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Customers' Opinions on Voluntary-Insurance in Bank-led Digital-banking: Statistical Analysis for Policymakers' Attentions

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In 21st century business-mentality era, bank-services have been modernized where customers compete for comparative time-saving-options. However, many factors in services are unpredictable. Perceived-risk has been undermining the prospects of cashless-society country-wise such as Bangladesh. But banks should work eliminating issues particularly perceived risk by adopting Voluntary Insurance (VI) provision as proposed by Rahman (2018) in literature. Now using statistical techniques, this study examined customers' opinions on VI as provision in e-banking services. Findings of this study show that customers' "age group" and "education level" have preferences for enacting VI as Provision. Data statistics were collected from 200 respondents of city & rural areas of Bangladesh, which was used to test the mediated model using the Hierarchical Regression. The results have supported that the perceived-risk has acted as a partial mediator in the relationship between independent variables particularly psychological risk, trust, financial, performance, dispute, pin-fraud, social/ privacy-risk to dependent variable, that is, customers' preferences for VI provision in e-banking services. Absolute risk-free services can attract more users of bank-led e-banking. Accordingly, policymakers can play vital role ensuring modern-society when it come e-banking services. Since digital transactions are not insured under Bank Laws in Bangladesh, like in other countries, this effort is for bringing the findings to the attentions of policymakers country-wise.

Keywords: *bank-led digital, perceived risk, voluntary insurance as banking-provision, risk-free digital-banking services*

Introduction

Meeting the demands of modern-banking-services in technology-driven human-society, bank-services have been restructured in world-economy country-wise. In this race, Bangladesh is no exception. Besides traditional bank-services operating side-by-side, digital-banking, particularly, mobile-led, and bank-led digitals are playing significant roles. In this progression in Bangladesh-economy, Agent-banking, bKash, Western-Union etc. serve new-way financial-services. However, this new era things are driven with business-mentality-theme where many factors are unpredictable. It is well recognized that strict laws and its application can marginalize the magnitudes of "Perceived risk" problem. In these efforts, developed countries are ahead of developing countries in today's world.

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In this journey, Bangladesh has made huge progress in digital-banking over the last decade where approximately over six percent of the population makes payments using mobile-led banking (The Daily Star 2021). Being a country with population of 160 million, there are lot of opportunities and prospects when it come e-banking services. However, for prompt and effective outcome in Bangladesh-economy, three factors are needed to come together and work in cohesions. These factors are a) payment instruments from end-user's sides b) acceptance instruments from retailers & businesses and c) the trust factor. No doubt, the government has been playing important roles enabling environment with the help of FinTech - Confirmation & Tech Communication. But, the FinTech services have been facing difficulties addressing the trust issues since the beginning of its journey in financial services (The Daily Star 2021, Khan 2016). It does not guarantee absolute risk-free digital transaction where developing countries are more vulnerable than that of developed countries. It might have led to a slower-growth of digital-banking in countries like Bangladesh. Transferring cash takes a lot of trust in the system. Many people in the country do not seem to truly trust the digital money transfers (The Daily Star 2021). They feel it to be risky in multi-faucets i.e., they face "perceived-risk". It is a concept that attempts making future foreseeable for current state by predicting unfavorable circumstances and its negative impacts on the risk, individual may face. Thus, trust and "feeling risky" are pivotal, which has been undermining the progression of digital-banking trends in world-economy country-wise.

Dealing with determinant "perceived-risk" (PR), the current author proposed in literature Voluntary Insurance (VI) a probable banking-provision in digital-banking services (Rahman 2018). In a comparison study between bKash and bank-led digital, underpinning Factor Analysis and Hypothesis Testing on customers' opinions in Bangladesh, Rahman (Rahman 2020) concluded in two-folds. They are a) attribute "Phone call confirmation" has influenced customers' preferences using bKash and b) attribute "No transaction fee" has influenced using bank-led digital. It clearly tells that having mobile-led banking such as bKash, Agent-banking, bKash, and Western-Union in place has eased overcoming technology type factor.

However, there is at least one critical-factor category, which is overlooked or has received inadequate attention in policy-design, is the PR. Accordingly, Rahman (Rahman 2020) re-emphasized the policy proposal of the VI as an e-banking provision in world-economy country-wise (Rahman 2018, Rahman 2020). The recent studies in countries such as the United States of America reveal that 70% of digital bank customers and 44% of traditional bank customers want embedded insurance offers based on transaction data (Global News Wire 2021, Indiana Department of Financial Institution 2022).

Now it involves building policy mandate for effectively addressing the trust issues that have been undermining the expected progression of digital banking country-wise such as Bangladesh. Like in many countries, there are lots of problems, which do not attract the attentions of policymakers' country-wise such as Bangladesh. Because they lack efforts or supports from relevant leaderships of entities such as bank-services-industry, consumer groups or relevant executive-

branches such as Bangladesh Bank – the Central Bank of Bangladesh. However, it is often contingent to public opinions, which in turn is influenced by treatment of the issue in the media. World-wide observations suggest that when key interest groups and policy experts agree on the importance and scope of the problem, it gets on the agenda of public policymakers. In practice, there are many approaches for building a mandate, which varies country-wise. In Bangladesh, sometime, some agencies use panels or committees of experts in a particular field. These groups make recommendations that are used by agencies to build a mandate.

