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Effects of Perceived Risk and Subjective Norms on Internet Banking Adoption Amongst the Students of University of Kelaniya: A Multilevel Linear Model Analysis

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ABSTRACT

Challenging technology advancements necessitate robust macroeconomic performance to support overall economic development. Within the service sector of the economy, one of the broadly studied areas of technological transformation is retail financial services; particularly consumer banking activities. Internet banking enables customers to experience a vast array of financial services through e-banking websites. Nonetheless, in practice; this phenomenon is contingent on the particular context. Hence, this research addresses the significance of subjective norms and perceived risk towards acceptance of consumer internet banking in the Sri Lankan context with special reference to private commercial banks. The sample was drawn from the students of the University of Kelaniya those who are participating in the weekend study programs. The students of the Doctor of Business Administration Course attached to the university were selected as enumerators for data collection. Data collected through self-administered questionnaires from the respondents. Initially, 400 questionnaires were distributed and 287 duly completed questionnaires were considered for the final data analysis. TAM has been extended using the subjective norms and perceived risk variables and dimensions of the variables were measured by a five-point Likert scale. Cronbach's alpha was used to check reliability. To test the hypotheses, ANOVA, ANCOVA, and multilevel linear models were used. The empirical evidence supported three hypotheses indicating the significance of the variables/constructs on the adoption of internet banking. In conclusion, the authors have presented several suggestions for research studies, in time to come.

Keywords: *Internet Banking, Online Banking, Risk, Sri Lanka, TAM*

INTRODUCTION

The marginal sectoral performance of the economy has witnessed the vulnerability of the economy to both internal and external disturbances. The services sector is the impetus of the Sri Lankan economy which contributes most, where services related economic activities expanded by 4.7 percent in 2018 in value-added terms in comparison to corresponding 3.6 percent growth which was reported in the preceding year (CBSL, 2019). The progression of service sector activities during the year was essentially backed by the development of financial services activities together with the expansions in wholesale and retail trade activities without causing significant macro-prudential concerns amidst critical market conditions. The banking sector of the country continued to dominate the financial sector, accounting for a considerable 72.5 percent of the total assets of the financial sector (CBSL, 2019). Nevertheless, the profitability of the

banking sector has deteriorated due to the upsurge of operating costs, among other things. Hence, this could be addressed by minimizing operational costs whilst improving additional income sources concurrently by facilitating electronic onboarding via internet banking services.

In the meantime, retaining public trust whilst providing safe and secured financial services, is vital for the proper functioning of the market mechanism (CBSL, 2019). Timely addressing of various aspects of risks embed innovation, service quality enhancement, and secure services provision, are paramount in improving the internet banking adoption levels within the Sri Lankan banking context (Commercial Bank of Ceylon, 2019; HNB PLC, 2018; Sampath Bank PLC, 2018). Furthermore, several researchers have noted the significance of perceived risk and subjective norms factors concerning the adoption of internet banking within different country contexts (Al-Ajam & Nor, 2015; Gumussoy et al., 2018; Marakarkandy et al., 2017; Kamyab & Delafrooz, 2016). In the same way, numerous researchers have recognized the strategic importance of conducting researches on the notion of internet banking adoption related to various emerging and developing country perspectives (Afshan et al., 2018; Gayan Nayanajith & Dissanayake, 2019; Rahi, 2015).

Moreover, researches related to technology adoption have identified different impacts alongside observing varied relationships between the factors affecting the adoption of novel technologies and the adoption aspect itself. Similarly, some researchers have identified significant relationships among the perceived risk, subjective norms, perceived ease of use, perceived usefulness, and internet banking adoption whereas some other studies have found such relationships are not significant in different country contexts (Al-Ajam & Nor, 2015; Boateng et al., 2016; Marakarkandy, Yainik & Dasgupta, 2017; Nor & Pearson, 2015; Rawashdeh, 2015).

