eBanking – Measuring Attributes of Banking New Technologies' adoption in Developing Economy Countries

Johan W. De Jager[1], Lutete C. Ayikwa*[2], Elizma M. Wannenburg[3]

Tshwane University of Technology, Staatsartillerie Road, Pretoria, 0001, South Africa,
[1]DejagerJW@tut.ac.za, [2]AyikwaLC@tut.ac.za, [3]WannenburgEM@tut.ac.za, (+27 12-3825627).

Abstract

This study intended to develop, explore and validate a new measurement scale for the attributes of eBanking adoption dedicated to developing economy countries. It gathered items from previously validated instruments underlying eight banking customers' characteristics, performance expectations, effort expectations, perceived ease of use, social influence, perceived digital banking services quality, hedonic motivation and customer experience to form the initial measurement scale. Once, data was collected using convenience sampling, they were analysed through factor analysis procedures. At the exploratory phase, five components were retained and while four have been labelled according to some initial dimensions, one was renamed "perceived performance of digital banking". Furthermore, one item was removed from each reorganised component to increase internal consistency. At confirmatory factor stage, all remaining items were allowed to be incorporated in the final measurement scale, though, reaching an overall good fit model index necessitated the technique of correlating error terms for two measurement models: perceived performance of digital banking and social influence. Recommendations were made to extend the study kind investigation to gather data from much more developing economy countries as well as integrating other components that were not considered.

Keywords

eBanking; Digital Banking; Technology Acceptance Model; unified theory of adoption and use of technology; South Africa; Ukraine

JEL Classification

O33 Technological Change: Choices and Consequences • Diffusion Processes

DOI: https://doi.org/10.14311/bit.2022.01.04

Editorial information: journal Business & IT, ISSN 2570-7434, CreativeCommons license published by CTU in Prague, 2022, http://bit.fsv.cvut.cz/

Introduction

It is an open secret that with the high-speed spread of the use of new information technologies in several sectors of economic life, especially banks, the transition from traditional to digital is becoming an obligation for businesses (Abdurrahaman, et al., 2021). Digitalization allows better market segmentation and better targeting of customers through customized offers, promising better satisfaction for bank customers and at the same time as an increase in transactional flows, a source of profitability for banks (Oktay & Yetkin Özbük, 2020). However, the change in customers' banking practices will only take place through the efforts of banks to influence them to adopt the new technologies they are introducing through platforms and apps, as well as to their consistent use (Magotra, Sharma, & Sharma, 2018). Thus, the need for banks and developers of these digital solutions to understand attributes of eBanking adoption and use in order to create favourable conditions for the acceptance of this transition from traditional to digital to make banking activities prosper simultaneously with an increase in the satisfaction of bank customers.

Several instruments have been developed and validated by several researchers to understand the attributes of eBanking adoption without any of them having thought of confining themselves to the framework of emerging economies by collecting data in more than one country. Thus, this study proposes to develop, explore and validate an instrument dedicated to developing countries, based on items previously used, in order to define the relevant characteristics explaining the choice of banking customers to adopt eBanking or not through data collected in two emerging countries: South Africa and Ukraine.

Literature review

Several models were developed and validated to understand the adhesion of banking customers' intention to use or not to use the new digital platforms and apps, designed, developed and operated by banks, in order to accomplish multifaceted transactions. In the first place, intention to use eBanking, which is defined as digital platforms provided to banking customers in order to perform transactions (Anggraeni, Hapsari, & Muslim, 2021), was explained by perceived usefulness and perceived ease of use through attitudes (Rehman & Shaikh, 2020). Indeed, traditional behavioural study models such as the theory of reasoned action (TRA) and its extended version the theory of planned behaviour (TPB), the social cognitive theory (SCT), motivational model (MM), model of PC utilization (M-PCU), and innovation diffusion theory (IDT) were applied initially to understand the acceptance of new technologies. Then the most widespread and used theoretical framework, the technology acceptance model (TAM), was proposed, which brought to light the two aforementioned variables (Malik, Singh, & Stakić, 2022).

As researchers began to understand the phenomenon, "attitude" was pruned from the theoretical spectrum because it has been empirically proven through several studies that it is insignificantly related to the use of technology (Thompson, Higgins, & Howell, 1991). Furthermore, it was deemed necessary to extend the total addressable market (TAM) by incorporating two more variables, perceived risk (PR) and innovativeness, to form the TAM2 as the risk involved in using digital means to perform banking transactions and degree of innovation of the platforms and apps they propose are equal predictors of bank customers' adoption or rejection of new technologies (Anggraeni, Hapsari, & Muslim, 2021).