Since such efforts, if any, are unknown at least in Bangladesh-economy at the present and since the research-findings in literature are very often used by panels or committees of experts, it is assumed that the corresponding agency(s) are familiar with the proposal of VI e-banking-provision. It deserves to be empirically scrutinized using customers-opinions in world-economy country-wise such as Bangladesh on how the customers would take it in their decisions using bank-led digital-banking services.

This study takes on the challenges statistically testing customers opinions on how they feel about adopting Voluntary Insurance as a provision in bank-led digital-banking services in Bangladesh-economy. The findings can serve as a "paradigm findings" of studying world-economy country-wise in general. Thus, it can be instrumental to today's policymakers for effective-policy design ensuring risk-free bank-led digital-banking services in world-economy country-wise. Accordingly, it can be a win-win to parties involved in the progression of digital-banking in Bangladesh-economy.

Literature Review

Bauer (1960) first introduced "perceived risk" in literature and called it an influence, which led the overall perceived value of purchasing behavior of a customer. As an abstract concept, it means an undesirable outcome that a customer may anticipate that it can follow the customer's current action. Later, Mitchell (1999) divided it into two components: uncertainty about the consequences of a wrong choice and uncertainty about the outcome. Perceived risk can be seen as the deterministic feeling if the result is adversely unfavorable (Cunningham 1967, Malika 1997).

With this progression in literature, Technology Acceptance Model (TAM) of Davis (1989) revealed three components namely a) perceived-usefulness b) perceived ease of use and c) system usages. Hong et al. (2001) added two categories of external variables. They are "individual differences" and "system characteristics". Chau (1996) simplified it by using four perceived factors a) perceived ease of use b) perceived long-term usefulness c) perceived short-term usefulness and d) behavioral intention to use. Venkatesh et al. (2003) compared and tested the variables in eight different models about users' technology acceptance including the TAM and subsequently, they proposed a Unified Theory of Acceptance and Use of Technology (UTAUT). It is consisted of four core determinants of acceptance and four moderating factors. Im *et al.* (2008) investigated four potential

variables in users' technology-adoption. These variables were a) perceived risk b) technology type c) user experience and d) gender. Their findings showed that perceived risk, technology type and gender were found to be significant variables.

Since we live in a world of business-mentality where many factors are often unpredictable, it is palatable saying that strict-laws and its fullest application can marginalize the magnitudes of this "perceived risk". On this matter, in today's world, developed countries are doing better and ahead of developing countries. But it does not guarantee an absolute risk-free e-banking service even in developed countries. On risk issue, developing countries are vulnerable, which might have led a slower growth of bank-led digital-banking in countries such as Bangladesh where mobile-led payment (bKash), has been dominating the trend (Rahman 2018).

In aim to deal with the determinants of "perceived risk" and "trust issue", current author proposed in literature VI in banking services (Rahman 2018). Under the proposal, if VI e-banking provision is in place, bank will introduce the VI as a new product in e-banking services where customers of e-banking will decide buying it or not buying it. In literature, the proposal has not yet been challenged. Instead, many companies or organizations such as the Global News Wire in the United States of America have completed surveys (Global News Wire 2021). But the proposal deserves to be scrutinized on how the customers feel about it. In other words, it deserves having customers' opinions and then carryout statistical analysis for policymakers' attentions. This study takes on the tasks of statistical analysis using customers' opinions. The expected findings can be guidance to policymakers for addressing the issue of "perceived risk" and "trust" by crafting or enacting e-banking provision in practice in world-economy country-wise. This study advances with the goal where Bangladesh is chosen as a case study, which can fill-up the gap in literature.

Objectives of the Study

To study customers' perceptions on "perceived risk" that can serve as Lessons-learnt to the progression of e-banking services in Bangladesh.

To examine the relationship between customers' preferences and policy proposal of VI as guidance for policy design addressing perceived risks in e-banking services.

To assess e-banking-customers' perceptions whether the proposed VI banking provision should be enacted addressing perceived risks in e-banking services.

Theoretical Background: Hypotheses Development

Perceived Risks in Bank-led Digital-banking Services

The concept "risk" is shaped around the idea that any customer behavior involves risks in the sense that customer's actions may create consequences, which the customer cannot anticipate with certainty (Bauer 1960). Thus, "Perceived risk" is powerful explaining customer's behaviors. This is because customers are more motivational to avoid mistakes than maximizing utility of using bank-led e-

banking (Mitchell 1999, Florea 2014, Rahman 2018, Ahmadksath 2022). Risk is often present in choice-situation as customers cannot always be certain that a planned-use of bank-led e-banking will achieve full-satisfaction. Accordingly, the Online shoppers perceive greater risk when paying online-bills even though goods are non-standardized and often sold without warranties (Zeithaml 1981, Yousafzai 2009). With this reality in today's competitive markets, perceived risk is regarded as being a composite of several categories of risks. In literature, several types of perceived risks have been identified in e-banking services (Featherman 2001, Pavlou 2003, Lee and Chung 2009, Florea 2014, Rahman 2020). For better understanding, first, the definition of perceived risk, its distinct types and some other factors that influence today's individual's behavior are outlined as follows

Perceived Risk

It is an abstract concept that suggests future foreseeable for current state by predicting unfavorable circumstances and its negative impacts individual may face. On this aspect, in initial stages of digital-banking progression, six major factors of perceived risk were identified (Littler and Melanthiou 2006). They are i) financial ii) performance iii) time iv) social v) psychological and vi) security.

Psychological Risk

It is a threat when something goes wrong with Internet banking transaction and customer feels frustrated. Also, sometime customer feels shamed to be.