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Aldás-Manzano et al. (2009) noted how innovativeness could be used to positively influence online banking adoption and reducing consumer perceived risk. Further, Lee (2009) indicated that intention to use online banking is adversely affected mainly by the security/privacy risk, as well as financial risk, according to the research integrating TAM and TPB models. Additionally, several researchers showed that behavioral intention is significantly influenced by perceived usefulness, perceived ease of use, and perceived risk (Risk) in the Jordanian mobile banking context (Alalwan et al., 2016). Some researchers indicated that TAM constructs, perceived risk elements, innovativeness, subjective norms, perceived behavioral control, perceived security and trust of e-services are predictors of behavioral intention/adoption towards e-banking (Giovanis et al., 2012; Gayan Nayanajith & Damunupola, 2019; Nayanajith & Damunupola, 2019a & 2019b; Nayanajith, Damunupola & Ventayen, 2019a; Nayanajith, Damunupola & Pastor, 2020).

Poon (2008) indicated that privacy, security, and convenience factors play a significant role in determining users' acceptance of e-banking services. Perceived technology security was the most important factor, inter alia, to decide the user's intention concerning the adoption of e-banking (Rahi & Ghani, 2018). Security is the extent to which the user believes that using an application will be risk-free (safe) and the capability to protect data against unauthorized access (Kim et al. 2010; Zeithaml et al. 2000; Shareef et al. 2011). Charney (2008) suggested that the principal purpose of security is to protect the data and system. There are several aspects to consider to reduce information security risk and uplift the security of same (Lai, Tong & Lai, 2011; Weippl, 2005; Taherdoost et al., 2011). A research study conducted in Finland in the light of the technology acceptance model (TAM) by Pikkarainen et al. (2004) proposed that online banking adoption or acceptance can be modeled with the TAM variables perceived usefulness and perceived ease of

use (PU & PEOU) with four other variables referred as perceived enjoyment (PE), information on online banking, security and privacy, and the quality of the internet connection variables as derived from the available online banking acceptance literature. The study conducted by Priyangika, Perera, and Rajapakshe (2016) mainly focused on the analysis of customers' attitude towards internet banking under four factors (TAM with two additional factors); PEOU, PU, perceived risk (PR), and subjective norms (SN). Attitude towards online banking has strong positive relationships with PEOU and PU while PR and the SN have weak positive relationships.

CONCEPTUAL FRAMEWORK AND HYPOTHESES OF THE STUDY

The technology acceptance model (TAM) is an extension of Ajzen and Fishbein's theory of reasoned action (TRA) as found in the literature. Davis's TAM (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989) is applied extensively to explain users' acceptance and usage of technology (Venkatesh, 2000). TAM was developed by Fred Davis and Richard Bagozzi (Davis 1989; Bagozzi, Davis & Warshaw 1992). TAM is an adaptation of TRA for the field of information systems. TAM was originally used to examine internet banking (IB) adoption by Bhattacherjee (2001). His research examined a post-acceptance application of TAM to understand the role of expectations in IB adoption and continued use among United States banking customers. Another remarkable application of TAM in the study of IB adoption was presented by Suh and Han (2002 & 2003) who were the first to consider cross-national effects in their study of South Korean e-banking customers. Another prominent study was conducted by Vatanasombut, Igbaria, Stylianou, and Rodgers (2008) who integrated TAM and commitment trust theory to understand continuance intentions. Attempts to extend TAM (e.g., TAM2) have generally guided largely by one of the three following approaches: by integrating factors from interconnected models on customer adoption, by means of integrating additional or alternative belief factors, and lastly by way of examining antecedents and moderators of perceived usefulness and perceived ease of use.

