7 basis.

5.4 LIMITATIONS AND FUTURE RESEARCH

Despite its contributions, this study has several limitations.

First, the survey data is collected from MTurk. The decrease in reliability and validity of data collected from MTurk has triggered a lot of concern about the quality of psychological research since 2018 (Chmielewski & Kucker, 2020). This study has followed multiple suggestions made by Aguinis & Ramani (2021) including getting at least an addition of 15%-30% of MTurkers, the use of Qualtrics to keep track of MTurk ID, the use of attention check, data screening, etc. Although reverse-coded questions have been added, there are still over 20% of responses answered with low attentiveness (i.e. answered within 2 minutes and answers with a standard deviation of the Likert-scale answers lower than 0.2). Although the final sample size is still over the minimum number of samples suggested by Hair al et. (2011), the honesty and integrity of those 233 respondents cannot be verified. Aguinis & Ramani (2021) also suggested that fair pay can bring better performance on the research task. In a future study, the compensation rules should be reviewed. Also, researchers can work with IOBs to get their users' consent on joining the survey which can enhance the reliability and validity of data.

Second, only one post-use instrumentality, perceived economic benefit, has been considered in this study. Based on the literature review, some post-use instrumentalities, e.g., system quality, convenience, etc., could have significant relationships with continuance intention (and probably with cross-buying intention). Although this study finds that perceived economic benefit does not have a significant relationship with

ongoing trust, it cannot show which post-use instrumentalities are associated with ongoing trust. In a future study, more post-use instrumentalities should be included, especially in the context of post-adoption of IOBs which does not have a lot of relevant studies.

Third, only one personal trait has been studied in this study as it is widely identified from extant studies on IOBs and online banking. However, other personal traits (e.g., computer self-efficacy, and customers' propensity to trust (Montazemi & Qahri-Saremi, 2015) may also affect the intention of continued use and cross-buying. Also, this study takes personal innovativeness as a moderator while some studies treated it as one of the independent variables. In a future study, their relationships with dependent variables should be further examined.

Fourth, the collected data has some degree of inter-collinearity issues among variables. Table 6 shows that some inter-correlations are higher than 0.70. I have kept those variables after checking Fornell-Larcker criterion in SmartPLS 4.0 that the square root values of the variables do not exceed their inter-correlations with other variables, except that fact that the correlation with ongoing trust is slightly higher than confirmation itself with an insignificant difference of 0.021. Also, the surface meanings of highly correlated variables are still distinct from each other. This limitation of inter-collinearity could have been caused by data collection with MTurk, where the respondents were less attentive when answering questions than I expected. Therefore, future research should collect data not from MTurk but from more attentive groups of respondents.

CHAPTER 6   CONCLUSION

The purpose and research question of this study is to examine what factors lead to customers' intention of continued use and cross-buying on IOBs by extending the Post-Acceptance Model of IS Continuance (PAMISC). Specifically, this study proposes a model that investigates the relationships among current IOB users' degree of confirmation, perceived economic benefits, ongoing trust and their intention of continued use and cross-buying on IOBs based on the PAMISC. It also treats personal innovativeness as a moderator. The result shows that confirmation has a significant association with both perceived economic benefit and ongoing trust, but the perceived economic benefit does not have a significant relationship with ongoing trust. However, ongoing trust has a significantly positive association with intention of continued use and the intention of cross-buying. Also, the intention of continued use mediates the association between ongoing trust and the intention of cross-buying. Personal innovativeness is found to have a marginally significant moderating effect on the association between ongoing trust and intention of cross-buying. This study sheds light on the literature on contactless financial services and PAMISC. IOB practitioners should also revisit the effectiveness of economic benefits for the establishment of ongoing trust with customers and consider the personal traits of current IOB users and their intention of continued use when inducing cross-buying intention.

