SBS Journal of Applied Business Research
Volume XIII, Issue 1, February 2025
DOI: 10.70301/JOUR/SBS-JABR/2025/13/1/5

Impact of Customers' Satisfaction, Values, Habit and Switching Costs on Switching to Hong Kong Digital Banks

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Article Information

- **Date of Receival:** [14/01/2025]
- **Date of Acceptance:** [03/02/2025]
- **JEL Classification Codes:** G21, M31, C83

Abstract

This study examines the factors behind retail banking customers in Hong Kong switching their use of traditional retail banks to digital banks utilizing the push-pull-mooring model. Satisfaction was proposed as a push factor. Utilitarian value, hedonic value and social value were proposed as pull factors. Habit and switching costs were proposed as mooring factors. It was hypothesized that all six factors could impact switching behavior. A quantitative survey was conducted with 360 residents of Hong Kong through an online questionnaire. The hypotheses were analyzed and tested using descriptive and inferential statistics. Utilitarian value, habit, and switching costs were found to be impactful to customer switching behavior using the PLS-SEM methodology. Their p values were below the threshold of significance ($p < 0.05$) at 0.006, 0.001, and 0 respectively. A case study conducted with 12 banking professionals provided further triangulation and insight into these findings. An implication of this study's findings is that retail banks should pay great attention to the role of utilitarian value to attract customers in Hong Kong.

Keywords: *Virtual Banks, Digital Banks, Customer;*

1. Introduction and Background

Global digitization is driving lower-cost tech-based banking in the form of faster processes, increased online activity, and fewer branches (Arner et al., 2017). However, existing research on the factors driving retail banking customers to make the switch from traditional retail banks to digital banks have been inconclusive. This research proposes to utilize the Push-Pull-Mooring model (PPM) model to present a new perspective on the topic of digital banking adoption - looking at the factors driving customers to digital banks as an act of switching between alternative channels instead of the more widely-used act of technology acceptance, specifically on the factors relevant to customers in Hong Kong (HK). Push and pull factors would attract customers to the alternative digital banks while mooring factors held them back.

This research aims to answer the following questions:

Research Question 1: *What are the push, pull, and mooring factors that are driving local retail banking customers to switch to using digital banking in HK?*

Research Question 2: *Do the push, pull, and mooring factors driving local retail banking customers to switch to using digital banking in HK differ by age or gender demographics?*

It is to be noted that the digital banks in HK were previously known as virtual banks when the research was conducted before being renamed by the local regulator in 2024. The terms virtual banks, digital banks, and mobile banks were used interchangeably in this study.

2. Literature Review

2.1 The rise of digital banks

Global digitization is breaking down industry boundaries, building new opportunities, and harming long successful business models (Bhat & Raschella, 2015). In the banking sector, there are expectations of faster processes, more online activity, and fewer physical bank branches (Arner et al., 2017). Further technology development led to digital banking, defined by Shaikh and Karjaluoto (2015) as well as Albashrawi et al. (2019) as banking services delivered via banking applications. While traditional retail banks operate via multiple channels that may include automated teller machines (ATMs), phone banking, and online banking in addition to their physical bank branch, digital banks operate only via their downloadable mobile application on a smartphone or tablet (Shaikh & Karjaluoto, 2015). The Hong Kong Monetary Authority (HKMA) issued a "Guideline on Authorization of Virtual Banks" in 2000 (Hong Kong Monetary Authority, 2000), and granted eight digital banking licenses in 2019 (Hong Kong Monetary Authority, 2019).

2.2 Existing research on digital bank adoption

Three reviews on the existing body of digital banking literature stand out in particular for their insights and discernment, namely those of Shaikh and Karjaluoto (2015), Tam and Oliveira (2017), and Souiden et al. (2021). The main findings are presented in Table 1.

Table 1: *Summary of Conclusions of Literature Review on Mobile Banking Adoption*

Authors	Published	Period	No. of Studies	Summary of Conclusions
Shaikh & Karajaluoto	2015	2005-2014	55	Research activities have increased but are fragmented and dependent on TAM. Research has mostly been quantitative.
Tam & Oliveira	2017	2002-2016	64	Research are concentrated on TAM. Proposes further investigation on impact of culture and use of longitudinal research.
Souiden et al.	2021	2005-2019	76	Highlights boredom of TAM and focus on functionality of mobile banking. Demographic impact have not been conclusive. Proposes more qualitative research that highlight impact of affective values.

Note: Summary of Conclusions of Literature Review on Mobile Banking Adoption, from "Mobile Banking Adoption: A Literature Review'" by Shaikh, A. A. & Karjaluoto, H., 2015, *Telematics and Informatics, 32*(1), pp. 129-142, doi: https://doi.org/10.1016/j.tele.2014.05.003; "Literature Review of Mobile Banking and Individual Performance'" by Tam, C. & Oliveira, T., 2017, *International Journal of Bank Marketing, 35*(7), pp. 1044-1067, doi: https://doi.org/10.1108/IJBM-09-2015-0143; "Mobile Banking Adoption: A Systematic Review," by Souiden, N., Ladhari, R. & Chaouali, W., 2021, *International Journal of Bank Marketing, 39*(2), pp. 214-241, doi: https://doi.org/10.1108/IJBM-04-2020-0182.