Venkatesh et al. (2003), in reviewing the previously developed and validated models above, set about comparing these theoretical frameworks to make a synthesis of the major components of each other, which gave birth to the unified theory of adoption and use of technology (UTAUT) (Khan, Hameed, & Khan, 2017). It emerged then that taken solely, these models were inadequate to explain intention to adopt new technologies such as eBanking and mobile banking. The UTAUT integrated

performance and effort expectations, social influence and facilitating conditions in its model. Later, in-depth investigations into the phenomenon emphasised the need to incorporate hedonic motivation, customers' levels of experience called habit and price value to develop an extended version of the UTAUT known as UTAUT2 (Venkatesh, Thong, & Xu, 2012).

Each component evoked above has its own characteristics in explaining eBanking adoption. Perceived ease of use is characterised by the degree of comprehension of the banking customers of the new-branchless banking options, while the degree to which the digital platforms and apps can assist them in completing their banking transactions better describes perceived usefulness/expectancy (Kitsios, Giatsidis, & Kamariotou, 2021). Intriguingly, social influence and subjective norms, included respectively in UTAUT and TRA and TPB, bear different labels while they mean the same thing in essence as both characterise the understanding of a person from social pressure to use digital banking or his perception of important others' views toward accepting or rejecting eBanking (Shima & Mohamadali, 2017). Effort expectancy reflects the perceived effort that a banking customer needs to make in using a new banking technology, while habit or customer experience emphasises the automatization resulting from the same, frequent, and consistent mental processes in particular situations which stimulate them unintentionally to consistently use digital banking (Anggraeni, Hapsari, & Muslim, 2021). On the one hand, perceived digital banking services quality is defined as the ability of the organization to meet or exceed customer expectations (Browne & O'Donnabhain, 2000). It is the difference between customer expectations of service and perceived service. On the other hand, hedonic motivation refers to a perception that using digital banking is fun or enjoyable, regardless of the performance resulting from its use (Winarno, Mas'Ud, & Palupi, 2021).

The present study adopted an approach that integrated some of the TAM and UTAUT attributes presented above, through integrating items devoted to measure each characteristic in its initial measurement scale that is analysed using factor analysis procedures in order to develop a validated new instrument dedicated to developing countries.

Methodology

Instrument design

This study's measurement scale considered most of the second unified theory of adoption and use of technology (UTAUT2) dimensions extended to subjective norms, drawing on the inspiration of previously conducted studies in the field of digital banking adoption. Thus, the questionnaire employed was composed of 34 items and included, in addition to subjective norms – 2, the following initially distributed UTAUT2 dimensions: performance expectations – 5 (per), effort expectations – 4 (ef), perceived ease of use (eou) – 3, social influence – 5 (si), perceived digital banking services quality – 4 (qu), hedonic motivation – 3 (hm) and customer experience – 8 (ce). The questions were rated using a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

The 34 questions retained in the final version were selected following a pilot survey, which consisted in administering the questionnaire used in Oktay and Yetkin Özbük (2020), Khan et al. (2017), Winarno et al. (2021), Shima et al. (2017) and, Gayan Nayanajith and Damunupola (2019) to 20 banking customers in both South Africa (10) and Ukraine (10). The contributions of the surveyed respondents helped test how comprehensible the questionnaire was from both countries' perspectives in order to revise the number and wording of original questions by dimension so that an interview routine is created, understanding of the items is parallel, difficulties in responding is addressed, and the duration of the interview is moderate. Following this step, some original items were taken out and minor changes in wording of the retained ones were considered to make an adequate content validity of the questionnaire.

Data collection and sampling strategy

The study employed a convenience sampling strategy as recommended for banking studies (Baabdullaha, et al., 2019). Questionnaires were administered online in both South Africa and Ukraine during the first semester of 2021. A quota was set to retain the same number of correctly completed questionnaires for each country in the final dataset. Therefore, each country's dataset provided 187 usable questionnaires to make the total sample size 374. To comply with ethics in conducting research, no incentive was offered to respondents who volunteered to participate in this study after guarantees were provided about the anonymity and confidentiality of all information collected. Furthermore, only banking customers aged at least 18 years old and residing in South Africa's city of Tshwane and Ukraine's Kiev were encouraged to complete the study's questionnaire.