BIBLIOGRAPHY

Achieva Financial (2018). The History of Online Financial Institutions in Canada. Retrieved September 19, 2018, from https://www.achieva.mb.ca/blog/detail/blog/2018/09/19/the-history-of-online-financial-institutions-in-canada

Aguinis, H., Villamor, I., & Ramani, R. S. (2021). MTurk research: Review and recommendations. *Journal of Management*, *47*(4), 823-837. https://doi.org/10.2308/isys-52021

Aguirre-Urreta, M. I., Marakas, G. M., & Ellis, M. E. (2013). Measurement of composite reliability in research using partial least squares: Some issues and an alternative approach. *Data Base for Advances in Information Systems, 44*(4), 11–43. https://doi.org/10.1145/2544415.2544417

Ahn, S. J., & Lee, S. H. (2019). The effect of consumers' perceived value on acceptance of an internet-only bank service. *Sustainability (Switzerland), 11*(17), 1–9. https://doi.org/10.3390/su11174599

Aldás-Manzano, J., Ruiz-Mafé, C., & Sanz-Blas, S. (2009). Exploring individual personality factors as drivers of M-shopping acceptance. *Industrial Management & Data Systems*. https://doi.org/10.1108/02635570910968018

Asif, C., Dallerup, K., Hauser, S., Parpia, A., & Taraporevala, Z., (2020). Reshaping retail banking for the next normal. Retrieved Oct 19, 2022, from https://www.mckinsey.com/industries/financial-services/our-insights/reshaping-retail-banking-for-the-next-normal

Asnakew, Z. S. (2020). Customers' Continuance Intention to Use Mobile Banking: Development and Testing of an Integrated Model. *The Review of Socionetwork Strategies, 14*(1), 123–146. https://doi.org/10.1007/s12626-020-00060-7

Bhattacherjee, A. (2001a). An empirical analysis of the antecedents of electronic commerce service continuance. *Decision Support Systems, 32*(2), 201–214. https://doi.org/10.1016/S0167-9236(01)00111-7

Bhattacherjee, A. (2001b). Understanding Information Systems Continuance: An Expectation-Confirmation Model. *MIS Quarterly, 25*(3), 351–370.

CFI Team. (2020). Non-Interest Expense - Overview, Components, Types. Retrieved Oct 19, 2022, from https://corporatefinanceinstitute.com/resources/knowledge/accounting/non-interest-expense/

Chan, S. C. (2001). Understanding Adoption and Continual Usage Behaviour towards Internet Banking Services in Hong Kong. *Department of Computing and Decision Sciences 10-2001*, 164.

Chen, S., D'Silva, D., Packer, F., & Tiwari, S. (2022). Virtual banking and beyond (Issue 120). Retrieved from https://www.bis.org/publ/bppdf/bispap120.pdf

Chen, X., & Li, S. (2017). Understanding continuance intention of mobile payment services: An empirical study. Journal of Computer Information Systems, 57(4), 287–298. https://doi.org/10.1080/08874417.2016.1180649

Chin, W.W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research, 295* (2), 295-336.

Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research, 14*(2), 189–217. https://doi.org/10.1287/isre.14.2.189.16018

Chmielewski, M., & Kucker, S. C. (2020). An MTurk crisis? Shifts in data quality and the impact on study results. Social Psychological and Personality Science, 11(4), 464-473. https://doi.org/10.1177/1948550619875149

Chung, N., & Kwon, S. J. (2009). Effect of trust level on mobile banking satisfaction: A multi-group analysis of information system success instruments. *Behaviour and Information Technology, 28*(6), 549–562. https://doi.org/10.1080/01449290802506562

Cohen, J. (2013). Statistical power analysis for the behavioral sciences. *Routledge*. https://doi.org/10.4324/9780203771587

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. MIS quarterly, 189-211. https://doi.org/10.2307/249688

Cook, K. S., Cheshire, C., Rice, E. R., & Nakagawa, S. (2013). Social exchange theory. In Handbook of social psychology (pp. 61-88). Springer, Dordrecht.

Dandapani, K., & Lawrence, E. R. (2008). Virtual bank failures: An investigation. *Managerial Finance, 34*(6), 399–412. https://doi.org/10.1108/03074350810872778

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly: *Management Information Systems, 13*(3), 319–339. https://doi.org/10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science, 35*(8), 982–1003.