Theories prominent in existing literature include the technology acceptance model (TAM) (Davis, 1986), the innovation diffusion theory (IDT) (Rogers, 2003), the theory of planned behavior (TPB) (Ajzen, 1991) and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003). The most popular by far was the TAM (Aboelmaged & Gebba, 2013; Chitungo & Munongo, 2013). Other widely used theories include the IDT (Kim et al., 2009; Lin, 2011) and the UTAUT (Yu, 2012; Luo et al., 2010). The high usage concentration of the TAM and its derivatives has been noted with concern (Shaikh & Karjaluoto, 2015; Tam & Oliveira, 2017). There was a similar concentration in analytic tools used and antecedents tested. The partial least squares (PLS) version of structural equation modeling (SEM) represented the analytic tool for 72 percent of all studies surveyed by Souiden et al. (2021). While the collective body of sample research in Shaikh and Karjaluoto's (2015) review identified as many as 84 antecedents, the two most prevalent were that of perceived ease of use and perceived usefulness – the variables of the TAM. Many studies included demographic constructs, but while Crabbe et al. (2009) believed these constructs played a significant role other studies (Chaouali & El Hedhli, 2019; Makanyeza, 2017; Malaquias & Hwang,2019) found no evidence of this.

2.3 Customer behavior

Sheth (2021) detailed how customer behavior research evolved from motivational research to multi-attribute attitude models such as Ajzen and Fishbein's (1980) theory of reasoned action (TRA). Themes such as satisfaction, values, habits, and costs are regularly investigated to determine the conduct and behavior of the customer.

Satisfaction

Churchill and Suprenant (1982) defined satisfaction as an outcome of marketing activity, leading to phenomena such as repeat purchases, customer switching, brand loyalty, and referrals. Parasuraman et al. (1985) posited that better levels of perceived service quality would consequently result in increased customer satisfaction. Customer satisfaction is believed to be a key predictor of consumer behavior (Delgado-Ballester & Munuera-Aleman, 2001) and is also associated with behavioral switching (Hou & Shiau, 2020).

Customer Value

Value creation is a fundamental part and aim of business entities (Osterwalder & Pigneur, 2010). Existing literature break down customer values into three distinct components – namely utilitarian value, social value and hedonic value (Gan & Wang, 2017; Evelina et al., 2020). Holbrook and Hirschman (1982) explained that utilitarian value could be expressed as how well a product performs its intended purpose in an act of consumption. Hsu and Lin (2016) updated the definition to refer to the functional and instrumental benefits delivered, such as convenience and cost-reduction. For hedonic values, Schmitt and Simonson (1997) have pointed out that customers seek feelings and sensations in their consumption process while Abagissa (2022) has suggested that visually appealing or attractive ambiance positively impacts customer satisfaction in the banking sector. Heijden (2004) related hedonic value to non-functional benefits such as pleasure, fun, and entertainment brought about by a service or a product to the customer. Holbrook (2006) posited that social value is obtained when one's consumption behavior serves as a means to shaping the responses of others while Rintamaki et al. (2006) defined social value as the enhancement of a customer's perception of status and self-esteem.

Habit

Customer habit or inertia meant customers stay on with a brand or provider even if the customer has no favorable inclinations toward them (Gounaris & Stathakopoulos, 2004). In fact, Ranaweera and Neely (2003) believed that some customers actually want to change brands or providers, but do not, due to passiveness, habit, or the perceived effort required. A strong sense of habit is often a bulwark against the best marketing efforts from competitors and substitutes (Han et al., 2011). That is the reason why some researchers have argued that habit moderates the phenomenon of customer switching (Colgate & Lang, 2001).

Switching Costs

The internet has reduced switching costs such as search costs for consumers (Menz et al., 2021). Switching costs were defined by Kim et al. (2003) as the economic or psychological costs associated with changing product or service providers. Lam et al. (2004) broke down these costs into the categories of money, time, effort, and transition uncertainty or risk. Bell et al. (2005) used the terms sunk costs, search costs, and setup costs while Burnham et al. (2003) grouped them into financial, procedural, and relational costs. Keaveney (1995) suggested that switching costs such as pricing and inconvenience were key determinants of switching behavior. Blut et al. (2016) explained that management tactics often included switching cost-increasing measures such as loyalty programs or touted unique customer solutions.

2.4 Digital banking adoption: technology acceptance or customer switching

Souiden et al. (2021) argued that the prevalence of the TAM in digital banking adoption literature was due to its acknowledged effectiveness. Lee et al. (2003) noted its application across all sorts of information systems and technology including calculators (Mathieson, 1991), electronic mail (Straub 1994), voice mail (Karahanna & Limayem, 2000), e-health systems (Wilson & Lankton, 2004), and even e-government systems (Napitupulu, 2017). Nevertheless, the TAM has been criticized for being unable to explain external variables and for ignoring internal variables such as individual personality traits (Napitupulu, 2017). The overuse of the TAM framework in general also resulted in an illusion of progress in knowledge accumulation (Lee et al., 2003; Benbasat & Barki, 2007). However, it would be a fresh perspective to understand the customer motivation behind switching, defined by Singh and Rosengren (2020) as occurring when a customer replaces or exchanges a current product vendor or service provider for another.

2.5 The push-pull-mooring model

The Push-Pull model was originally developed for migration research by Everett Lee (1966), describing human cultural and geographical movements. Push factors induced people to move away from their original homeland while pull factors enticed and attracted them to a new destination. Mooring factors were later introduced as moderating variables that hinder migration behavior despite all the influence of the push and pull factors (Moon, 1995). Bansal et al. (2005) pointed out that the migration phenomenon was similar to the concept of a customer switching from one service provider to another. Prior research suggests that the PPM model is fit for use to explain customer switching behavior (Hsieh et al., 2012; Jung et al., 2017). It has also been used to explore customer switching behavior across different channels of product delivery such as between shopping at physical and mobile stores (Chang, Wong & Li, 2017) and between face-to-face and online learning (Chen & Keng, 2019). A summary of recent PPM research is shown in Table 2.