In the present study, TAM has been extended by using additional variables as one of the means of extending Davis's model (Hanafizadeh, Keating & Khedmatgozar, 2014). Variables such as perceived risk, subjective norms have already been used in an attempt to extend the TAM (Gumussoy, Kaya & Ozlu, 2018; Lee, 2009; Sanayei & Bahmani, 2012). The relationship between attitudes and SN has been noted although the causality has not been established (Ajzen, 1985; Sheppard, Hartwick & Warshaw, 1988). Similarly, PEOU, PU, have been identified as the immediate direct determinants of customers' attitudes towards the adoption of internet banking (Abdekhoda et al., 2015; Celik, 2008). Hence, the adopted conceptual model is consistent with the theories. Some researchers noted that e-banking adoption could be analyzed by extending the TAM along with predictor variables such as perceived security of e-services, the perceived trust of e-services, perceived risk, and similar variables even in the context of Sri Lanka (Gayan Nayanajith & Dissanayake; 2019; Nayanajith et al., 2019b & 2019c). Considering the aforesaid facts following conceptual model has been proposed for the research.

CONCEPTUAL MODEL

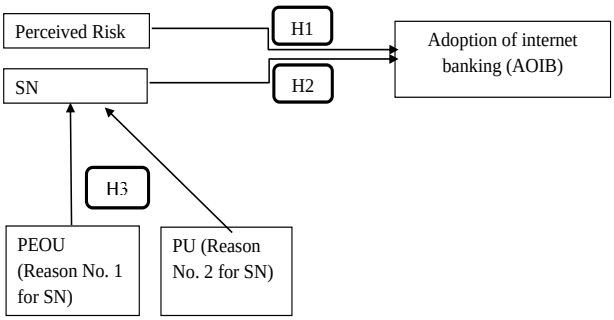

Figure 1: Conceptual model

Slade, Dwivedi, Piercy, and Williams (2015) revealed that performance expectancy, social influence, innovativeness, and perceived risk significantly influenced nonusers' intentions

to adopt remote mobile payments, according to the research conducted in the UK on modeling consumers' adoption intentions of remote mobile payments. Priyangika et al. (2016) noted that attitude towards online banking has strong positive relationships with PEOU and PU while PR and the SN have weak positive relationships. Lee (2009) indicated that the intention to use internet banking is adversely affected mainly by different kinds of risks. Alalwan et al. (2016) showed that behavioral intention is significantly influenced by perceived usefulness, perceived ease of use, and perceived risk. TAM constructs and perceived risk elements drive behavioral intention towards internet banking adoption (Giovanis, et al., 2012).

Considering the aforementioned facts following hypothesis was proposed,

H1-Perceived risk predicts AOIB significantly

Al-Ajam and Md Nor (2015) identified that customers' behavioral intention was significantly influenced by attitude, subjective norms, and technology readiness, in the Yemeni online banking adoption context. Among other factors, Perceived e-security, PEOU, PU, and SN are several influential factors that explain the e-banking adoption in Sri Lanka (Gayan Nayanajith & Dissanayake, 2019; Gayan Nayanajith & Damunupola, 2019). Another research effected by Deb and David (2014) found empirical evidence for the positive relationship between PU, PEOU, and social influence on positive attitude towards mobile banking in the Indian context. A subsequent study conducted on the adoption of e-banking in the same country by Rakesh and Ramya (2014) has identified empirical evidence for the positive relationship between PU, PEOU, and social influence on positive attitude towards mobile banking in the context of India. Several researchers claimed that the variables of perceived security and trust in e-banking had a significantly positive impact on the adoption of e-banking (Lim et al., 2019; Damghanian et al., 2016; Masoud & AbuTaqa (2017).

Considering the aforementioned facts following hypothesis was proposed,

H2-SN predicts AOIB significantly

According to Featherman and Hajli (2016) as usage risk concerns increased, the effect of subjective norm on PU and intention to use an e-service strengthened, as per the research on self-service technologies. Some researchers noted the significance of perceived ease of use and some other variables towards the adoption of e-services and another researcher particularly noted that PU, PEOU, and SN affect internet banking adoption (Nayanajith et al., 2019d & 2019e; Yousefi, 2015 as cited by Rajapakse, 2017). Moreover, Rakesh and Ramya (2014) have identified empirical evidence for the positive relationship between PU, PEOU, and social influence on positive attitude towards mobile banking in the context of India. Nayanajith and Damunupola (2019a) noted that the security of e-services, the interaction of subjective norms, and reason towards the same, are significant on online banking adoption in the Sri Lankan context.