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems, 19*(4), 9–30. https://doi.org/10.1080/07421222.2003.11045748

Dimitriadis, S., & Kyrezis, N. (2010). Linking Trust to Use Intention for Technology-Enabled Bank Channels: The Role of Trusting Intentions. *Psychology & Marketing, 27*(8), 799–820. https://doi.org/10.1002/mar.20358

Effler, G. & Roderick, J. (2022, May 12). Established Direct Banking Brands Flex Their Digital Banking Muscle, According to J.D. Power [Blog Post]. Retrieved from https://www.businesswire.com/news/home/20220512005345/en/Established-Direct-Banking-Brands-Flex-Their-Digital-Banking-Muscle-According-to-J.D.-Power

Eriksson, K., & Nilsson, D. (2007). Determinants of the continued use of self-service technology: The case of Internet banking. *Technovation, 27*(4), 159–167. https://doi.org/10.1016/j.technovation.2006.11.001

Estrella-Ramon, A., Sánchez-Pérez, M., & Swinnen, G. (2016). How customers' offline experience affects the adoption of online banking. *Internet Research, 26*(5), 1072–1092. https://doi.org/10.1108/IntR-03-2015-0092

Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling.* University of Akron Press.

Follmer, D. J., Sperling, R. A., & Suen, H. K. (2017). The Role of MTurk in Education Research: Advantages, Issues, and Future Directions. *Educational Researcher, 46*(6), 329–334. https://doi.org/10.3102/0013189X17725519

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*(1), 39. https://doi.org/10.2307/3151312

Foroughi, B., Iranmanesh, M., & Hyun, S. S. (2019). Understanding the determinants of mobile banking continuance usage intention. *Journal of Enterprise Information Management, 32*(6), 1015–1033. https://doi.org/10.1108/JEIM-10-2018-0237

Gefen, D., & Straub, D. (2005). A Practical Guide To Factorial Validity Using PLS-Graph: Tutorial And Annotated Example. *Communications of the Association for Information Systems, 16*(1),5. https://doi.org/10.17705/1cais.01605

Gefen, D., Straub, D., & Boudreau, M. C. (2000). Structural equation modeling and regression: Guidelines for research practice. *Communications of the association for information systems*, *4*(1), 7. https://doi.org/10.17705/1CAIS.00407

Grabner-Kräuter, S., & Kaluscha, E. A. (2003). Empirical research in on-line trust: A review and critical assessment. *International Journal of Human Computer Studies, 58*(6), 783–812. https://doi.org/10.1016/S1071-5819(03)00043-0

Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). Multivariate data analysis: A global perspective (Vol. 7).

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of *Marketing Theory and Practice, 19*(2), 139–152. https://doi.org/10.2753/MTP1069-6679190202

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

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management and Data Systems, 116*(1), 2–20. https://doi.org/10.1108/IMDS-09-2015-0382

Hernandez, J. M. C., & Mazzon, J. A. (2007). Adoption of internet banking: proposition and implementation of an integrated methodology approach. *International journal of bank marketing*. https://doi.org/10.1108/02652320710728410

Hoehle, H., Huff, S., & Goode, S. (2012). The role of continuous trust in information systems continuance. *Journal of Computer Information Systems, 52*(4), 1–9. https://doi.org/10.1080/08874417.2012.11645571

Hong, J., & Lee, Y. (2012). Determinants of cross-buying intentions in banking services in collectivistic culture. *International Journal of Bank Marketing, 30*(5), 328–358. https://doi.org/10.1108/02652321211247408

Kaabachi, S., Mrad, S. B., & Fiedler, A. (2019). The moderating effect of e-bank structure on French consumers' trust. International Journal of Bank Marketing. https://doi.org/10.1108/IJBM-04-2019-0119

Kaabachi, S., Mrad, S. B., & Petrescu, M. (2017). Consumer initial trust toward internet-only banks in France. *International Journal of Bank Marketing*. https://doi.org/10.1108/IJBM-09-2016-0140

Lin, J. (2011). Research on consumer trust and satisfaction in mobile commerce. *International Conference on Management Science and Engineering - Annual Conference Proceedings*, 47–51. https://doi.org/10.1109/ICMSE.2011.6069941

Liu, T. C., & Wu, L. W. (2007). Customer retention and cross-buying in the banking industry: An integration of service attributes, satisfaction and trust. Journal of financial services marketing, 12(2), 132-145. https://doi.org/10.1057/palgrave.fsm.4760067

Lee, J. M., & Kim, H. J. (2020). Determinants of adoption and continuance intentions toward Internet-only banks. *International Journal of Bank Marketing, 38*(4), 843–865. https://doi.org/10.1108/IJBM-07-2019-0269

Lee, K. Y., Sheehan, L., Lee, K., & Chang, Y. (2021). The continuation and recommendation intention of artificial intelligence-based voice assistant systems (AIVAS): the influence of personal traits. *Internet Research*, *31*(5), 1899-1939. https://doi.org/10.1108/INTR-06-2020-0327

Lewis, J. D., & Weigert, A. (1985). Trust as a social reality. *Social forces*, *63*(4), 967-985.