Table 2: *Summary of PPM factors used in Selected Research*

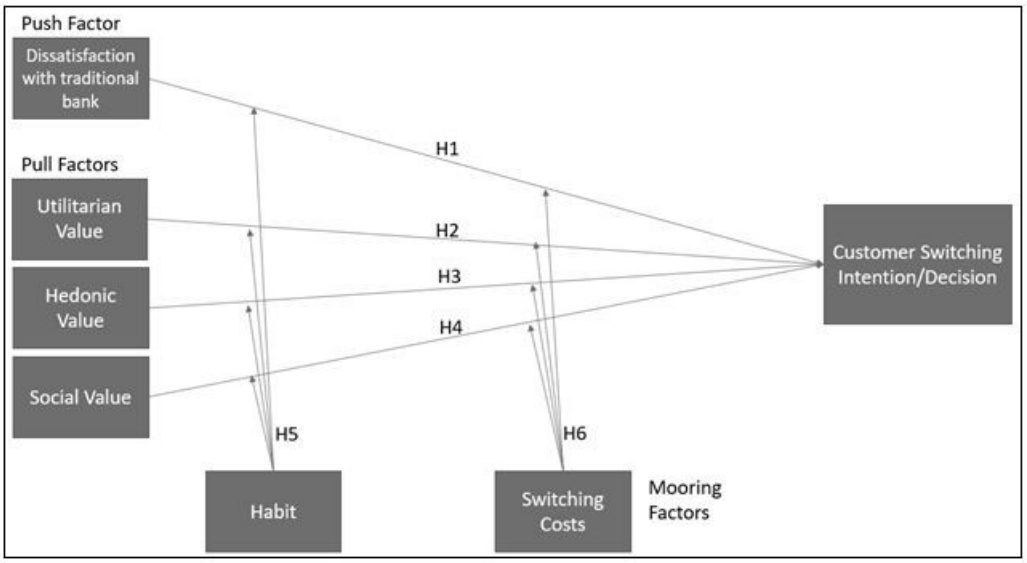
Author	Context	Push Factors	Pull Factors	Mooring Factors
Chang et al. (2017)	Mobile Shopping	Quality, Information Searching, Value	Alternative Attractiveness	Switching Cost, Self-Efficacy
Chen & Keng (2019)	Online Learning Platform	Quality, Convenience, Price	Usefulness, Motivation	Switching Cost, Community, Engagement
Dar & Niu (2021)	Restaurant	Satisfaction	Alternative Attractiveness, Regret	Switching Cost, Optimal Satiation, Self-Control
Hou & Shiau (2019)	Social Networking Site	Satisfaction, Quality, Enjoyment, Community	Alternative Attractiveness, Peer Influence, Critical Mass	
Hsieh et al. (2012)	Blog	Weak Connection, Writing Anxiety	Ease of Use, Usefulness, Enjoyment	Switching Cost, Experience
Jung et al. (2017)	Airline	Satisfaction, Quality, Price, Trust	Alternative Attractiveness, Price, Opportunity	Switching Cost, Habit, Experience, Involuntary
Liao et al. (2021)	Smartphone	Regret	Alternative Attractiveness, Subjective Norm	Switching Cost, Habit, Community, Commitment
Liu & Lee (2020)	Chinese Mobile Game	Satisfaction	Challenge	Switching Cost, Community
Lu & Wung (2021)	Mobile Payment	Trouble, Difficulty, Inconvenience	Alternative Attractiveness, Convenience, Time	Habit
Susanty et al. (2019)	SME Ecommerce	Quality, Price, Perceived Savings	Alternative Attractiveness	Self-Efficacy
Yoon & Lim (2021)	Internet Bank	Satisfaction	Usefulness	Switching Cost, Innovativeness

3. Research Framework and Methodology

3.1 Research Framework

The overall conceptual model and underlying hypotheses of this research is depicted in

Figure 1.



	Null Hypothesis
$H1_0$	HK customers' perceived dissatisfaction with traditional retail banks has no impact on their switching behavior from traditional retail banks to virtual banks
$H2_0$	HK customers' perception of utilitarian value offered by virtual banks has no impact on their switching behavior from traditional retail banks to virtual banks
$H3_0$	HK customers' perception of hedonic value offered by virtual banks has no impact on their switching behavior from traditional retail banks to virtual banks
$H4_0$	HK customers' perception of social value offered by virtual banks has no impact on their switching behavior from traditional retail banks to virtual banks
$H5_0$	HK customers' habit have no impact on their switching behavior from traditional retail banks to virtual banks
$H6_0$	HK customers' perception of switching costs have no impact on their switching behavior from traditional retail banks to virtual banks

Figure 1: *Conceptual Model and List of Hypothesis for this Research*

3.2 Research Methodology

A mixed methods approach rooted in pragmatism comprising both quantitative and qualitative methods was undertaken. Pragmatism provides a framework for the researcher to choose the most appropriate data collection method (Kelly & Cordeiro, 2020). A questionnaire survey was the first data collection method, allowing for a large sample across demographic groups and locations. The measurement items and wording of the questions used in the online ques-

tionnaire (Table 3) were adapted from similar studies and were measured using a seven-point Likert scale. The questions were constructed in English before being translated into Cantonese by the researcher. These questions were in turn translated back into English by an independent translator to ensure linguistic equivalence and understanding. The survey was posted online using the Google Forms function on Google.