Trust Factor

Despites huge investment in the progression of bank-led digital, "lack of trust" remains a barrier in the widespread adoption of Internet banking both in the context of the bank and the overall online environment (Yousafzai 2009). The magnitudes of trust issue are more in rural and urban areas than that in city areas. These are common country-wise.

PIN Fraud Risk

As alternative delivery channels, customers use Credit card or ATM card or Dual currency card etc., which requires password, or PIN. However, it can be stolen or misused.

Security/Privacy Risk

It is a kind of threat where a fraud or hacker may get unauthorized access to online-bank-users' accounts and acquire sensitive information such as username, password, credit card/debit card information and then misuse it. Overall, system reliability is a critical issue.

Financial Risk

It is a kind of threat where monetary loss could take place due to transaction-error.

Performance Risk

It is a kind of annoying issue where unexpected breakdown or disconnection from the Internet can take place.

Customer Dispute

It refers to the possibility of getting into dispute with digital-service-providers or Online seller or with individual or group that has caused the problem. It may warrant legal cases.

Social Risk

It refers to the possibility that using Internet banking may result in the disapproval of one's family, friends, or work group (Lee 2009). It happens when family member or friend or workgroup signed on as the guarantor.

Time Risk

When using "Internet & completing transaction" it may take unexpected longer times, or server can be down. With this cause and delay, customers may become frustrated losing time. On scheduled payment issues, sometime customers may be penalized for late transaction completion.

Other factors that individual/bank-led customer cares about no matter what society s/he belongs to

Familiarity with Internet

Using bank-led digital services require familiarity with internet.

Bonus for Digital

Offering bonus by banks for using digital service can inspire customers to use it more.

Self-image

In digital era, digital-banking users feel better and to be modern, which may carry self-image.

Comparison Effects

In business-mentality era, people focus on comparison effects of his/her each decision.

Lessons-learnt: Can Mobile-led Banking Shed Lights for Bank-led Digital Progression?

In literature, on customers' preferences, a comparison-study between mobile-led and bank-led options was carried out by the current author (Rahman 2020). It is here assumed to be served as lessons-learnt for better understanding of factors that has resulted a higher trend of bKash (mobile-led) usage over bank-led usage digital in Bangladesh.

There are more than thirty million customers who use bKash for digital-transactions and accordingly there are over 0.2 million agents located around Bangladesh (The Daily Star 2021). Here trend of bKash-users has been growing geometrically. However, trend of bank-led-users has been growing mathematically – very slowly in city areas & it would not be overstated claiming it does not exist in rural areas, even though bank-sector promotes it desperately curtailing the magnitudes of its operating cost (Rahman 2020). For clarity on whether perceived risk factor has overall played significantly undermining the growth of the trend of bank-led digital-banking, the author used a comparison as follows.

Table 1. *Position in Consumer's Preferences Mobile-led (bKash) vs. Bank-led "Digital-banking"*

Determinant	b-Kash	Bank-led
	Position	Position
Confirmation by making phone call(s)	1st (+)	1st (-)
Perceived risk factors		
Psychological risk	4th (+)	4th (-)
Privacy risk	2nd (-)	2nd (+)
Financial risk	3rd (-)	3rd (-)
Performance risk	6th (+)	6th (-)
Social risk	5th (+)	5th (-)
Access / Familiarity with Internet	2nd (+)	2nd (-)
Convenience for transaction	1st (-)	1st (+)
Bonus for digital banking	1st (-)	1s (+)
Confirmation *via* SMS	1st (+)	1st (+)
Focus option (phone call confirmation)	1st (+)	1st (-)
Focus of comparison effects	1st (+)	(+)
Know-how-skill	1st (+)	1st (-)
Self-image	1st (-)	1st (+)

Source: Rahman 2020.

In Table 1, the serial number or position of the factor in contribution reflects customer preferences in choosing bKash or bank-led digital banking. Here positive (+) sign means "positively influences" and negative (-) sign means "negatively influences" the choice of bKash or bank-led digital banking when a customer is decided for On-the-Go banking. It further shows mobile-banking is more appealing than that of bank-led digital because of perceived risk (PR) issue, which raises question: what is VI and how can it be instrumental?

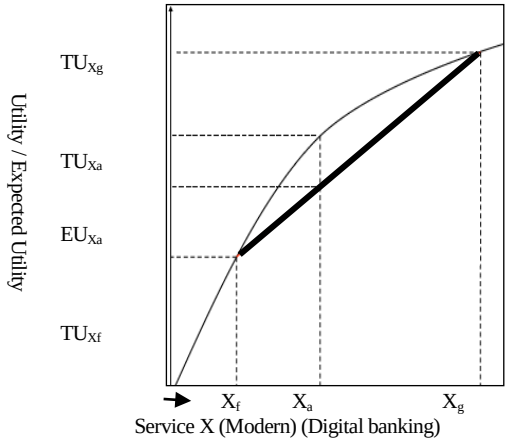
VI in Digital-banking (Rahman 2018): What is it?

It would not be overstated that PR plays an influential role in setting the stage for the VI option in e-banking services (Rahman 2018, Global News Wire 2021, Ahmadksath 2022). It is palatable assuming that customers of e-banking services are risk-averse. They prefer certainty to uncertainty.

In these uncertainty-world-activities, a customer receives actual utility from digital services, which will never fall on the TU (X) but on the chord (the bold

line) as shown in Figure 1. The X_g as shown in Figure 1, represents digital-banking service-outcome. Figure 1 illustrates risk preferences of a risk-averse banking-customer.

