

Preliminary Enquiry into the Adoption Behavior of ICTs Enabled Products and Services at the Bottom of the Pyramid (BOP) in Bangladesh.

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Abstract- *The primatial aim of the study is to ascertain the key motivating factors that are directly or indirectly swaying rural consumers' adoption and usage behavior of various ICT-enabled products and services available in Bangladesh. Using a self-administered questionnaire as a research instrument, this study analyzed one hundred and three rural consumers' data collected systematically from a village, locally known as Dollar Bazar, situated in Manikganj district. Result of the study revealed that the latent variables Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) had no significant influence on the Behavioral Intention to Use (BIU); subsequently, the two variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) identified as antecedents of the variable Self-efficacy(SE) which estimated a strong impact on the Behavioral Intention to Use (BIU) in a technology-mediated environment in Bangladesh.*

Keywords- *Information and Communication Technologies (ICTs), Rural consumer, Self-efficacy*

I. INTRODUCTION:

Due to its diverse benefits, ICT-enabled products and services, such as mobile wallet, mobile banking, e-commerce platforms, etc have been able to create copious social buzz among the rural inhabitants in Bangladesh. Unfortunately, this transformation has been drawn very limited attention by the regional academic scholars. Recently, some scholarly approaches have been attempted by the researchers in

the African and the Northeast Asia region, but not much attention has been drawn in Bangladesh. Technology which is highly praised by the people dwelling in urban and sub-urban areas, but, to some extent, not much admired by the people living in rural areas in Bangladesh, even though such services are commonly being used by the majority in urban areas of Bangladesh. ICTs intervention at the BoP level started into action in the mid-90's which was solely initiated by Grameen bank in collaboration with Telenor by which mobile phones (later known as 'Village Phone') were provided to the residents to access to ICTs; eventually, it was widely accepted by the residents. At present, several ICTs based services and products, such as Mobile wallet, Mobile Banking, Ride Sharing Services, Online Based Money Tracking System etc., which have been able to generate considerable interest among the rural community, which are also being successfully adopted by the rural residents in Bangladesh, regardless of the challenges and drawbacks related to technology adoption, culture and gender [1]. However, these emerging technologies are instinctively developing a common system engaging users, consumers and citizen with the aim of developing society in a more diverse manner. Authors [2] urged to develop the society involving users, consumers and citizens into a common system by which ideas, knowledge and experiences can be leveraged. Although, education rate and

compute/internet literacy in rural areas is quite low, rural consumers are more likely to use various technology driven products and services that can be accessed through handheld devices (e.g. smartphone, TAB) on any available network. Furthermore, rural people more aware of the functions which are usually complicated, technical and required hands-on training to be familiar with. Despite various benefits as well as perceived challenges, a small segment of rural community with strong personal efficacy, somehow are imbedded with the technology, eventually using complicated functions via smart phones, but the majority are still underprivileged and deprived. To ensure the maximum usage of the technologies that are provided, majority should be induced for the use of the services provided. Therefore, this study has twofold objectives to be pursued. These are as follows:

1. To identify the possible key influential factors that upsurge rural farmers' self-efficacy to deal with various technology driven products and services available in Bangladesh.
2. To identify the degree of influence that each factor has on the behavioral intention to use various technology driven services available in Bangladesh.

Furthermore, this paper is constructed in five phases. The subsequent parts describe various related studies and literature pertinent to the theme of the research along with the methodology which consists of data collection techniques and hypotheses development. In the third step, statistical evidence is portrayed. Lastly, the entire paper is wound up with conclusion, implications and future research directions.