Table 3: *Survey Questions on PPM Constructs in English*

Constructs	Items	Measure
Satisfaction	S1	I am not satisfied with the services offered by traditional retail banks
	S2	I am not satisfied with the products offered by traditional retail banks
	S3	I am not satisfied with my experiences with traditional retail banks
Utilitarian Value	UV1	Virtual banks are easy to use
	UV2	Virtual banks are useful
	UV3	Virtual banks help me accomplish my banking needs more quickly
	UV4	Virtual banks help me increase my productivity
	UV5	Virtual banks are convenient because I can bank anytime, anywhere
	UV6	Virtual banks charge lower fees for their products
	UV7	Virtual banks pay higher interest rates fees for deposits
	UV8	Virtual banks give me more or better incentives, discounts and cash rebates
Hedonic Value	HV1	Using virtual banks is fun and entertaining
	HV2	Using virtual banks is enjoyable
	HV3	I trust virtual banks with my money and financial transactions
Social Value	SV1	People who are important to me use virtual banks
	SV2	People who influence my behavior use virtual banks
Habit	H1	People whose opinions that I value use virtual banks
	H2	Using my traditional retail bank is a habit
	H3	I am loyal to my traditional retail bank
Switching Costs	SC1	It takes a lot of time to switch from using a traditional retail bank to using a virtual bank
	SC2	It takes a lot of effort to switch from using a traditional retail bank to using a virtual bank
	SC3	It costs a lot (in terms of money) to switch from using a traditional retail bank to using a virtual bank

A total sample of 360 valid responses was targeted, with Barrett (2007) explaining that SEM analyses with sample sizes of just 200 are not sufficiently representative. This also aligns with Israel's (1992) formulaic calculations where a 95 percent confidence level and a five percent precision would require a similarly sized sample following a finite population correction. While some like Wright et al. (1998) have criticized self-administered surveys for high data collection errors and failure of respondents to properly understand questions, mitigating actions such as using Cronbach's alpha to assess the reliability and accuracy of the measurement were taken to reduce errors (Collis & Hussey, 2014). 401 participants filled out the questionnaire, of whom five were not considered as the participants had indicated using less than three kinds of retail banking services. Since only the first 20 valid responses from each district were considered for stratified sampling, a total of 36 responses were also not considered. The researcher then invited selected participants to provide their thoughts and insight on the results

of the quantitative questionnaire survey as a second data collection method. This case study avoided active involvement by a researcher which could have resulted in interference or inadvertent bias (Poggenpoel & Myburgh, 2003). 12 semi-structured open-ended questionnaires were obtained.

Data coding and analysis

The methodology for data analysis was the partial least squares version of SEM as it allowed for effective evaluation of models which involved latent constructs (Astrachan et al., 2014). The software SmartPLS Version 4.0 was used to analyze the data and provide justifications to accept or deny the hypotheses proposed. The qualitative data obtained from the case study portion were coded by themes and then analyzed using thematic analysis.

Ethics

The research methodology followed all required ethical guidelines. All participants needed to consent and to be well-informed about the purpose of the research and questionnaires. Both the questionnaires used in this research were designed to be anonymous. A sample of the online questionnaire survey is included in Appendix A (English version) and Appendix B (Chinese version). In addition, a sample of the open-ended questionnaire is included in Appendix C. All collected information were protected and their use was solely limited to this research.

4. Research Results and Discussion

Of the 360 respondents, 292 (81.8 percent) submitted an English response with the remaining 68 (18.9 percent) submitting a Chinese response. The descriptive statistics of these responses are summarized and presented in Table 4.

Table 4: *Descriptive Statistics of Overall Sample*

Question	Response	Frequency	Percentage
Which category includes your gender?	Male	207	57.5%
	Female	151	41.9%
	Others	2	0.6%
Which category includes your age?	21 - 30	62	17.2%
	31 - 40	142	39.4%
	41 - 50	92	25.6%
	51 - 65	64	17.8%
What is your highest level of education?	Secondary / High School	21	5.8%
	Associate Degree / Certificate	15	4.2%
	Bachelor's Degree	221	61.4%
	Master's Degree	98	27.2%
	Doctorate	5	1.4%
How long have you been a client of a retail bank in Hong Kong?	3 - 5 years	12	3.3%
	5 - 10 years	62	17.2%
	More than 10 years	286	79.4%
How often do you use banking services?	A few times a year	3	0.8%
	A few times a month	65	18.1%
	A few times a week	115	31.9%
	Once a day	74	20.6%
	Multiple times a day	103	28.6%
How many traditional retail banks in Hong Kong are you a client of?	Only 1	12	3.3%
	2 - 3	205	56.9%
	4 - 5	131	36.4%
	More than 5	12	3.3%
How many virtual banks in Hong Kong are you a client of?	None	120	33.3%
	Only 1	88	24.4%
	2 - 3	121	33.6%
	4 - 5	23	6.4%
	More than 5	8	2.2%
Which statement best describes your banking situation?	I only use traditional retail banks	125	34.7%
	I mainly use traditional retail banks, but also use virtual banks	199	55.3%
	I mainly use virtual banks, but also use traditional retail banks	36	10.0%
Please choose the statement that best describes your situation	I currently use only traditional retail banks for all my banking needs but I intend to try using virtual banks in the future	63	17.5%
	I currently use both traditional retail and virtual banks for my banking needs and I intend to increase my use of virtual banks	223	61.9%
	I currently use both traditional retail and virtual banks for my banking needs but I intend to decrease my use of virtual banks	12	3.3%
	I currently use only traditional retail banks for all my banking needs and I intend to continue to do so	62	17.2%

In order to obtain a better insight into the independent variables, descriptive statistics measurements were calculated. Skewness and kurtosis values for all six independent variables or PPM factors were within the acceptable ranges, suggesting that the data were indeed normally distributed.

Partial Least Square: Research Model Testing

This study employed a two-stage methodology where the measurement model and the structural model are developed and evaluated separately. Fornell and Larcker (1981) recommended testing models for their psychometric properties e.g., indicator reliability, internal consistency reliability, convergent validity, and discriminant validity.