Participants' biographical characteristics

As mentioned earlier, the total dataset was made up of half (50%) by each country. Descriptive statistics of participants in Table 1 indicated that 58.6% were male, and 41.4% female. The majority of banking customers that were included in the final datasets were aged in the range of 18–25 years old (51.3%). Furthermore, the age range of 26–35 years old constituted 21.4%, 15.2% were aged 36–45 years old, 7.2% were aged 46–55 years old, and the remaining 4.8% were aged 56 years old or more. Out of 374 participants, about 40.1% held a certificate, 31.6% had a degree, 15.8% were high-school graduates, 9.6% had a post-graduate degree, 2.4% a doctorate degree, and the rest were primary graduates (0.5%). Most of the participants were full-time students (44.4%), followed by private (18.7%) and public (15.0%) sector employees, 12.8% exercised occupational activities in the informal sector, 8.0% were unemployed, and 1.1% were self-employed.

The majority of participants (53.2%) have been using digital banking for more than two years, 30.7% between one and two years, 12.3% since seven to eleven months, and 3.7% for up to six months. Among them, 59.4% declared that they use banking new technologies and apps to pay bills, 52.1% to transfer money, 33.2% to top up their digital money, 23.8% for a savings account and deposits, 7.2% for loan-related purposes, and 10.7% for other reasons.

Table 1: **Demographic Profile of the Participants (n = 374) (source: authors)**

Bio-characteristics	**Frequency**	**Percent**	**Bio-characteristics**	**Frequency**	**Percent**
Country			***Level of education***		
South Africa	258	50.0	Primary Education	2	0.5%
Ukraine	258	50.0	High School Education	59	15.8%
Total	314	100.0	Certificate Education	150	40.1%
Gender			Degree Education	118	31.6%
Male	219	58.6%	Post-graduate Education	36	9.6%
Female	155	41.4%	Other	9	2.4%
Total	314	100.0	Total	314	100.0

Duration of using e-banking			***Age***		
0 to 6 months	14	3.7%	18 - 25 years old	192	51.3%
7 to 11 months	46	12.3%	26 - 35 years old	80	21.4%
1 – 2 years	115	30.7%	36 - 45 years old	57	15.2%
More than 2 years	199	53.2%	46 - 55 years old	27	7.2%
Total	314	100	56 years old and older	18	4.8%
Occupation			Total	314	100.0
Student	166	44.4%	***What do you use e-banking for?***		
Employed in the private sector	70	18.7%	Transfer Money	195	52,1%
Employed in the public sector (Government)	56	15.0%	Saving account and Deposit	89	23,8%
Unemployed	30	8.0%	Top up my digital money	124	33,2%
Pensioner	4	1.1%	Loan	27	7,2%
Self employed	48	12.8%	Pay Bills	222	59,4%
Other	166	44.4%	Other	40	10,7%
Total	314	100.0			

Data analysis procedures

Besides the descriptive statistics performed to portray participants and their means and standard deviations with regards to attributes of digital banking adoption, this study conducted both exploratory and confirmatory factor analyses. The procedure adopted in the exploratory phase required empowering the statistical software SPSS 28 with its compatible R version loaded with polycor, GPArotation, nFactors, Corpor, ICS and R.Utils packages. The reason for this was to enable the study to estimate the number of factors to be retained through Velicer's minimum average partial test (see Table 2), which necessitated using two step heterogenous correlations. Thus, during principal component analysis (PCA) that assessed convergent validity of the study's measurement scale, a fixed number of five factors/components was applied as constraint resulting in the integration of an additional factor compared to the initial PCA. Reliability, on the other side, was estimated by Cronbach's Alpha coefficients. Confirmatory factor analysis (CFA) was performed using SPSS AMOS version 28. Discriminant validity was then examined through average variance extracted (AVE), while internal consistency was estimated by composite reliability (CR). The threshold used for reliability coefficients was set at .7 (Nunnally & Berstein, 1994).