Li, M. L., Lin, S. P., Chan, Y. H., & Wu, C. H. (2021). Customer involvement facets stimulating customers' intention to use internet-only bank services in China: The extension of perceived risk-value model. *Journal of Organizational and End User Computing, 33*(5), 1–24. https://doi.org/10.4018/JOEUC.20210901.oa4

Liang, H., Saraf, N., Hu, Q. & Xue, Y. (2007). Assimilation of enterprise systems: the effect of
institutional pressures and the mediating role of top management. *MIS Quarterly, 31*(1), 59-87. https://doi.org/10.2307/25148781

Liu, T.-C., & Wu, L.-W. (2007). Customer retention and cross-buying in the banking industry: An integration of service attributes, satisfaction and trust. *Journal of Financial Services Marketing, 12*(2), 132–145. https://doi.org/10.1057/palgrave.fsm.4760067

Llewellyn, D. T. (2005). Trust and confidence in financial services: a strategic challenge. *Journal of Financial Regulation and Compliance, 13*(4), 333-346. https://doi.org/10.1108/EUM0000000007304

Lowry, P. B., D'Arcy, J., Hammer, B., & Moody, G. D. (2016). "Cargo Cult" science in traditional organization and information systems survey research: A case for using nontraditional methods of data collection, including Mechanical Turk and online panels. *Journal of Strategic Information Systems, 25*(3), 232–240. https://doi.org/10.1016/j.jsis.2016.06.002

Lu, J. (2014). Are personal innovativeness and social influence critical to continue with mobile commerce?. *Internet research*. https://doi.org/10.1108/IntR-05-2012-0100

Hernandez, J. M. C., & Mazzon, J. A. (2007). Adoption of internet banking: Proposition and implementation of an integrated methodology approach. *International Journal of Bank Marketing, 25*(2), 72–88. https://doi.org/10.1108/02652320710728410

Montazemi, A. R., & Qahri-Saremi, H. (2015). Factors affecting adoption of online banking: A meta-analytic structural equation modeling study. *Information and Management, 52*(2), 210–226. https://doi.org/10.1016/j.im.2014.11.002

Mukerjee, K. (2020). Impact of self-service technologies in retail banking on cross-buying and word-of-mouth. *International Journal of Retail and Distribution Management, 48*(5), 485–500. https://doi.org/10.1108/IJRDM-08-2019-0261

Ofori, K. S., Boateng, H., Okoe, A. F., & Gvozdanovic, I. (2017). Examining customers' continuance intentions towards internet banking usage. *Marketing Intelligence and Planning, 35*(6), 756–773. https://doi.org/10.1108/MIP-11-2016-0214

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of marketing research, 17*(4), 460-469. https://doi.org/10.1177/002224378001700405

Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in Human Behavior, 61*(2016), 404–414. https://doi.org/10.1016/j.chb.2016.03.030

Omololu, E. (2022, June 3). Canada's Best Online Banks for 2022. Retrieved June 20, 2022, from https://www.savvynewcanadians.com/best-online-banks-canada/

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology, 88*(5), 879.

Poromatikul, C., De Maeyer, P., Leelapanyalert, K., & Zaby, S. (2020). Drivers of continuance intention with mobile banking apps. *International Journal of Bank Marketing, 38*(1), 242–262. https://doi.org/10.1108/IJBM-08-2018-0224

Rogers, E.M. (2003). Diffusion of innovations (5th ed.). New York: Free Press.