Measurement Model Testing

There are altogether 22 measurement variables. Outer loadings indicate how well a measurement variable represents an underlying construct with Vinzi et al. (2010) recommending an outer loading value of over 0.7. There was only one measurement variable that did not exhibit a value over 0.7, which was HV2, however this measurement variable was retained as its calculated value was 0.699 and considered a marginal case. Internal consistency reliability is the extent to which the constructs are associated with each other and can be measured by assessing Cronbach's alpha and composite reliability. Both measures require a value above 0.7 to be considered acceptable. All measurement variables recorded values above 0.7 for both measures, ranging from 0.728 to 0.938. Each construct was next assessed for its convergent validity - the extent to which the construct converges in order to explain the variance of its measurement variables (Hair et al., 2021), evaluated by the metric average variance extracted (AVE). All constructs recorded values above the minimum acceptable value of 0.5, ranging from 0.601 to 0.851. Finally, discriminant validity is assessed using as Fornell and Larcker's (1981) comparison of each construct's AVE to the squared inter-construct correlation. While the discriminant validity of all constructs were satisfactory, recent research such as that by Henseler et al. (2015) argue that this metric is not suitable for discriminant validity assessment and that the heterotrait-monotrait ratio (HTMT) of correlations should be used as a better alternative. The calculation of HTMT values of correlations of the constructs returned satisfactory values all below 0.9, ranging from 0.417 to 0.875. The results of these various assessments conclude that the design of the questionnaire survey is reliable and valid to measure the objectives of this research.

Structural model testing

Structural model regressions need to be examined for collinearity problems due to the potential biasedness of point estimates and standard errors arising from strong correlations between the different groups of constructs (Sarstedt & Mooi, 2019). The calculation of Variance inflation factor (VIF) values returned an acceptable range from 1.177 to 3.95, all below the threshold of 5 which was a sign of probable collinearity issues among constructs. Next, both the relevance and the significance of path coefficients are assessed. Path coefficients are relevant if their values range between -1 and +1. The values are summarized in Figure 2 and range from -0.34 to 0.235. Since all values were between -1 and +1, all path coefficients were deemed to be relevant.

	Full Sample	Full Sample
	Path Coefficient	P values
S	-0.023	0.318
UV	0.198	0.006
HV	0.088	0.103
SV	0.017	0.383
H	-0.200	0.001
SC	-0.340	0.000
H x S	-0.073	0.180
H x UV	-0.014	0.442
H x HV	0.109	0.113
H x SV	0.023	0.347
SC x S	0.090	0.148
SC x UV	0.235	0.016
SC x HV	-0.063	0.243
SC x SV	-0.059	0.201

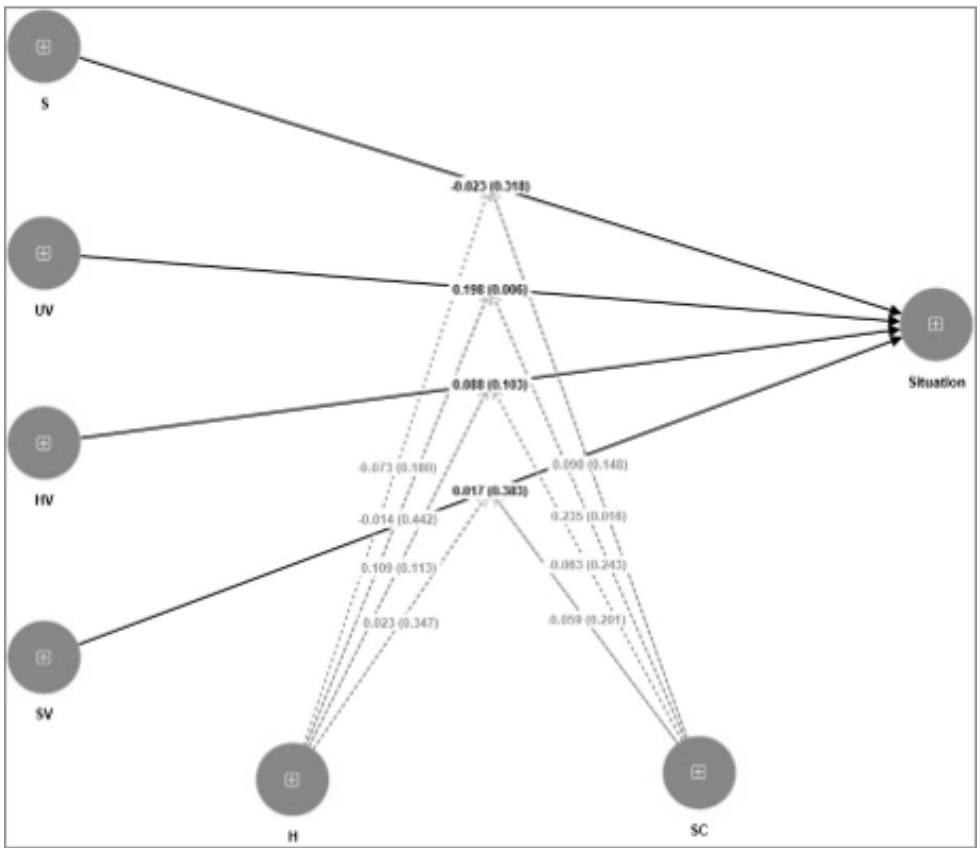


Figure 2: *Path Coefficients and p values of the Research Model*

The path coefficients are significant at the five percent level if it records a *p* value below .05 in a one-sided test. Of the four hypotheses regarding the push and pull factors, only $H2_0$ was rejected. In other words, the statistical analysis only supported the pull factor of utilitarian value as being a cause of switching. $H5_0$ stated that habit has no negative impact on switching behavior. A *p* value of .001 demonstrated significance, supporting that this null hypothesis can be rejected. This is supported by the path coefficient value of -0.2 which indicates that a negative relationship existed between habit and the switching construct. $H6_0$ stated switching

costs have no negative impact on switching behavior. A returned p value of $p < .001$ supported a rejection of this null hypothesis and was also supported by its path coefficient of -0.34 which is an indication of the negative relationship between switching costs and switching. This meant that both habit and switching costs are potentially mooring factors in this research study. Table 5 below summarizes the results of the statistical analysis on the six null hypotheses.