Table 2: **Velicer's Minimum Average Partial Test (source: authors)**

	Velicer's Minimum	
	Minimum	Components to retain
Squared MAP	0,016	5
4th power MAP	0,001	5

Results

The exploratory factor analysis (EFA) and reliability tests performed aimed to discover the factor structure of the data collected from digital banking customers who volunteered to participate in this study by completing the online self-assessment scale that explains the specified underlying dimensions of eBanking adoption, and to examine its internal reliability (Ayikwa, De Jager, & Van Zyl, 2019). EFA, which is appropriate for scale development (Hurley, et al., 1997), was done without imposing any preconceived structure on the outcome.

The Kaiser-Meyer-Olkin statistic of .955, a value sufficiently close to 1, demonstrated the adequacy of this study's sample. Therefore, it was determined that factorial analysis should yield distinct and reliable factors. In addition, the highly significant Bartlett's test of sphericity [X2 (561) = 12297.871; p < 0.001] established the appropriateness of factor analysis, as no relationships between the variables to be included in the analysis was ascertained. Furthermore, a correlation matrix Determinant of 1.579E-15 demonstrated the absence of collinearity. Thus, factorial analysis for this study was deemed suitable.

The EFA performed via the PCA extraction method and varimax rotation was employed to generate the uncorrelated extracted component with a constraint of retaining five factors as suggested by the Velicer's minimum average partial test. The standardized factor loading and Cronbach's alpha were used under the EFA to determine the underlying questions for the extracted component structure of each dimension. A cut-off of .3 was used as threshold in this study for standardized factor loading, as recommended by Shyu et al. (2013).

From the initial eight underlying dimensions, only five components were retained following EFA procedures, explaining 71.97 percent of total variance, which were labelled as: effort expectations – 7, perceived expectations – 4, social influence – 6, hedonic motivation – 3, as in the original measurement scale, and perceived performance of digital banking – 14. This new dimension, perceived performance of digital banking, is characterised by how digital banking services are appreciated by banking customers in term of the digital platform's architecture, service-quality and understanding of banking transactions used through digital means.

Although the Cronbach alpha of all the components were adequate scoring each a value above .7, except for perceived expectations (.654), some items were removed to increase internal consistency within each dimension. The questions considered for deletion to enhance Cronbach alpha coefficients are qu3, eou3, si3, per2 and hm3. After deletion of item per2, perceived expectations' reliability coefficient scored well above the threshold (.872), as shown in Table 3.

Table 3: **Exploratory Factor Analysis and Confirmatory Factor Analysis statistics (source: authors)**

			EFA			CFA		
Dimensions/ Items	Mean	Std.	Factor Loading	Cronbach Alpha	Cronbach Alpha if item deleted	Factor Loading	AVE	CR
Perceived performance of digital banking								
ce5	5.460	1.664	0.846	.965	.961	.894	.673	.964
ce3	5.497	1.673	0.830		.961	.866		
ce6	5.546	1.752	0.824		.961	.892		
ce1	5.738	1.807	0.811		.962	.830		
ce2	5.425	1.693	0.805		.962	.796		
ce4	5.503	1.595	0.778		.962	.851		
ce7	5.267	1.769	0.769		.963	.771		
qu2	5.885	1,716	0.760		.963	.847		
qu4	5.725	1.713	0.756		.961	.854		
qu1	5.722	1.593	0.675		.963	.765		
ce8	5.425	1.668	0.651		.965	.668		
si4	5.693	1.751	0.644		.963	.777		
eou2	5.591	1.742	0.629		.962	.829		
qu3	5.289	1.578	0.529		.966	-		
Effort expectations								
ef4	5.588	1.758	0.707	.860	.818	.938	.700	.932
ef3	5.615	1.730	0.672		.819	.917		
eou1	5.775	1.789	0.641		.820	.908		
per1	5.757	1.954	0.628		.827	.798		
ef1	5.548	1.824	0.564		.824	.802		
eou3	5.511	3.645	0.443		.930	-		
ef2	5.254	1.570	0.425		.848	.612		
Social influence								
sn2	4.813	2.005	0.848	.898	.869	.932	.616	.887
si2	4.733	1.906	0.848		.873	.691		
sn1	4.874	1.970	0.843		.871	.919		
si1	4.759	1.818	0.825		.877	.688		
si5	4.735	1.876	0.729		.888	.644		
si3	4.989	1.867	0.655		.900	-		
Perceived expectations								
per4	5.046	1.667	0.677	.654	.569	.908	.698	.873
per5	5.144	1.822	0.645		.511	.798		
per3	5.433	1.742	0.530		.504	.795		
per2	5.893	4.149	0.459		.872	-		
Hedonic motivation								
hm1	5.356	1.621	0.742	.827	.669	.889	.768	.868
hm3	4.869	1.827	0.716		.868	-		
hm2	5.393	1.669	0.610		.742	.863		

Shaded fields show removed items.