Scotiabank. (2021). *Annual Report 2021*. Retrieved from https://www.scotiabank.com/content/dam/scotiabank/corporate/quarterly-reports/2021/q4/Annual_Report_2021_AODA_EN.pdf

Shaikh, A. A., & Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and Informatics, 32*(1), 129–142. https://doi.org/10.1016/j.tele.2014.05.003

Shareef, M. A., Baabdullah, A., Dutta, S., Kumar, V., & Dwivedi, Y. K. (2018). Consumer adoption of mobile banking services: An empirical examination of factors according to adoption stages. *Journal of Retailing and Consumer Services, 43*, 54–67. https://doi.org/10.1016/j.jretconser.2018.03.003

Sharma, S. K., & Sharma, M. (2019). Examining the role of trust and quality dimensions in the actual usage of mobile banking services: An empirical investigation. *International Journal of Information Management, 44*, 65–75. https://doi.org/10.1016/j.ijinfomgt.2018.09.013

Shergill, G. S., & Li, B. (2005). Internet Banking– An Empirical Investigation of a Trust and Loyalty Model for New Zealand Banks. *Journal of Internet Commerce, 4*(4), 101–118. https://doi.org/10.1300/J179v04n04

Sikdar, P., Kumar, A., & Makkad, M. (2015). Online banking adoption: A factor validation and satisfaction causation study in the context of Indian banking customers. *International Journal of Bank Marketing, 33*(6), 760–785. https://doi.org/10.1108/IJBM-11-2014-0161

Sun, H. (2012). Understanding user revisions when using information system features: Adaptive system use and triggers. *MIS quarterly*, 453-478. https://doi.org/10.2307/41703463

Susanto, A., Chang, Y., & Ha, Y. (2016). Determinants of continuance intention to use the smartphone banking services: An extension to the expectation-confirmation model. *Industrial Management and Data Systems, 116*(3), 508–525. https://doi.org/10.1108/IMDS-05-2015-0195

Thakur, R. (2014). What keeps mobile banking customers loyal?. *International Journal of Bank Marketing, 32*(7), 628–646. https://doi.org/10.1108/IJBM-07-2013-0062

Van Slyke, C., Ilie, V., Lou, H., & Stafford, T. (2007). Perceived critical mass and the adoption of a communication technology. *European Journal of Information Systems*, *16*(3), 270-283. https://doi.org/10.1057/palgrave.ejis.3000680

Vatanasombut, B., Igbaria, M., Stylianou, A. C., & Rodgers, W. (2008). Information systems continuance intention of web-based applications customers: The case of online banking. *Information and Management, 45*(7), 419–428. https://doi.org/10.1016/j.im.2008.03.005

Vedadi, A., & Warkentin, M. (2016). Continuance intention on using mobile banking applications: A replication study of information systems continuance model. *AIS Transactions on Replication Research*, *2*(1), 7. https://doi.org/10.17705/1atrr.00014

Verhoef, P. C., Franses, P. H., & Hoekstra, J. C. (2001). The impact of satisfaction and payment equity on cross-buying: A dynamic model for a multi-service provider. *Journal of Retailing, 77*(3), 359–378. https://doi.org/10.1016/S0022-4359(01)00052-5

Wagle, L., & Biswas, A. (2019). *Virtual banking is disrupting Asia's financial services.* The United States of America. Retrieved from https://www.ibm.com/thought-leadership/institute-business-value/report/asia-virtual-banking

Yap, K. B., Wong, D. H., Loh, C., & Bak, R. (2010). Offline and online banking—Where to draw the line when building trust in e-banking? *International Journal of Bank Marketing, 28*(1), 27–46. https://doi.org/10.1108/02652321011013571

Yoon, C., & Lim, D. (2020). An empirical study on factors affecting customers' acceptance of internet-only banks in Korea. *Cogent Business and Management, 7*(1). https://doi.org/10.1080/23311975.2020.1792259

Yoon, C., & Lim, D. (2021). Customers' intentions to switch to internet-only banks: Perspective of the push-pull-mooring model. *Sustainability (Switzerland), 13*(14), 1–20. https://doi.org/10.3390/su13148062

Yu, P. L., Balaji, M. S., & Khong, K. W. (2015). Building trust in internet banking: A trustworthiness perspective. *Industrial Management and Data Systems, 115*(2), 235–252. https://doi.org/10.1108/IMDS-09-2014-0262