Table 5: *Null Hypotheses and p Values*

	Null Hypothesis	p value	Result
$H1_0$	HK customers' perceived dissatisfaction with traditional retail banks has no impact on their switching behavior from traditional retail banks to virtual banks	0.318	Supported
$H2_0$	HK customers' perception of utilitarian value offered by virtual banks has no impact on their switching behavior from traditional retail banks to virtual banks	0.006	Rejected
$H3_0$	HK customers' perception of hedonic value offered by virtual banks has no impact on their switching behavior from traditional retail banks to virtual banks	0.103	Supported
$H4_0$	HK customers' perception of social value offered by virtual banks has no impact on their switching behavior from traditional retail banks to virtual banks	0.383	Supported
$H5_0$	HK customers' habit have no impact on their switching behavior from traditional retail banks to virtual banks	0.001	Rejected
$H6_0$	HK customers' perception of switching costs have no impact on their switching behavior from traditional retail banks to virtual banks	0.000	Rejected

Model's explanatory and predictive power

The R^2 value is used as a measure of a model's explanatory power (Shmueli & Koppius, 2011). R^2 values range from 0 to 1, and the closer the R^2 value is to 1, the greater a model is said to have explanatory power. The software SmartPLS Version 4.0 calculated the R^2 value for this study as .598, suggesting that this model had a moderately strong explanatory power.

Hair and Sarstedt (2021) believed that the R^2 was insufficient as a measure of a model's predictive power as it only indicates a model's in-sample explanatory power rather than its power to predict new or future observations. Instead, $PLS_{predict}$ (Shmueli et al., 2016) which executes k-fold cross validation was calculated. The metric root-mean-square error (RMSE) of the model was 0.789 compared to the values of a linear regression model (LM) benchmark at 0.784. This can be interpreted as the model used in the study having a similar predictive power as a linear regression model.

Additional Insights and Testing

The sample was further split by gender and age groups. Only the p values were recalculated based on the various sample subsets. The two responses that chose to use Others as their gender were not included for this additional testing. Independent-samples t-tests were conducted to compare the means of the six variables between the two gender subsets after being first examined for homogeneity of variances using the software PSPP. It turned out that there was indeed a homogeneity of variances, as assessed by the Levene's test for equality of variances, for utilitarian value, hedonic value, social value, and habit, $p > .05$. However, homogeneity of variances was violated for satisfaction and switching costs, $p < .05$.

Gender subset data for utilitarian value, hedonic value, social value, and habit exhibiting equal variances, had their means between the gender subsets tested using the independent-samples t-test while the other gender subset data were tested using the Welch t-test instead. As

the Type I error probability rate of the independent-samples *t*-tests is increased or reduced by unequal variances combined with unequal sample sizes (Adusah & Brooks, 2011), the Welch *t*-test is used to eliminate these effects (Hinkle et al., 2003). This test adjusts the degrees of freedom using the Welch-Satterthwaite method and was calculated to be 352 and 351 respectively for the two groups of data. The results are summarized in Table 6 below.

Table 6 : *t-Test for Equality of Means*

	T-Test for Equality of Means					
Independent Variable	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**Difference of Means**
S	3.17	352	0.002	0.35	0.11	Significantly Different
UV	2.5	356	0.013	0.25	0.1	Significantly Different
HV	1.65	356	0.101	0.16	0.1	Not Significantly Different
SV	1.54	356	0.125	0.18	0.12	Not Significantly Different
H	-3.65	356	0	-0.58	0.16	Significantly Different
SC	-2.29	351	0.023	-0.34	0.15	Significantly Different

The results of the *t*-tests showed that four out of six independent variables between the two gender subsets had a significantly different mean, making it reasonable to hypothesize that there were material differences between the two genders as far as which of the PPM factors were driving their switching behavior. PLS-SEM analysis run with a significance level of 2.5% for the two gender subsets confirmed this hypothesis. Table 7 shows that while the male sample of responses mirrored the results of the of the full sample, the same could not be said for the female sample .

Table 7: *p Values for Total Sample and Gender Subsets*

P values	Full Sample	Male Sample	Female Sample
S	0.318	0.077	0.152
UV	0.006	0.009	0.119
HV	0.103	0.060	0.370
SV	0.383	0.418	0.055
H	0.001	0.011	0.005
SC	0.000	0.000	0.000

These calculations were repeated for subsets of the total sample, this time separated by the four age groups. The one-way ANOVA (Analysis of Variance) test is able to compare the means of more than two groups (Ross & Willson, 2017) and was applied using the software PSPP to test if at least one of the four age groups would differ from the others. The results are summarized in Table 8 below.

Table 8: *ANOVA Test for Age Group Subsets*

Independent Variables		Sum of Squares	df	Mean Square	F	Sig.
S	Between Groups	49.44	3	16.48	15.21	0
	Within Groups	385.84	356	1.08		
	Total	435.28	359			
UV	Between Groups	48.85	3	16.28	20.6	0
	Within Groups	281.36	356	0.79		
	Total	330.22	359			
HV	Between Groups	38.97	3	12.99	17.2	0
	Within Groups	268.89	356	0.76		
	Total	307.87	359			
SV	Between Groups	40.85	3	13.62	11.69	0
	Within Groups	414.8	356	1.17		
	Total	455.65	359			
H	Between Groups	143.73	3	47.91	24.89	0
	Within Groups	685.37	356	1.93		
	Total	829.1	359			
SC	Between Groups	123.87	3	41.29	24.41	0
	Within Groups	602.12	356	1.69		
	Total	725.99	359			

The results of the one-way ANOVA showed that the means between the age group subsets for all six independent variables were significantly different, making it reasonable to hypothesize that there were differences between the four age groups as far as which of the PPM factors were driving their switching behavior. PLS-SEM analysis using a significance level of 2.5% was run separately for the four age group subsets confirmed this hypothesis and is summarized below.