After testing the original measurement scale for convergent validity and reliability, a CFA procedure was followed to test the reorganised scale for divergent validity and reliability through AVE and CR tests before their integration for testing adequacy of eBanking adoption self-assessment measurement model by means of the maximum likelihood (ML) estimation method. Any item loading below the .4 threshold was considered for removal, while values ≥ .5 and ≥ .6 were set as cut-offs

respectively for AVE and CR (Hair, Black, Babin, & Anderson, 2010). After testing each dimension's measurement model, no item was left aside for integration in the eBanking adoption self-assessment measurement model. However, the technique of correlating errors was used to get good fit model index for perceived performance of digital banking (e1↔e2, e1↔e3, e2↔e3, e4↔e5, e7↔e8, e9↔e10, e9↔e11, e10↔e11) and social influence (e1↔e2) measurement models after inspection the modification indices. The cut-offs for good fit for each measure and results are presented in Table 4.

The initial estimation of the eBanking attributes' self-assessment measurement model suggested an overall good fit model index [CMIN/DF (3,906), CFI (.907), SRMR (.077) and TLI (.894) despite GFI (.786) and RMSEA (.088) being respectively below and above their permissible levels, as indicated in Table 4.

Table 4: **Reported Fit Statistics for eBanking attributes' measurement model (source: authors)**

Measure	Name	Initial	Final	Cut-offs for good fit
CMIN/DF	Chi square/Degree of freedom	3.906	3,641	≤ 5.0 to 2.0
CFI	Comparative fit index	.907	.916	≥ .9 to 1
GFI	Goodness of fit index	.786	.800	≥ .85
RMSEA	Root-mean-square error of approximation	.088	.084	≤ .08
SRMR	Standardised root-mean-square residual	.077	.076	≤ .08
TLI	Non-normed fit index	.894	.904	> .9 (sometimes > .8)

Conclusion

This study developed and validated a self-assessment scale, verified through factor analysis procedures, to measure attributes of eBanking adoption in the context of developing economy countries. The initial phase consisted in conducting an EFA to identify and reorganise the underlying dimensions of eBanking adoption's attributes that provide the best explanation of their characteristics. Prior convergent validity and reliability assessment using PCA and orthogonal varimax rotation extraction method and Cronbach's alpha, a Velicer's minimum average partial test was performed to help identify to number of factors/components to retain rather than relying exclusively on the Eingen values. The Velicer's results determined a minimum of five components to be retained, while the original PCA suggested four factors. Consequently, the applied constraint of retaining five components led to the reduction of three factors from the eight comprised in the initial measurement scale. Four of the reorganised factors were labelled according to the initial components (effort expectations, perceived expectations, social influence and hedonic motivation), while one of them was re-labelled as perceived performance of digital banking which characterised how digital banking services are appreciated by banking customers in term of the digital platform's architecture, service-quality and understanding of banking transactions used through digital means. Furthermore, items qu3, eou3, si3, per2, and hm3 were removed from their respective underlying dimensions to enhance internal consistency within new components with Cronbach's alpha coefficients well above the .7 threshold.

Discriminant validity and reliability at CFA level were measured using AVE and CR, while the models were estimated by applying ML in order to determine the fit indices. The individual's assessment of the measurement models of all five new attributes of eBanking adoption allowed keeping all items as they loaded well above a value of .4 rule of thumb. Three models tested demonstrated perfect or overall good fitting index (effort expectations, perceived expectations and hedonic motivation), except the initial measurement model of social influence and perceived performance of digital banking that showed poor fitting index that required correlating some error terms to adjust the index at their permissible levels. Lastly, the newly developed eBanking attributes' measurement model that

integrated all components' measurement scale demonstrated an overall good fit model index [CMIN/DF (3,906), CFI (.907), SRMR (.077) and TLI (.894) despite GFI (.786) and RMSEA (.088) being respectively below and above their permissible levels.