II. RELATED LITERATURE

Researchers always possess a keen interest to examine the adoption behavior of various technology driven products and services that are hiking the standard of living of the rural people across the world. As such, researchers from diverse disciplines have proposed and validated various model to understand the phenomena by which rural consumers are diverted and induced. Scholars kept on applying and analyzing different model such as TRA [3], TPB [4], TAM [5], UTAUT [6] and TRI [7], though some of these models are considered as outmoded and over research theory in identifying the determinants influencing rural communities' behavioral intention to adopt technology driven products and services, such as Mobile Banking, E-Commerce Platform, etc. Recently, evidence was taken from Zimbabwe and concurrently confirmed the influence of the factors

such as relative advantages, personal innovativeness and social norms which had impacted the behavioral intention [8]. Study also confirmed the influence of society in triggering the willingness to use various blog [9]. The Technology Acceptance Model (TAM) was also replicated in Bangladesh and China for several times and was able to identify the key influential factors such as occupation relevancy, innovativeness, self-efficacy and social influence that are swaying rural farmers' behavioral intention to welcome technology at home. In terms of mobile banking, there are variables: perceived usefulness, perceived ease of use, relative advantages, personal innovativeness and social influence which found to have significant effect on the formation of the attitude and intention to use mobile banking[8]. In the context of broadband connectivity, variables such as usage, personal experience and self-efficacy found to have a significant direct effect on the formation of attitude and intention to use [10].

III. METHODOLOGY

A. Data collection techniques, and scientific tools used for interpreting collected data.

This study primarily adopted the cross-sectional research technique with which 103 samples were taken based on the technical knowledge and internet experience of the respondents from a rural village located, locally known as Dolla Bazar situated, in Manikganj district. The data collection procedure was finalized in two phases. In phase one, all respondents were approached by a nominated research assistant for providing a short demonstration of the process of generating money tracking confirmation report using respondent's smart phone on the available network. In the second phase, respondents were provided with standard and structured questionnaire and instructed to record their responses in a seven-points Likert scale ranging from Strongly Disagree (SD) to Strongly Agree (SA). Initially, data collected from the survey were primarily coded into SPSS for retrieving descriptive statistics. To analyze the hypothesized paths, formulated in the later part of the paper, a standard structural equation modeling simulation, namely, SmartPLS 2.0 developed by the author [11] were deployed.

B. Formulation of the Hypotheses

Perceived Usefulness is the degree in which people think that the technology and its associated products and services would pretty much solve their problems that are being confronted [5]. During the field visit, which took place recently, it has been observed that the majority of rural population are more likely to incorporate technology enabled products and services

not because of its diverse benefits and chances of solving their day to day problems. Conversely, it is also confirmed that the people of rural areas are well aware of the benefits since they are frequently communicated and infiltrated by the service providers through various integrated marketing communication (IMC) activities, but not been able to trigger up much behavioral intention to use such services. Therefore, we propose the following hypotheses to be tested.

H1: PU will have no impact on BIU

H2: PU will have no impact on SE

Perceived ease of use is the degree in which people highly expect that the offered technologies and its associated products and services would be free from technical complexity and would be fair easy to operate with the minimal technical knowledge inherited [6]. Since, people in rural areas highly rely on technical assistance in a form of product review either done by savvy neighbors or short training provided by the sellers during the phase of sale which eventually growing the amount of interest and self-confident that impartially leads to the behavioral intention to use. Therefore, this study introduces the following hypotheses to be analyzed.

H3: PEOU will have no significant impact on BIU

H4: PEOU will have significant impact on SE

Self-efficacy is the notion that deals with the belief in person's innate ability to achieve goals in a technology mediated environment [12] "self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance." [13] Rural communities possess high self-efficacy that leads them to adopt technology enabled products and services despite not having prior knowledge about the products and services. To some extent positive willingness to use a technical product may generate enough confident among them and literally enhancing behavioral intention to use ICTs enabled products and services in a technology mediated environment. We, therefore, formulate the following hypotheses to be dealt with.

H5: SE will have significant positive impact on BIU

C. Research Model

The above postulated hypotheses will give birth to the research model of the study. All Arrows directed from independent variable to dependent variables are simple forming cause effect relationships.