Figure 1. *Risk Aversion Scenario*



Source: Rahman 2018.

Here customer may use a certain level of service X. Since the X_f represents negative outcome, thus, customer may use less of service X. Since the existence of the level of uncertainty is undeniable, a customer may not use X_g units of service X. Thus, the utility that this customer receives will lie somewhere on the chord (the bold line). Here the chord represents the expected utility (EU) of using service X that lies in the concavity of the curve. This is because, it is the average probability that the customer will use service X or will not use it. As a result, an individual will never receive TU (X_a), but s/he will receive EU (X_a). Thus, it can be preferable to customers of e-banking in Bangladesh-economy.

Current Research Question

The above as a background, the current research questions are: a) What derive a customer's preference choosing the VI in bank-led e-banking services? b) How do customers prefer the VI as e-banking provision in e-banking services in Bangladesh?

Research Hypotheses for this Study

Underpinning the facts, the following hypotheses are developed and tested statistically.

H1: Psychological risk is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.
H2: Trust-factor is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.
H3: Pin fraud risk is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.

H4: Security or privacy risk is positively related to preferences of e-banking-customers' preferences for the proposed VI-Provision in bank-led digital-banking services.
H5: Financial risk is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.
H6: Performance risk is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.
H7: Customer dispute risk is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.
H8: Social risk is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.
H9: Time risk is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.
H10: Perceived risk is positively related to customers' preferences for the proposed VI Provision in bank-led digital-banking services.

The regression equation can be written as follows

$$Y = f(x_i) \quad (1)$$

$$\hat{Y} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots. + \beta_i x_i \quad (2)$$

where
Y = VI-provision is a dependent variable and x_i are independent variables.
$\hat{Y}$ = Preference for having VI as a provision in bank-led e-banking services β_i = Coefficients and $x_1 \ldots x_i$ are independent variables where

x_1 = Gender x_2 = Age x_3 = Edu level x_4= Psychological risk x_5 = Trust factor x_6 = Pin-fraud risk x_7 = Privacy risk x_8 = Financial risk x_9 = Performance risk x_{10} = Dispute risk x_{11} = Social risk x_{12} = Time risk x_{13} = Perceived risk x_{14} = Familiarity with Internet x_{15} = transaction conveniency x_{16} = Bonus for bank-led digital x_{17} = know-how-skill x_{18} = Self-image x_{19} = Confirmation via SMS and x_{20} = Focus option (phone call confirmation).

Methods and Data Collection

Sample, Survey Instrument and Measures

Sample Represents Customers of Bank-led Digital-banking in Bangladesh

Data were collected from two hundred respondents using Google Survey Form. Among the respondents, 25 respondents were in rural areas and 175 were in city areas of Bangladesh. Today over half of the population of Bangladesh live in rural areas where electricity is mostly accessible to and most markets in rural areas are facilitated with network services if individual wants to use it. With this facilitation, most rural people are more familiar with mobile-led digital-banking than that of bank-led digital-banking. Also, in rural areas, in most cases, people can receive services from professionals, in case they need digital-banking including bank-led digital services. Thus, preferences of using bank-led digital-banking depend on individual's preferences. Location, that means, residing in rural areas or city areas in Bangladesh, does not matter or influence the preferences of using

bank-led digital-banking. It is the scenarios of world-economy country-wise no matter where customer resides.

Demographic profile of the respondents reveals that 60 percent of them were married, 70 percent were male, and the 36 percent were below the age of 35 years. Furthermore, from the sample, 85 percent respondents had savings bank account where 35 percent of them were using bank-led digital banking for over 2 years and 25 percent were pampered using bank-led e-banking. On educational aspect, 85 percent respondents were holding at least undergraduate degree.

Survey Instrument Used in this Study

In this study, a structural questionnaire-form was designed to collect the data statistics. Here respondents were asked to answer the questions on a 5-point Likert Scale ranging from "5 = strongly agree" to "1 = strongly disagree".

Measures Used in this Study

These measures were adapted author's earlier studies (Rahman 2018, Rahman 2020).

Psychological risk: reliability coefficient of Cronbach's alpha for this measure is 0.631.
Trust factor overall: reliability coefficient of Cronbach's alpha for this measure is 0.713.
Pin fraud risk: reliability coefficient of Cronbach's alpha for this measure is 0.758.
Security/privacy risk: reliability coefficient of Cronbach's alpha for this measure is 0.744.
Financial risk: reliability coefficient of Cronbach's alpha for this measure is 0.669.
Performance: reliability coefficient of Cronbach's alpha for this measure is 0.880.
Customers' dispute: reliability coefficient of Cronbach's alpha for this measure is 0.964.
Social risk: reliability coefficient of Cronbach's alpha for this measure is 0.734.
Time-risk: reliability coefficient of Cronbach's alpha for this measure is 0.661.

Results

Descriptive Statistics

The means, standard deviations and zero-order correlations are reported in Table 2. The initial analysis of correlations suggests that the highest correlations were between psychological risk and customer preference for the VI provision in bank-led digital-banking (r=0.527) and pin-fraud and performance risk (r=0.509). In viewpoint of multicollinearity, since correlations of 0.80 or higher may be problematic as noted in literature (Kennedy 1979), a statistical check for multicollinearity using variance inflation factor (VIF) for each of the independent variables has been carried out and the VIF was appeared to be two (VIF≤2). Thus, the results here support that the multicollinearity is not a problem.