Considering the aforementioned facts following hypothesis was proposed,

H3- Interaction of SN and R predicts AOIB significantly

Upon reviewing the literature operationalization of the variables, was conducted and the overview of the same is given in the following table (Table 1a).

Table 1a: Operationalization Table

Concept	Variable	Measurement indicator	Source
Technology acceptance	Perceived usefulness	The belief that using a particular system (online banking) will enhance job performance	Davis et al., 1989
	Perceived ease of use	The belief that using a particular system will be free from effort	
Technology acceptance	Adoption of internet banking	Usage of e-banking	Aldas-Manzano et al., 2009: Davis, 1989; Venkatesh, 2000; Poon, 2007
		Customers' intention to use	
Perceived risk theory	Perceived risk in internet banking	Likelihood of financial loss-financial risk	Aldas-Manzano et al., 2009; Khedmatgozar & Shahnazi, 2017
		Likelihood of wasting time, online-time risk	
		Likelihood of poor performance of service-performance risk	
		Likelihood of fraud & misuse of data-security risk	
		Possibility of abuse of personal information-privacy risk	
		Negative attitudes of social groups towards the service-social risk	
Theory of reasoned action	Subjective norms	Specific perceived social pressure to perform or not to perform the behavior (usage of internet banking) by an individual	Fishbein, 1976; Fishbein & Ajzen, 1975; Albarracin & Ajzen, 2007

RESEARCH METHOD

In this study deductive methodology and quantitative methods have been used. Firstly, a questionnaire survey was deemed suitable for the type of data that the researcher gathered as the major part of the study is concerned with the respondents' perceptions of e-banking and how these perceptions influence their adoption of e-banking. Secondly, Saunders (2011) specified that questionnaires can be employed to examine and explicate relationships between variables. There were additional reasons to use a questionnaire survey, including the need for a large sample and the fact that the cost of a questionnaire survey is much cheaper than against an interview survey. Respondents of this research study were the students of the University of Kelaniya who were participating in the weekend study programs conducted by the university and are possessing internet banking facilities offered by the private commercial banks. They were selected on a random sampling method as per registration numbers. The doctoral students of the Doctor of Business Administration (DBA) attached to the university, were selected as enumerators for the data collection process. They have collected data through self-administered questionnaires from the respective respondents. Altogether 400 questionnaires were distributed and 287 duly completed questionnaires were considered for the final data analysis.

RESULTS

The IBM SPSS 20 package was used for data analysis. The sample consisted of a higher proportion of male respondents (51.6 percent) than female respondents (48.4

percent). Further, the majority being 65.8 percent of the respondents were advanced level qualified personnel and 11 percent of the respondents were qualified as graduates whereas postgraduate and professional qualification holders were recorded as 9 percent and 14.2 percent respectively. As per the age distribution statistics, the vast majority of respondents (64.5 percent) were aged between 30–60 years where married respondents count reported as 65.8 percent in considering the marital status. Given the figures of the analysis 65.2 percent recorded in the income segment in between Rs.75,000/- to Rs.150,000/- Therefore, the demographic characteristic structure of the research sample is in line to examine the research issue in the particular context as most of the demographic features of the population are being replicated by the designated sample of the research study.

Initially, a reliability analysis was conducted to measure internal consistencies of the total scores for each scale through Cronbach's alpha coefficients (Field, 2017). The calculation of reliability measurements is presented in table 1b. As per the findings, all the reliabilities for variables are found to be adequate since Cronbach's alpha values are higher than 0.7 (George & Mallery, 2003). Moreover, the K-S test, Levene's test, and linearity test performed to ensure normality, homoscedasticity, and linearity respectively, in which the results were not significant for the tests.

Table 1b: Reliability Analysis of the Variables.