Thus, researchers in the fields interested in the adoption of new technologies, particularly in digital banking, eBanking, and mobile banking in developing economy countries, may adopt this model to investigate characteristics that predict either intention or consistent use of digital means for performing banking transactions. However, it is recommended that further research be done in different regions and countries across the world, as this study only collected data in South Africa and Ukraine. The integration in the initial measurement scale of items that describe risk, innovativeness, attitudes and other aspects of eBanking adoption will help strengthen this study's newly developed and validated measurement scale in getting a more realistic model to assess eBanking attributes. In addition, the predictive, moderating and mediating roles of demographic, socio-economic, and cultural characteristics are worth empirical investigation.

References

[1] Abdurrahaman, D. T., Sharubutu, M. S., Sabiu, T. T., Adam, S. B., Ibrahim, M. G., & Udu, A. A. (2021, August). Examining the Determinants of eBanking Adoption: Evidence from Nigeria. Technium Social Sciences Journal, 22(1), 463-482. Retrieved May 18, 2022, from https://techniumscience.com/index.php/socialsciences/article/view/4018

[2] Anggraeni, R., Hapsari, R., & Muslim, N. A. (2021). Examining Factors Influencing Consumers Intention and Usage of Digital Banking: Evidence from Indonesian Digital Banking Customers. Asia-Pacific Management and Business Application, 9(3), 193-210. doi:10.21776/ub.apmba.2021.009.03.1

[3] Ayikwa, L. C., De Jager, J. W., & Van Zyl, D. (2019, February). Enhancing the Theory of Planned Behaviour by Incorporating Social Marketing Behavioural Enhancers: A First VS Second Order Confirmatory Factor Analysis Approach. Journal of Economics and Behavioral Studies, 11(1), 139-151. Retrieved February 26, 2019, from https://core.ac.uk/download/288023276.pdf

[4] Baabdullaha, A. M., Ranab, N. P., Alalwanc, A. A., Islamd, R., Patile, P., & Dwivedie, Y. K. (2019). Consumer Adoption of Self-Service Technologies in the Context of the Jordanian Banking Industry: Examining the Moderating Role of Channel Types. Information Systems Management, 36(4), 286-305. doi:10.1080/10580530.2019.1651107

[5] Browne, M., & O'Donnabhain, S. (2000). The Assessment of Client Satisfaction in the Client- Project Manager Relationship: An Expectations - Artefact Model. Project Management, 5(1), 42-49. Retrieved May 11, 2022, from https://pure.ulster.ac.uk/en/publications/the-assessment-of-client-satisfaction-in-the-client-project-manag-3

[6] Gayan Nayanajith, D. A., & Damunupola, K. A. (2019). Effects of Subjective Norms and Security on Online Banking Adoption: Multilevel Linear Model Analysis. Asian Journal of Multidisciplinary Studies, 1(1), 9-16. Retrieved June 5, 2022, from http://www.asianjournal.org

[7] Hair, J., Black, W., Babin, B., & Anderson, R. (2010). Multivariate data analysis: A global perspective (7th ed.). London: Pearson Education.

[8] Hurley, A. E., Scandura, T. A., Schriesheim, C. A., Brannick, M. T., Seers, A., Vandenberg, R. J., & Williams, L. J. (1997). Exploratory and confirmatory factor analysis: guidelines, issues, and alternatives. Journal of Organizational Behavior, 18(6), 667-683. doi:10.1002/(SICI)1099-1379(199711)18:6<667::AID-JOB874>3.0.CO;2-T

[9] Khan, I. U., Hameed, Z., & Khan, S. U. (2017, January-March). Understanding Online Banking Adoption in a Developing Country: UTAUT2 with Cultural Moderators. Journal of Global Information Management, 25(1), 43-65. doi:10.4018/JGIM.2017010103

[10] Kitsios, F., Giatsidis, I., & Kamariotou, M. (2021). Digital Transformation and Strategy in the Banking Sector: Evaluating the Acceptance Rate of E-Services. J. Open Innov. Technol. Mark. Complex., 7, 204. doi:10.3390/joitmc7030204

[11] Magotra, I., Sharma, J., & Sharma, S. K. (2018). Investigating linkage between customer value and technology adoption behaviour: A study of banking sector in India. European Research on Management and Business Economics, 24(1), 17–26. doi:10.1016/j.iedeen.2017.11.001

[12] Malik, G., Singh, D., & Stakić, N. (2022). Understanding the behavioural intention to adopt internet banking: An indian perspective. The European Journal of Applied Economy, 19(1), 110-120. doi:0.5937/EJAE19-35277

[13] Nunnally, J. C., & Berstein, I. H. (1994). Psychometric Theory (3rd ed.). New York, NY: McGraw-Hill.