Yuan, S., Liu, Y., Yao, R., & Liu, J. (2016). An investigation of users' continuance intention towards mobile banking in China. *Information Development, 32*(1), 20–34. https://doi.org/10.1177/0266666914522140

Yuan, Y., Lai, F., & Chu, Z. (2019). Continuous usage intention of Internet banking: A commitment-trust model. *Information Systems and E-Business Management, 17*(1), 1–25. https://doi.org/10.1007/s10257-018-0372-4

Zhang, Y., Chen, X., Liu, X., & Zhu, N. (2018). Exploring trust transfer between internet enterprises and their affiliated internet-only banks: An adoption study of internet-only banks in China. *Chinese Management Studies, 12*(1), 56–78. https://doi.org/10.1108/CMS-06-2017-0148

Zhou, T. (2011). An empirical examination of initial trust in mobile banking. *Internet Research, 21*(5), 527–540. https://doi.org/10.1108/10662241111176353

Zhou, T. (2012). Understanding users' initial trust in mobile banking: An elaboration likelihood perspective. *Computers in Human Behavior, 28*(4), 1518–1525. https://doi.org/10.1016/j.chb.2012.03.021

Zhou, T. (2013). An empirical examination of continuance intention of mobile payment services. *Decision Support Systems, 54*(2), 1085–1091. https://doi.org/10.1016/j.dss.2012.10.034

Zhou, T., Zhang, S., & Ji, B. (2010, May). Exploring the effect of online banking service quality on users' continuance usage. In *2010 2nd International Conference on E-business and Information System Security* (pp. 1-4). IEEE.

APPENDIX A   List of IOBs used by the participants

IOBs in the US	IOBs in Canada
1. American Express	1. Tangerine Bank
2. Discover Bank	2. EQ Bank
3. Charles Schwab Bank	3. Simplii Financial
4. Ally Bank	4. Manulife Bank
5. Capital One	5. Motusbank
6. Marcus by Goldman Sachs	6. Alterna Bank
7. Varo Bank	7. Outlook Financial
8. E Trade Bank	8. AcceleRate Financial
9. TIAA Bank	9. Achieva Financial
10. Barclays	10. Hubert Financial
11. Synchrony Bank	11. Implicitly Financial
12. Axos Bank	12. Questrade
13. Citi	13. Neo Financial
14. CIT Bank	
15. Sallie Mae Bank	

APPENDIX B   Measurement items

Construct	Measurement items	Sources
Intention of cross-buying on IOBs	- I intend to increase my volume of business with IOBs. - I intend to buy more products from IOBs. - I will take an opportunity to cross-buy if IOB offers. - I will seriously consider the offer if it is from the IOB I used.	Hong & Lee (2012); Mukerjee (2020)
Intention of continued use of IOBs	- I intend to continue my use of IOBs in the future. - I plan to use IOBs in the future. - I predict that I will use IOBs in the future.	Lee & Kim (2020)
Perceived economic benefit	- IOBs allow me to save money since it charges lower (or no) transaction fees. - If I get a loan from IOBs, I will save money for the interest I need to pay for the loan from IOB. - IOBs are more advantageous to me because it pays higher interest for savings or investment accounts. - I think it is economical to use IOBs.	Kaabachi et al. (2017); Yoon & Lim (2021)
Confirmation	- The system functionality provided by IOBs meets my expectation. - The convenience and economic benefits provided by IOBs meets my expectation.	Bhattacherjee, (2001a), Bhattacherjee (2001b)

Construct	Measurement items	Sources
	• The security level of IOBs meets my expectation. • Overall, the use of IOBs meets my expectations.	
Ongoing trust	Based on my experience with the IOB(s) that I'm currently using, • IOB is trustworthy • IOB has high integrity. • IOBs fulfill the commitments it assumes. • The design and commercial offer of IOBs take into account the desires and needs of its customers.	Hoehle et al., (2012); Yuan et al. (2019); Thakur (2014)
Personal innovativeness	• If I hear about new information technology, I will look for ways to experiment with it. • Among my peers, I am usually the first to try out new information technologies. • I like experimenting with new information technologies • In general, I am willing to try out new information technologies.	Lee et al., (2021); Oliveira et al. (2016)