	No. of items	Cronbach's alpha	Mean	Standard deviation
SN	6	.819	3.95	.46
Risk	24	.915	3.81	.58
AOIB	8	.879	4.19	.49

Source: Survey data 2019

According to the descriptive statistics as depicted in table 1b, variables are at a high level as the composite mean figures are all above 3.66 (where 5 point Likert scale figures starting from strongly agree, agree, not sure, disagree and strongly disagree, have been converted to high, medium and low values in the following manner (taking account of the composite values calculated by using SPSS application), values in between 1-2.33, considered as low; 2.34-3.66, medium; 3.67-5, high, respectively). There were six constructs for the Risk variable and subsequently the composite mean was recorded at 3.81 whereas the S variable has a composite mean of 3.5, while the dependent variable; AOIB has reported a mean of 4.19.

Table 1c shows the results of one-way ANOVA, analyzing the effect of SN on AOIB, which is significant, F (1, 285) = 15.614, p = .000

Table 1c: ANOVA Results

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	2.928	1	2.928	15.614	.000
Within Groups	53.448	285	.188		
Total	56.377	286			

Source: Survey data 2019

Table 2 shows the results of the multilevel linear model (MLM) with only the fixed effect of SN, which is significant and similar to ANOVA, F (1, 285) = 15.614, p = .000

Table 2: MLM Results

Type III Tests of Fixed Effects[a]

Source	Numerator *df*	Denominator *df*	*F*	Sig.
Intercept	1	287	3625.973	.000
Subjective Norm (Sub. N.)	1	287	15.723	.000

a. Dependent Variable: AOIB.

Source: Survey data 2019

Table 3 demonstrates the results of ANCOVA with Risk as a covariate in determining the effect of SN on AOIB. Now, SN does not predict AOIB significantly, F (1, 284) = .748, p = .388. However, there is a significant effect of Risk on AOIB, F (1, 284) = 634.65, p = .000.

Table 3: ANCOVA Results

Tests of Between-Subjects Effects

Dependent Variable: AOIB

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected Model	39.853[a]	2	19.926	342.488	.000
Intercept	35.459	1	35.459	609.450	.000
Risk	36.925	1	36.925	634.647	.000
Sub. N.	.044	1	.044	.748	.388
Error	16.524	284	.058		
Total	5726.500	287			
Corrected Total	56.377	286			

a. R Squared = .707 (Adjusted R Squared = .705)

Source: Survey data 2019

Table 4 depicts the results of MLM with fixed effects of SN and Risk. Even now, SN is not significant although the Risk is significant which is similar to previous ANCOVA results.

Table 4: Reliability Analysis of the Variables

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	*df*	*t*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	2.2480	.107701	287	20.873	.000	2.036059	2.460029
Sub. N.	-.02545	.029284	287	-.869	.385	-.083099	.032180
Risk	.590894	.023333	287	25.325	.000	.544969	.636819

a. Dependent Variable: AOIB.

Source: Survey data 2019

Table 5 demonstrates the results of MLM with a level 2 variable which is the particular bank of the respondent. This considers the covariation within banks by including the hierarchical data structure and assumes that intercepts vary across banks. Allowing the intercepts to vary has made a difference to the model. Chi-square change (-2LL change) = -4.827 - -69.968 = 65.141, df change = 5-4 = 1, chi-square critical values with 1 df is 3.84 ($p < .05$) and 6.63 (p

< .01); therefore, this change is highly significant; the fit of the model has significantly improved. Hence, it could be noted that the intercepts for the relationships between SN and AOIB (when controlling for Risk) vary significantly across the different banks. By allowing the intercepts to vary, there is a new regression parameter for the effect of SN, which is .15 compared to -.03 when the intercept was fixed. In other words, by allowing the intercepts to vary over banks, the effect of SN has become slightly higher positive from the previous lower negative one. In fact, now SN is significant, F (1, 285.55) = 19.97, p = .000. This shows how had the researchers ignored the hierarchical structure in the data, researchers would have been reached different conclusions than what is mentioned in this section.