Table 9: *p Values for Total Sample and Age Group Subsets*

P values	Full Sample	Subset 21-30	Subset 31-40	Subset 41-50	Subset 51-65
S	0.318	0.000	0.078	0.267	0.049
UV	0.006	0.000	0.125	0.298	0.016
HV	0.103	0.000	0.343	0.033	0.263
SV	0.383	0.000	0.002	0.158	0.161
H	0.001	0.000	0.075	0.447	0.321
SC	0.000	0.000	0.000	0.011	0.029

There was no age group that fully reflected the PLS-SEM results of the total sample. The one consistent factor across all groups was that switching costs featured strongly, which was also reflected in the previous test on genders. The larger differences between age groups relative to genders indicate that age could be a key determinant in switching behavior in addition to external factors such as the PPM factors.

5. Case Study

This study employed the purposive or judgmental sampling method (Leedy et al., 2020), where samples are chosen for their characteristics to provide the best information to help answer the research questions. Participants in the case study comprised seasoned banking professionals possessing extensive (more than 10 years) experience working with retail banks in key functions evenly divided between the two kinds of retail banks, namely traditional and digital to maintain a balanced view. The six hypotheses of the research study denoted H1 – H6 were matched to themes numbered T1 – T6 in the case study to provide structure to the process. The construct, research hypotheses, and case study themes are summarized and shown in Table 10. Two additional themes were created to discuss the effects of demographic groups such as gender and age. The 12 participants of the open-ended questionnaire were coded P1 to P12 respectively.

Table 10: *Construct and Themes of Case Study*

Case Study		
Subjects: A total of 12 identified participants. 2 participants each from 6 banks (3 traditional retail banks and 3 mobile banks).		
Hypotheses		Themes
$H1_0$	Dissatisfaction with traditional retail banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T1
$H2_0$	Utilitarian value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T2
$H3_0$	Hedonic value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T3
$H4_0$	Social value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T4
$H5_0$	Habit has no negative impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T5
$H6_0$	Switching costs have no negative impact on the switching behavior of HK customers from traditional retail banks to	T6
	Does gender have an impact on the factors impacting switching behavior of HK customers from traditional retail banks to virtual banks?	T7
	Does age have an impact on the factors impacting switching behavior of HK customers from traditional retail banks to virtual banks?	T8

Theme 1 - Satisfaction

The statistical analysis indicated that dissatisfaction was not a significant factor driving

HK customers to switch their banking service providers to digital banks. All 12 responses indicated that this finding was in line with their expectations. P3 explained that dissatisfaction is a personal and subjective matter – "what may be unacceptable to one customer, may be tolerable to another." In fact, P6 added that "customers move accounts for concrete reasons, but dissatisfaction can be solved," suggesting that dissatisfaction was not or serious enough to warrant a switch. P1 believed that dissatisfaction may drive temporary removals of deposits instead of a closure of accounts.

Theme 2 – Utilitarian value

The statistical analysis indicated that utilitarian value was a significant factor driving HK customers to switch to digital banks. This finding was unanimously expected. P8 stated that "pricing has to be the number one factor that interests banking customers in HK" with aggregator websites making it easier for "comparing the cheapest mortgages or personal loans, (and the) best deposit rates." Eight respondents also pointed out financial incentives were conspicuous on marketing and promotional campaigns.

Theme 3 – Hedonic value

The statistical analysis indicated that hedonic value was not a significant factor driving HK customers to switch their banking service providers to digital banks. The respondents had mixed feelings about this finding. Some felt that trust is an integral part of banking with P1 exclaiming that "without trust, no customer would place any money in a bank." P9 shared that while hedonic value may not be a deciding factor in switching behavior, it was a topic growing in importance for banks – for example, there are discussions for branches to "feel more like a Starbucks Cafe, being somewhere that customers want to go to, rather than it being a totally utilitarian visit."

Theme 4 – Social value

The statistical analysis indicated that social value was not a significant factor driving HK customers to switch their banking service providers to digital banks. This was the collective agreement among the 12 responses collected. P9 pointed out that "influencers" shared the utilitarian benefits of a product or service, whether as a paid spokesperson or as a real customer. P10 emphasized that "banking was a utility rather than a social gathering" while P12 was incredulous that any kind of banking would help "increase your social standing."

Theme 5 – Habit

The statistical analysis indicated that habit was indeed a significant factor in moderating the behavior of HK customers to switch their banking service providers to digital banks. The participants of the case study were united in their support of this finding. P6 declared that "customers are predictable beings (and) prefer being comfortable," and this was the reason why they "like the same thing or product and will even ask for a discontinued product that they liked." P12 underlined just how strong a moderating factor habit was in behavior to switch, explaining that the experience with customers was that, "where using a particular bank has become a habit for the customer, it will be very hard for them to fathom the idea of using another bank."

Theme 6 – Switching costs

The statistical analysis indicated that switching costs were indeed a significant factor moderating the behavior of HK customers to switch their banking service providers to digital banks. P12 revealed that cross-selling different products to the same customer was a common strategy to increase switching costs for the customer in order to keep them – "the more products we can get the customer to use at our bank, the more entrenched in their life we would be." The respondents agreed that time and effort were more relevant than money in terms of relevance to switching behavior.