[14] Oktay, B., & Yetkin Özbük, Ü. R. (2020, July 30). Segmentation of Customers Based on Behavioral Intention to Use Multi-Channel Banking and Experience. Pazarlama İçgörüsü Üzerine Çalışmalar, 4(1), 13-26. Retrieved May 18, 2022, from https://dergipark.org.tr/en/pub/somi/issue/56246/745927

[15] Rehman, Z. U., & Shaikh, F. A. (2020). Critical Factors Influencing the Behavioral Intention of Consumers towards Mobile Banking in Malaysia. Engineering, Technology & Applied Science Research, 10(1), 5265-5269. Retrieved May 20, 2022, from https://pdfs.semanticscholar.org/01f9/0771b6945b2886f96e54f44b43e02bc8dad5.pdf

[16] Shima, N., & Mohamadali, A. K. (2017, February 15). Examining the factors affecting willingness to use electronic banking: The integration of TAM and TPB models with electronic service quality (Case study: eghtesad novin bank). Journal of Fundamental and Applied Sciences, 9(1S), 824-841. doi:10.4314/jfas.v9i1s.736

[17] Shyu, C. H., Li, Y. L., & Tang, Y. (2013, August). Applying Confirmatory Factor Analysis on the Measure for Restaurant Over-service. The Journal of International Management Studies, 8(2), 10-16. Retrieved July 13, 2018, from http://www.jimsjournal.org/2%20Yong,%20Tang.pdf

[18] Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991, March). Personal computing: Toward a conceptual model of utilization. MIS Quarterly, 15(1), 125-143. doi:10.2307/249443

[19] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003, September). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425-478. doi:10.5555/2017197.2017202

[20] Venkatesh, V., Thong, J. Y., & Xu, X. (2012, March). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. MIS Quarterly, 36(1), 157-178. doi:10.2307/41410412

[21] Winarno, W. A., Mas'Ud, I., & Palupi, T. W. (2021). Perceived Enjoyment, Application Self-efficacy, and Subjective Norms as Determinants of Behavior Intention in Using OVO Applications. Journal of Asian Finance, Economics and Business, 8(2), 1189–1200. doi:10.13106/jafeb.2021.vol8.no2.1189

Appendix

Code	Questions
per1	I find digital banking services technology useful
per2	Using digital banking technology enables me to accomplish tasks more quickly
per3	Using digital banking technology increases my productivity
per4	I believe the use of digital banking technology will increase my chances of a prosperous life
per5	I believe that using digital banking technology can significantly increase my quality of life
ef1	I find digital banking services technology useful in my job or business
ef2	I will be regarded as skilful when using digital banking services technology
ef3	I find digital banking services easy to use
ef4	Learning to operate digital banking services system is easy for me
eou1	Learning to use a digital banking system over mobile phone or internet is easy for me
eou2	It was easy for me to become skilful at a digital banking system for my personal or business purposes
eou3	I think that interaction with a digital banking system does not require a lot of mental effort
si1	People who influence my behaviour expect me to use digital banking services
si2	People who are important to me expect me to use digital banking services
si3	The employees of the bank have been helpful in the use of the e-banking services system
si4	In general, the use of the digital banking services system has been supported by my bank
si5	People who uses digital banking services have more prestige than those who do not
sn1	People who are important to me think that I should use digital banking Services technology
sn2	People who have influence on my behaviour think that I should use digital banking services for conducting e-commerce or e-Business transactions
qu1	Digital banking services make it easy to find what I need
qu2	Digital banking services technology enables me to complete a transaction quickly
qu3	Digital banking services technology protects my information
qu4	Digital banking services technology provides me with convenient options for conducting financial transactions
hm1	Using digital banking services technology is fun
hm2	Using digital banking services technology is enjoyable
hm3	Using digital banking services technology is entertaining
ce1	I can easily login/logout on the bank's digital application
ce2	The links are problem free, accurate and pages download quickly
ce3	The presentation quality of the bank's digital application is high
ce4	The design elements of the bank's digital application are innovative
ce5	The information architecture of the bank's digital application is clear
ce6	The language of the bank's digital application is easily understandable
ce7	The web pages of the bank do not freeze any information given by you
ce8	I feel secure while transacting through bank's digital application