Table 5: MLM with Level 2 Variable (Random Intercepts-Banks) Results

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	*df*	*t*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	1.83480	.134014	31.515	13.691	.000	1.561661	2.107947
Sub. N.	.153149	.034271	285.545	4.469	.000	.085694	.220604
Risk	.629412	.021344	285.039	29.489	.000	.587400	.671423

a. Dependent Variable: AOIB.

Source: Survey Data 2019

Including a random intercept has changed log-likelihood significantly. Hence, Table 6 shows the results with the addition of random slope. Chi-square change (-2LL change) = -69.968 - -116.427 = 46.459, *df* change = 6-5 = 1, chi-square critical values with 1 *df* are 3.84 ($p < .05$) and 6.63 ($p < .01$); therefore, this change is highly significant; the fit of the model has significantly improved when the variance of slopes is included; meaning that there is significant variability in slopes.

Table 6: MLM with Random Intercepts (Banks) and Random Slopes (SN) Results

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	*df*	*t*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	1.75070	.193196	7.595	9.062	.000	1.301026	2.200388
Sub. N.	.203444	.114150	4.157	1.782	.147	-.108809	.515698
Risk	.634581	.019406	283.545	32.701	.000	.596383	.672778

a. Dependent Variable: AOIB.
Source: Survey data 2019

As there is significant variability in slopes, subsequently check whether the slopes and intercepts are correlated (or covary). In the previous analysis 'variance components' assumed covariance between intercepts and slopes were zero. Hence, only the variance of slopes has been estimated. Now, covariance being included by selecting 'unstructured', and results given in table 7.

Chi-square change (-2LL change) = -116.427 - -121.408 = 4.981, *df* change = 7-6 = 1, chi-square critical values with 1 *df* is

3.84 ($p < .05$) and 6.63 ($p < .01$); fit not improved at $p < .01$, now SN is Not Significant, $p = .269$, However, Risk is Significant, $p = .000$, variance estimates for the intercept (.113) and slopes (.043) and their associated significance (-.061) (covariance of slopes and intercepts) based on Wald test, confirms this, as all the estimates are not significant. As the covariance is negative, it indicates a negative relationship between the intercepts and slopes. Since the research is looking at the effect of SN on AOIB in 4 different banks, this means that, across these banks, as the intercept for the relationship between SN and AOIB increases, the value of the slope decreases.

The variance of the slopes (.043) indicates that how much the slopes vary around a single slope fitted to the entire data set (i.e., ignoring the bank from which the data emanated). This confirms what the chi-square test illustrated; that the slopes across banks are not significantly different.

Therefore, could be concluded then, that the intercepts and slopes for the relationship between SN and AOIB (when controlling for Risk) do not vary significantly across the different banks. By allowing the intercept and slopes to vary there is also a new regression parameter for the effect of SN, which is .159 compared to .153 when the slopes were fixed. In other words, by allowing the intercepts to vary over banks, the effect of SN has increased very slightly and it is still not significant, F (1, 3.592) = 1.709, $p = .269$. This demonstrates that even if the hierarchical structure in data, has been ignored the same conclusion would have been reached in this scenario, as per the analysis.

Table 7: MLM with Covariance between Intercepts and Slopes

Estimates of Covariance Parameters[a]

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.03521	.00297	11.825	.000	.029835	.041561
Intercept + Sub. N.	UN (1,1)	.11306	.09275	1.219	.223	.022647	.564483
[subject = Question	UN (2,1)	-.0614	.05475	-1.123	.261	-.168804	.045828
4_Bank]	UN (2,2)	.04351	.03663	1.188	.235	.008356	.226638

a. Dependent Variable: AOIB.

Source: Survey data 2019

When the R and interaction of R x SN, were introduced to the model, results are as follows. Chi-square change (-2LL change) = -121.408 - -187.098 = 65.69, *df* change = 9-7 = 2, chi-square critical values with 2 *df* is 5.99 ($p < .05$) and 9.21 ($p < .01$); fit improved, now SN is Significant, $p = .034$, Risk is also Significant, $p = .000$, R is Significant, $p = .049$, SN x R is also Significant, $p = .000$, regression coefficient of SN = .425, All predict AOIB, Values of variables of intercepts/slopes and covariance are not significant. Interaction term shows the most interesting effect, since this shows the effect of R for SN, taking account of whether or not the respondent had SN (Table 8).