Table 2. *Descriptive Statistics: Means, Std Deviation and Correlations*

	Var	Mean	Std	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Gender	1.42	0.494	1																				
2	Age	2.20	1.079	0.029	1																			
3	Edu Level	2.62	0.877	0.060	0.026	1																		
4	Psychological	4.22	0.621	-0.045	0.105*	0.051	1																	
5	Trust	4.0	0.627	-0.024	-0.005	0.140**	0.074	1																
6	Pin-fraud	3.87	0.680	-0.096*	0.099*	0.070	0.053	0.475**	1															
7	Security	3.96	0.801	-0.012	-0.022	0.032	0.023	0.090*	0.276**	1														
8	Financial	3.80	0.615	-0.147**	0.016	0.001	-0.111*	0.373**	0.318**	0.347**	1													
9	Performance	4.07	0.765	-0.111*	0.169*	0.070	0.071	0.245**	0.495**	0.305**	0.106*	1												
10	Dispute	3.95	0.668	-0.049	0.021	0.002	0.129**	0.478**	0.349**	0.293**	0.355**	0.107*	1											
11	Social	4.15	0.731	-0.042	0.062	-0.045	-0.055	0.377**	0.100**	0.241**	0.498**	-0.034	0.322*	1										
12	Time	4.11	0.634	-0.146**	0.059	-0.026	0.001	0.434**	0.212**	0.296**	0.509**	0.195**	0.416**	0.416**	1									
13	Perceived risk	4.22	0.060	-0.177**	0.049	0.011	0.220	0.332**	0.211**	0.123**	0.342**	0.100**	0.441**	0.312**	0.221	1								
14	Familiarity	3.99	0.026	-0.134*	0.023	0.100	0.232	0.122	0.100	0.211	0.010	0.111	0.144	0.122	0.231	0.101	1							
15	Conveniency	1.22	0.012	-0.122	0.011	0.121	0.121	0.223	0.002	0.000	0.120	0.122	0.000	0.000	0.100	0.001	0.120	1						
16	Bonus	3.77	0.212	-0.223*	0.232	0.232	0.221	0.234*	0.212*	0.111	0.122	0.211*	0.111	0.021	0.211	0.222	0.100	0.112	1					
17	Know how	2.99	0.572	-0.123	0.234*	0.321*	0.211*	0.311*	0.211	0.221	0.221	0.231*	0.200	0.213*	0.111	0.212*	0.200	0.211	0.121	1				
18	Self-image	2.67	0.234	-0.233	0.111	0.120	0.100	0.220	0.101	0.100	0.133	0.110	0.100	0.111	0.011	0.110	0. 010	0.001	0.110	0.100	1			
19	Via SMS	4.03	0.546	-0.245*	0.432*	0.212*	0.233*	0.232*	0.202	0.233*	0.211*	0.200	0.221	0.232*	0.211*	0.111	0.211	0.231*	0.121	0.112	0.102	1		
20	Focus option	2.87	0.123	-0.231	0.110	0.111	0.111	0.100	0.100	0.001	0.11	0.11	0.001	0.001	0.121	0.101	0.100	0.101	0.001	0.111	0.10	0.0	1	
21	For VI	4.10	0.626	-0.025	0.102*	0.056	0.039	0.29**	0.435**	0.411**	0.143**	0.252**	0.143**	0.148**	0.527**	0.232**	0.321**	0.231*	0.341*	0.222*	0.231*	0.22	0.22	1

Source: Author.
Note: Cells contain zero-order (Pearson) correlations
**Correlation is significant at 0.01 level and *Correlation is significant at 0.05

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Hypotheses Testing

Here the Hierarchical Regression has been used to test each hypothesis. The reason of this choice is that the Hierarchical Linear Regression, a special form of a Multiple Linear Regression Analysis, facilitates adding more variables to the model in separate steps called "blocks". In study, it has facilitated statistically controlling some variables to see whether adding variables significantly improves model's ability to investigate a moderating effect of a variable. The column 1 and column 2 show the results of effect of independent variables to preferences for the proposal of the VI provision enactment. After entering control variable in step 1, the results are presented in Table 2.

In column 1 of Table 3, where all the control variables - gender, age, education-level are shown, gender was a significant predictor for the proposed VI provision (β=−0.148, p<0.001).

The corresponding model was significant (R^2=0.26; Adj R^2=0.18; F=3.240, p<0.001). Then main independent variables are entered in step 2. The results show that the beta coefficient of psychological-risk (x_1) was significant (β=0.170, p<0.001), thus supporting Hypothesis-1, that is, psychological-risk is significant and positively related to preference for proposed VI provision in e-banking services. The beta coefficient of trust-factor (x_9) (β=−0.142, p<0.05) was significant and supports Hypothesis 2. Beta coefficient of time-risk (β=0.051, p=0.241) was not significant. Hence, Hypothesis 9 is not supported.

The beta coefficient of customer-dispute (x_5) (β=0.301, p<0.001) was significant, thus supporting Hypothesis 7. The regression coefficient of performance risk (x_3) (β=0.154, p<0.001) was significant and hence supporting Hypothesis 6. The beta coefficient of financial risk (β=0.133, p<0.001) was significant and hence renders support to Hypothesis 5. The beta coefficients of social risk (x_6) (β=0.040, p=0.350) was not significant, hence not supporting Hypotheses 8.