Theme 7 – Impact of gender

The statistical analysis indicated that while 'utilitarian value' was a significant consideration for males as a pull factor to switch to digital banks, it was not a significant consideration for females. Some respondents felt that the results needed further scrutiny. P1 remarked that it was unclear if the finding "is due to the usefulness, the convenience, pricing, or a combination of them all." P12 observed that while financial incentives were universally attractive, survey respondents may have had the technological aspects of digital banking on their minds, which could be more affected by gender differences.

Theme 8 – Impact of age

The statistical analysis indicated that there was no age group that fully reflected the PLS-SEM results of the total sample. Several respondents agreed that younger customers have not yet developed strong relationships with their banking institutions and were liable to switch banks regularly. The large variances between different age groups prompted P12 to share that while age or gender may be a supplementary detail about the customer, banks would instead "focus on (demographic) subsets such as education, income, occupation, and behavior." This was a view shared by P8, who explained how their bank's models looked at various attributes such as past "activities, behavior, and habits" in addition to demographic attributes when formulating strategies.

6. Conclusions, Limitations, and Implications

Primary Research versus Case Study

Six hypotheses had first been formulated and subsequently tested in the main study. Three hypotheses ($H2_0$, $H5_0$, $H6_0$) were rejected. Further tests on subsets of the sample revealed differences between both genders and age groups in terms of results. A case study was used to triangulate these conclusions. These findings are summarized in Table 11.

Table 11: Conclusions - Results of the Main Study and Case Study

Main Study (by hypothesis)		Case Study (by themes)	
$H1_0$	Dissatisfaction with traditional retail banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The testing of the first null hypothesis ($H1_o$) resulted in its acceptance with a p value of 0.635, above the threshold of 0.05. It was concluded that dissatisfaction with traditional retail banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T1	Dissatisfaction with traditional retail banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The majority of respondents indicated that their agreement with this statement. Some respondents reasoned that it was more likely for dissatisfied customers to switch to other traditional retail banks instead of virtual banks.

$H2_0$	Utilitarian value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The testing of the second null hypothesis ($H2_o$) resulted in its rejection with a *p* value of 0.011, below the threshold of 0.05. It was concluded that utilitarian value offered by virtual banks has a positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T2	Utilitarian value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The respondents were unanimous in their disagreement with this. Financial incentives were raised by nine respondents as a traditional pull factor in the banking industry. It was also evident that this fact was clearly understood by the virtual banks as can be seen from their promotional and advertising material.
$H3_0$	Hedonic value offered by virtual banks has no impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The testing of the third null hypothesis ($H3_o$) resulted in its acceptance with a *p* value of 0.206, above the threshold of 0.05. It was concluded that hedonic value offered by virtual banks has no impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T3	Hedonic value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The respondents offered slightly mixed views on this. Some respondents opined that hedonic value was gaining attention as evidenced by the increasing talk about gamification of the banking experience. Nevertheless, they agreed that hedonic value would not have been a deciding factor to switch.
$H4_0$	Social value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The testing of the fourth null hypothesis ($H4_o$) resulted in its acceptance with a *p* value of 0.766, above the threshold of 0.05. It was concluded that social value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T4	Social value offered by virtual banks has no positive impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The respondents offered slightly mixed views on this. Most respondents felt banks were by nature utilitarian and hence mainly offer utilitarian value. Nevertheless, respondents also revealed that changing social norms meant the role of 'influencers' is growing and would soon inevitably encroach upon the realm of banking.

$H5_0$	Habit has no negative impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The testing of the fifth null hypothesis ($H5_o$) resulted in its rejection with a p value of 0.002, below the threshold of 0.05. It was concluded that habit has a negative impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T5	Habit has no negative impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The respondents were in unanimous disagreement on this. They shared how becoming a 'habit' of the customer, was a core part of both customer acquisition and customer retention strategies.
$H6_0$	Switching costs have no negative impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The testing of the sixth null hypothesis ($H6_o$) resulted in its rejection with a p value of 0, below the threshold of 0.05. It was concluded that switching costs have a negative impact on the switching behavior of HK customers from traditional retail banks to virtual banks.	T6	Switching costs have no negative impact on the switching behavior of HK customers from traditional retail banks to virtual banks. Findings: The respondents were unanimously in disagreement about this. While all respondents agreed that switching costs would be a key consideration of customers to switch, some felt that this was similar to, or was due to habit.
		T7	Does gender have an impact on the factors impacting switching behavior of HK customers from traditional retail banks to virtual banks? Findings: The respondents offered very mixed responses - especially in reaction toward the findings of the statistical analysis.
		T8	Does age have an impact on the factors impacting switching behavior of HK customers from traditional retail banks to virtual banks? Findings: The respondents offered very mixed responses - but pointed out age itself may be less meaningful than other demographic differences such as education, income, occupation and behavior.

Limitations

One of the limitations of the research model is that the constructs in the research model were only self-reported. Such individual perceptions could be subjective. In addition, a cross-sectional approach was adopted. This meant that the research was not able to observe the duration of changes in switching behaviors. While the main questionnaire survey was conducted in both English and Chinese, it was mainly conducted over an online platform. There could be elements of selection bias as the survey was more easily answered by individuals who were willing and able to use the technology provided.

Implications of the Findings

This research study has suggested that the only significant factor to attract customers to switch to using digital banks was by offering better utilitarian value. This research study has also provided sufficient evidence to conclude that the habit and switching costs were both significant factors that hinder customers from switching to using digital banks in spite of the existence of any push or pull factors.

Recommendations for Further Research

1. Do retail customers change their switching behavior from traditional retail banks to digital banks over time and if so, which are the factors that change over time?

2. Why do the factors driving HK retail customers to switch to digital banks differ from other countries and jurisdictions?

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