Table 8: MLM with the Addition of Reason (R) towards SN and Interaction (R*SN)

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	*df*	*t*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	1.87783	.261170	17.904	7.190	.000	1.328922	2.426741
Sub. N.	.425807	.148915	5.139	2.859	.034	.046101	.805514
Risk	.571683	.024157	283.43	23.665	.000	.524133	.619234
R	.153230	.077619	280.25	1.974	.049	.000439	.306021
Sub.N.*R	-.21992	.045524	280.08	-4.831	.000	-.309542	-.130315

a. Dependent Variable: AOIB.

Source: Survey Data 2019

For the respondents those with SN considering PEOU, SN did not significantly predict AOIB, b = .113, t (3.949) = .905, p =.417. The positive gradient showed that in these people, AOIB is higher after the SN compared to the control group. Further, for those who had SN considering PU also, SN did not predict AOIB, b = -.0630, t (27095.493) = -.217, p =.828. However, the slope was negative, indicating that people who had SN considering PU, scored lower on AOIB, than those who did not have SN (Although this is not significant). The interaction effect, hence, reflects the difference in slopes for SN as a predictor of AOIB in those who had SN considering PEOU (slight positive slope) and those who had SN considering PU (slight negative slope). In conclusion, it could be noted that AOIB, after controlling for Risk, was lower for those who had SN considering PU than those who had SN considering PEOU. This senses that for those who had SN considering PEOU, the SN has probably brought easiness, and therefore, their adoption increase while those had SN considering PU, may get to know that usefulness was not the cause for non-adoption, and hence, their AOIB is lower.

Table 9: MLM Rerun Results, Separately for Different 2 Reasons by Removing R and Interaction of R and SN by Splitting the File

Sub. N. considering PEOU

Estimates of Fixed Effects[a,b]

Parameter	Estimate	Std. Error	*df*	*t*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	2.32346	.238606	9.995	9.738	.000	1.791783	2.855153
Sub. N.	.113819	.125827	3.949	.905	.417	-.237320	.464958
Risk	.525894	.027650	187.694	19.020	.000	.471349	.580438

a. R = PEOU

b. Dependent Variable: AOIB.

Sub. N. considering PU

Estimates of Fixed Effects[a,b]

Parameter	Estimate	Std. Error	*df*	*t*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	3.18838	.363902	27751.58	8.762	.000	2.475118	3.901647
Sub. N.	-.06302	.290607	27095.49	-.217	.828	-.632626	.506584
Risk	.327727	.008926	91.127	36.715	.000	.309996	.345458

a. R = PU

b. Dependent Variable: AOIB.

Source: Survey Data 2019

DISCUSSION OF RESULTS

Statistical tests such as ANOVA, ANCOVA, Multilevel Linear Model (MLM) were used enabling to answer the research question (are SN, Risk, and interaction effect significantly predict adoption of internet banking?) and testing of the hypotheses as per the necessity. Although MLM could have been used to test the hypotheses in a complicated manner, researchers had developed MLM gradually to measure the differences in the output when the hierarchy (from individual internet banking user level to internet banking users considering the particular bank to which the users belong), random intercept, random slope and covariance of random intercepts and random slopes were introduced. Hence, in the beginning, MLM was conducted considering only the SN without any hierarchical structure that is similar to performing of ANOVA test. Subsequently, enabling to analyze the effect of 'Risk' on the adoption of internet banking (AOIB) while taking account of SN, conducted the analysis again ignoring the data structure, and output was similar to that of performing of ANCOVA analysis. Afterward, the model was developed further and as shown in table 8-MLM with the addition of reason (R) towards SN and interaction (R*SN) test was conducted. As depicted in the output of same, SN, Risk and interaction effect were significant and all the three hypotheses were supported by the empirical results attaining the objective (to identify the effect of SN, Risk and interaction effect, on AOIB) of the study. Finally, intending to identify the effect of SN considering the two reasons (R) namely; PEOU and PU, MLM was re-run, by splitting the file.