Finally, the beta coefficient of "perceived risk" (β=0.119, p<0.05) was significant, hence it was supporting Hypothesis 10. Here main effects of the model are significant (R^2=0.393; Adj R^2=0.377; F=24.210, p<0.001; Δ R^2=0.367; ΔF=32.688, p<0.001) and it explains 36.7 percent of variance in support of the preferences for the proposed VI provision in the bank-led e-banking services. Here main independent variable "perceived risk" represents all independent variables.

The regression result in support of proposed VI provision is presented in column 3 and column 4 of Table 2. Among control variables, age and education-level are the significant predictors (β=0.105, p<0.001) and (β=0.133, p<0.001) of customer preferences for bank-led e-banking. The control variable gender is not significant. The control variables model was not significant (R^2=0.014; Adj R^2=0.006; F=1.806, ns.). In step 2 (column 4), the main variable, perceived risk, was entered the regression equation. The beta coefficient of perceived risk (β=0.181, p<0.001) was significant, thus supporting Hypothesis 10 that perceived risk-factors are significant and positively related to preferences of customers for the proposed VI provision in bank-led e-banking.

Table 3. *Results of Multiple Regression*

	Colum 1	Colum 2	Colum 3	Colum 4
	Step 1	Step 2	Step 1	Step 2
Variables	**Perceived Risk**	**Perceived Risk**	**For VI Provision**	**For VI Provision**
Gender	0.148** (-3.298; 0.001)	-0.065 (-1.772; 0.077)	-0.030 (-0.674; 0.501)	-0.004 (-0.081; 0.936)
Age	0.062 (-3.298; 0.001)	0.023 (0.605; 0546)	0.105** (2.221; 0.027)	0.094** (2.010; 0.045)
Education level	-0.014 (1.302; 0.763)	-0.047 (-1.226; 0.221)	0.059 (1.228; 0.220)	0.061 (1.303; 0.193)
Psychological		(0.170)** (-2.947; 0.003)		
Trust		0.051 (1.173; 0.241)		
Pin-fraud		0.301** (6.430; 0.000)		
Security		0.154** (4.005; 0.000)		
Financial		0.133** (3.014; 0.003)		
Performance		0.040 (0.935; 0.350)		
C. dispute		0.081 (1.722; 0.086)		
Social risk		0.001 (1.002; 0.211)		
Time risk		0.110** (1.030; 0.230)		
Perceived risk		0.211** (0.981; 0.110)		
Familiarity		(0.001) (0.761; 0.153)		
Conveniency		(0.011) (1.223; 0.312)		
Bonus		(0.123)** (1.111; 0.123)		
Know how		(0.124)** (0.321; 0.121)		
Self-image		(0.121) (1.221; 0.212)		
SMS		(0.111)** (0.671; 0.100)		
Focus option		(0.012)		
VI Provision				0.181*** (4.068; 0.000)
R^2	0.26	0.393	0.014	0.046
Adj R^2	0.18	0.377	0.006	0.037
ΔR^2		0.367		0.032
F	3.240**	24.210***	1.806	4.800***
ΔF		32.668***		16.550
Df	4,495	13,486	4,495	5,494

Source: Author.

Note: *** $p<0.001$; ** $p<0.05$

Since Hypothesis 10 was concerned with perceived risk as a mediator in the relationship between nine independent variables and dependent variable, it requires to fulfill mediation conditions.

As Aiken and West (Aiken et al. 1991) indicated in literature, three conditions are necessary to demonstrate mediation. The first condition is to ensure independent variables, in this case: security, financial, performance, psychological, customer dispute, pin-fraud, and trust factor, are significantly related to the mediator, that is, perceived risk.

The second condition is to ensure that these independent variables are significantly related to preferences of customers for VI provision. The third condition is to ensure that when perceived risk is included in the full equation, the relationship between the nine independent variables is either no longer significant or less significant.

If the relationship is not significant, then full mediation is present; if the relationship is significant, then psychological risk becomes partial mediator. The regression results of test of mediation hypothesis are presented in Table 4.

Table 4. *Regression Results of Full Mediation Analysis Multiple Regression*

	Colum 1	**Colum 2**	**Colum 3**
	Step 1	**Step 2**	**Step 1**
Variables	**Preference for VI**	**Preference for VI**	**Preference for VI**
Gender	-0.03 (-0.674; 0.501)	0.118 (0.223; 0.823)	-007 (0.190; 0.885)
Age	0.105** (2.221; 0.027)	-0.001 (-0.041; 0.967)	-0.001 (-0.030; 0.976)
Education level	0.059 (1.228; 0.220)	-0.005 (-0.124; 0.901)	-0.005 (-0.147; 0.088)
Psychological		0.054 (1.380; 0.168)	0.011 (0.241; 0.810)
Trust		0.008 (0.176; 0.860)	0.173*** (3.780; 0000)
Pin-fraud		0.176*** (3.871; 0.000)	0.195*** (4.749; 0000)
Security		-0.194*** (4.738; 0.000)	-0.130** (-2.841; 0.005)
Financial		- 0.135** (-3.081; 0.002)	0.067 (1.815; 0.070)
Performance		0.064	-0147 (-3.501; 0000)
C. dispute		0.149***	0.387*** (-3.501; 0.001)
Social risk		0.387***	0.311** (7.341; 0000)
Time risk		0.087**	0.017 (0.190; 0.885)
Perceived risk		0.121**	-0.017 (-0.478; 0.684)
Familiarity		0.054	0.001 (0.0123; 0.211)
Conveniency		0.111	0.211 (2.331; 0.002)
Bonus		0.001	0.221 (0.897; 0.001)
Know how		0.234**	0.211** (0.786; 0.001)
Self-image		0.001	0.012 (2.002; 0.005)
Focus option		0.001	0.112 (0.987; 0.002)
R^2	0.014	0.463	0.463
Adj R^2	0.006	0.448	0.447
ΔR^2		0.447	0000
F	1.806	32.183***	29.845***
ΔF		45.0421***	0.166
Df	4,495	13,486	14,485

Source: Author.

Note: *** $p<0.001$; ** $p<0.05$

All control variables are entered first in the regression equation (column 1). As seen earlier, none of the control variables represents significant predictor of customer satisfaction.

In step 2 (column 2), all independent variables are entered. The results are particularly interesting because there is no direct relationship of (a) time risk and perceived risk (b) social risk and perceived risk. Therefore, the first condition of mediation is not satisfied for these two variables.

Out of nine variables, time risk and social risk are not significantly related to customer preference for VI provision. Therefore, the second condition of mediation is not satisfied for these variables. Only variables that satisfied the condition to check mediation are psychological risk, privacy risk, financial risk, performance risk, customer dispute, pin fraud and trust factor. Results show that (a) the beta coefficients for perceived risk were significant before and after entering the mediator into the equation (β=0.176, p<0.001; β=0.173, p<0.001), (b) the beta coefficients for trust factor (β=−0.135, p<0.05; β=−0.130, p<0.05) were significant, (c) the beta coefficients for security/privacy (β=−0.149, p<0.001; β=−0.147, p<0.001) were significant and (d) the beta coefficients for customer dispute (β=−0.309, p<0.001; β=0.311, p<0.001) were significant. After entering the mediated variable, the beta coefficient of perceived risk became non-significant (β=−0.017). These results support partial mediation of perceived risk in the relationship between psychological, security, financial, performance, customer dispute, pin fraud and trust factor and dependent variable, that is, bank-led digital-banking users' preferences for the proposed VI provision.

The mediated model was significant and explained 46.3 percent of variance in customer preference for VI provision (R^2=0.463; Adj R^2=0.447; F=29.845, p<0.001). Post-hoc analysis of the study also showed some interesting results. Other than psychological risk and trust factor, all other independent variables are related to customer preference for VI provision.

The beta coefficients (before and after entering the mediated variable for psychological risk (β=0.196, p<0.001; β=0.176, p<0.001), financial (β=0.194, p<0.001; β=0.195, p<0.001), performance risk (β=−0.135, p<0.05; β=−0.130, p<0.05), customer dispute (β=−0.149, p<0.001; β=−0.147, p<0.001), trust factor (β=0.387, p<0.001; β=0.387, p<0.001) and pin fraud (β=0.087, p<0.05) were significant. No hypothesis was formulated for these as this is a post-hoc analysis. Summary of Hypotheses Tests is presented in Table 5.

Table 5. *Summary of Hypotheses*

Hypotheses	Results
H1: Psychological risk (x_4) is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services	Supported
H2: Trust-factor (x_5) is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services	Supported
H3: Pin fraud risk (x_6) is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services	Partially supported
H4: Security or privacy risk (x_7) is positively related to preferences of e-banking-customers' preferences for the proposed VI-Provision in bank-led digital-banking services	Supported
H5: Financial risk (x_8) is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services	Supported
H6: Performance risk (x_9) is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services.	Not supported
H7: Customer dispute risk (x_{10}) is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services	Supported
H8: Social risk (x_{11}) is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services	Partially supported
H9: Time risk (x_{12}) is positively related to e-banking customers' preferences for the proposed VI-Provision in bank-led digital-banking services	Not supported
H10: Perceived risk (x_{13}) is positively related to customers' preferences for the proposed VI Provision in bank-led digital-banking services	Supported

Source: Author.

Discussion

As foundation of earlier studies in literature by the author on the VI policy-proposal in e-banking services (Rahman 2018, 2020, Rahman and Islam 2021), the present study is aimed examining customers' preferences in bank-led e-banking in Bangladesh-economy. It can serve as an example of world-economy country-wise.

Like in many developing countries, the infrastructure for bank-led e-banking is still in its embryonic stage in Bangladesh. This is because, people are not here habituated to do so particularly in rural areas where little over 50% of the population resides. In today's Bangladesh, most areas are facilitated with electricity and Internet services where customers preferences for using it are important. Despite this reality, rural people do not use bank-led digital unless individual is required to submit application along with fees. However, majority of them have access to and prefer to use facilitations of commercial mobile-led banking services that are available in rural market areas too. However, on bank-led digital approaches, rural populations still face limitations with several reasons including education-level and lack of smartphone devices and frequent access to Internet service. But based on literature review, very recently few studies on the possibility of having Voluntary Insurance (Rahman 2018) as a provision in practice were conducted in several countries including in the United States of America (Global News Wire 2021) as noted in the Introduction Section.

The present study examines the factors – perceived risk-factors that can derive a customer's preference of choosing VI in e-banking in Bangladesh-economy,

which can serve as an example in world-economy country-wise. This study revealed interesting results. First, the psychological risk significantly undermines a customer's preference choosing the bank-led e-banking services. Secondly, contrary to what is expected, "social risk" and "time risk" variables are not related to the perceived risk factors of online banking. Thus, these two do not influence a customer's preference of choosing the VI in e-banking services. Third, other risk-factors particularly security/privacy, financial, performance, customer dispute, pin-fraud and trust contribute to undermine the preferences of using bank-led digital-banking. The "perceived risk" as mediator in the relationship between independent variables and customer's preference for VI policy are partially supported. The post-hoc analysis revealed that most of the independent variables are also related to customer's preference for VI enactment, even though not hypothesized, as these are expected results.