To summarize, consistent with the empirical results given in the preceding section, AOIB has been significantly predicted by SN as per ANOVA results. However, in ANCOVA with Risk as the covariate, SN was not significant in predicting AOIB. Both MLMs of random intercepts and random intercepts with random slopes showed that Risk is significant and SN is significant only in the random intercepts model. MLM assuming the covariance of random intercepts and random slopes showed that model fit has not been increased significantly at $p = .01$ level. Additionally, there are empirical evidences to support a positive relationship between adoption and perceived risk of e-services variables on e-banking adoption (Perera, 2013). With the addition of R and interaction of R and SN to MLM, SN, Risk, R, and interaction all predicted AOIB significantly. According to the final MLM, it could be noted that AOIB, after controlling for Risk, was lower for those who had subjective norms considering perceived usefulness than those who had subjective norms in view of perceived ease of use, although the effect is not statistically significant in this context.

CONCLUSION

The present study was executed to determine the significance of SN, perceived risk, R, and interaction of SN and R on AOIB in the context of the top four private commercial banks in Sri Lanka, where the data had two levels of hierarchy; i.e. individual and bank. MLM with random slopes, random intercepts with provisions for the covariance of random intercepts, and random slopes illustrated that SN, Risk, R, and interaction of R and SN, all predict AOIB significantly. The interaction effect indicated that the difference in slopes for SN as a predictor for AOIB, in those who had SN considering PEOU; slightly positive slope and those who had SN considering PU; slightly negative slope. The empirical evidence supported the first and second hypotheses suggesting the significance of SN, Risk on AOIB. Moreover, the interaction of SN and R also significantly predicted AOIB being the third hypothesis.

Results of the study were indicative that perceived risk and subjective norms are significantly predicting the adoption of internet banking in the present research context. Hence, internet banking service providers; particularly commercial banks ought to pay their special attention to address the internet banking users' concerns on perceived risk towards patronizing specific internet banking services such as higher value fund transfers, the opening of fixed deposit accounts, execution of online investments, etc. While promoting the online banking services, commercial banks could emphasize

the measures taken by them to mitigate probable financial losses, time-saving and convenient nature of internet banking services, the superior service performance of online amenities, strengthened data security and data protection initiatives, maintenance of highest standards related to privacy concerns and highly regarded favorable societal attitudes concerning the adoption of internet banking services enabling to overcome the associated perceived risks (Khedmatgozar & Shahnazi, 2017). Correspondingly, internet banking service operators are required to identify the significance of determinants of behavioral intentions and ascertain the way how the perceptions of relevant groups or individuals for instance the family members, friends, and peers, affect one's performance of/adoption of internet banking services (Aldas-Manzano et al., 2009). Conforming to the present and previous research findings, internet banking service providers could use pull and push marketing strategies as well as customer orientation and technical strategies in view of upgrading the internet banking adoption level amongst the Sri Lankans. Similarly, it is recommended to execute the marketing communication campaigns highlighting the safe and secured, ease of use features of the internet banking facilities which is a necessity for the busy lifestyles of the contemporary technology-savvy society (Aldas-Manzano et al., 2009; Alalwan et al., 2016; Khedmatgozar & Shahnazi, 2017; Priyangika et al., 2016).

Limitations which confine the reliability to generalize the research findings could be noted as the respondents of the study were the students of the University of Kelaniya those who are participating in the weekend study programs of the university, it could be possible to obtain different results in the case of conducting the research in another context as the respondents may not exactly replicate the whole Sri Lankan online banking customers of the selected commercial banks. Since there were constraints due to time and sample selection, future researches could be performed with an enriched representation of the entire population to validate the research findings in search of diverse findings in diverse country, cultural and social-economic contexts by integrating a wide array of adoption models, predictor variables and perspectives.

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