The present study is not without limitations. First, the common method bias, which is common in survey research, is one potential problem that needs to be acknowledged. It was tried to reduce the common method bias by Harmon one factor analysis. Secondly, social desirability bias is addressed by confirming to confidentiality in the survey. Even though the psychometric properties of the survey instrument are tested which provide internal validity, there is some problem of generalizability because the sample is from rural areas and city-areas. However, the selection was such way that the results from this study are expected to be generalizable across all areas of Bangladesh. This is because the survey study was conducted Online, which ratifies everyone had opportunity to participate. It further suggests that access to electricity and Internet facilitations were not problems, but it was reachable to people if they had preference or chose to use it. On this aspect, income level probably had dominated the decision of the preferences.

Current Effort in Support of Policy-design: How can it be Instrumental?

This effort is to bring the findings of the Survey-Opinions to the attentions of policymakers so that the proposed provision can be introduced in digital-banking services in Bangladesh-economy. Thus, it can be an example in world-economy. This raises questions: how can the proposed provision be instrumental to bank-sector and to the human society in this modern world?

Answer to the questions posed, it is no overstated that transferring risk away from customers will benefit banking sector. It will facilitate customers and the nation in its economic growth. It will attract new customers who were feeling it to be risky to use. Under the proposed provision, offering bonus on number of e-banking transaction will facilitate customers with incentives for more usages while maintaining optimal utility of it. Furthermore, the proposed provision will facilitate a new product, obviously legal one, which can serve as lifeblood to business-companies and to human societies. It can ease in multi-faucets 1) ensured new value for customers 2) improved society and 3) continued existence of the company in competitive market.

Thus, policymakers of world-economy country-wise such as Bangladesh can play effective roles in modern-society for its better-ness when it come e-banking

services. Bank Laws in Bangladesh, like in many countries, contains multi-faucets provisions. The adoption by the Bangladesh Bank of a deposit insurance system (DIS) was a significant development, which now covers bank-deposits, bank-account, however, digital transactions are not insured.

The proposed VI provision in place can ensure risk-free e-banking, which can guarantee elevated self-service-banking activities in Bangladesh-economy, which can be an example to world-economy country-wise. This can be beneficial to customers because it can ensure savings in the form of cost and time. Also, it can facilitate a sense of relief of a user from psychological stress of perceived risk-factors in digital-banking. Accordingly, customers will flock to it when they use banking services. By extra advancement of ICT usages, banking sector can be further competent cutting-off its operating costs, meeting customers' needs and keeping up with global changes. Also, it can ensure the e-banking to be a secured product underpinning VI provision, if it is, in bank-service sector in Bangladesh-economy, which can be example in world-economy country-wise.

With this win-win setting for service-provider and customer (user) of the product secured under the VI provision, if it goes as law in digital-banking, financial sector. To sail through tough competition and to sustain revenues, financial sector in many countries such as Bangladesh are engaging more than that of other kind banks on adoption of ICT in its operation (Khan 2016). Thus, it warrants for policy-practitioners' prompt effective-efforts on attracting more customers meeting the challenges in case Bangladesh is moving for being "cashless society" sooner than delaying.

Conclusion

It can be concluded that VI digital-banking as provisions in place can be helpful for further growth of digital-banking usages. This is because assurance of risk-free services can attract more users by improving customer's satisfaction, customer base, banks benefits and many more. It is now undisputed that customers are deriving several benefits from e-banking over their traditional way of banking. However, several negative and positive factors are significantly affecting the prospects of e-banking to its fullest. Accordingly, banks should work to eliminate the negative issue particularly perceived risk-factors by adopting the proposed VI e-banking provision, which can ensure a cashless society sooner than delaying.

The results of this study clearly show that age-group and education-level of customers have different preferences for enacting the proposed VI provision. Data were collected from two hundred respondents of rural and city areas in Bangladesh. It was used testing the mediated model using the hierarchical regression. The results supported the perceived-risk-factors and acted as a partial mediator in the relationship between various independent variables particularly psychological risk, trust, financial, performance, dispute, pin-fraud social/privacy-risk to dependent variable, customers' preference for VI provision in e-banking services. These findings can attract more users by significantly reducing "perceived risk" in e-banking services. Accordingly, policymakers of Bangladesh can play vital role

society for its better-ness when it come e-banking services. Since digital transactions are not insured under Bank Laws in Bangladesh, like in many other countries, the current effort is for bringing the findings to policymakers' attentions.

Since it is well accepted among today's policy-practitioners and official country-wise that e-banking serves so many benefits not just to bank itself but to humankind no matter where they reside, this study-findings can be inspirational for actions. This is because, the e-banking has been making finance economically possible in multi-faucets. They are: (i) Lowering operational costs of banks (ii) Automated process (iii) Accelerated credit decisions (iv) Lowered minimum loan size to be profitable and (v) Making the entire economy country-wise moving faster. These scenarios are no different in Bangladesh-economy even though over half of its population lives in rural areas where most of its populations are now covered with electricity and Internet facilitations. So, the proposed provision in e-banking services might be introduced eventually in Bangladesh-economy for the benefits of its society, which can be an example in world-economy country-wise.

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