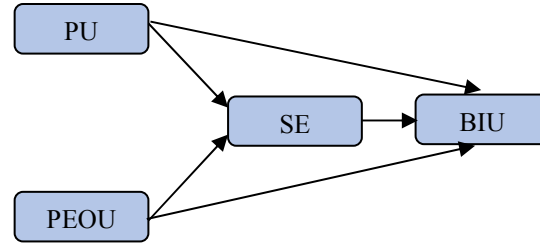


Figure 1: Model of Technology Driven Services Adoption (BoP Perspective)

IV. STATISTICAL EVIDENCE

A. Demographics

Respondents of the study are primarily villagers dwelling in a rural area of Bangladesh, over 62% were male and the rest (37%) were female. Among them, 60% had computer at home with internet connectivity of over 52%. Majority (nearly 84%) of the total respondents own various branded smart phones available in Bangladesh market.

B. Results

1) Reliability and Validity Analysis

Table 1: Reliability and Validity Analysis

	AVE	CR	R ²	α	No of Items
BIU	0.7966	0.9214	0.6262	0.8723	3
PEOU	0.5937	0.8793	0.0000	0.8320	4
PU	0.5673	0.8386	0.0000	0.7454	4
SE	0.6736	0.9104	0.6302	0.8748	5

Source: Estimated Result

The measurement scales used in study are primarily adopted from prior studies as to technology adoption and usage. We, therefore, conducted reliability analysis for the scales using three standard criteria, i.e., Cronbach's Alpha, Average Variance Extracted (AVE), and Composite Reliability (CR). From the above table 1, it can be posited that the values indicated in the above table have good internal consistency since all calculated values of the measurements; α , AVE and CR are well above the cut off points suggested by the scholars in their respective field of study [14-16].

2) Correlations Analysis

Table 2 Correlations among the Latent Variables

	BIU	PEOU	PU	SE
BIU	1.0000			
PEOU	0.7023	1.0000		
PU	0.6547	0.7993	1.0000	
SE	0.7675	0.7900	0.6784	1.0000

Source: Estimated Result

The results depicted in the above table confirmed the significant positive relationship of the variables used in the study. Furthermore, the strengths of the relationships were calculated and regarded as “high”. To determine the degree of influence that each exogenous factor has on endogenous variable along with the effect size, we, therefore, estimated t-statistics and path coefficients.

3) Structural Model

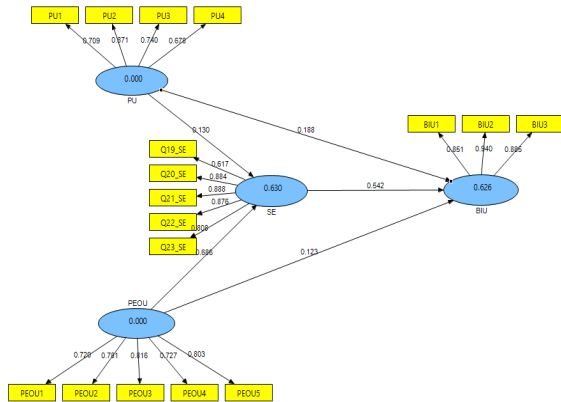


Figure 2: Structural Model
Source: Simulation Output

The structural model of the study comprising four latent variables, two of which are endogenous, and the rest are exogenous. It seems that the outer loadings are adequate since none of these are below 0.30 [17] with strong R² values for both the endogenous variables of over 0.60 [18].

4) Structural Equations

C. Structural Equation

The following are the equations derived from the research model.

1. SE = $\gamma_{21}PU + \gamma_{22}PEOU + \epsilon_1$
2. BIU = $\beta_{12}SE + \gamma_{11}PU + \gamma_{12}PEOU + \epsilon_2$

Notes:

- γ = Gamma
- β = Beta
- ϵ = Epsilon
- PU = Perceived Usefulness
- PEOU = Perceived Ease of Use
- SE = Self-efficacy
- BIU = Behavioral Intention

1) Testing of Research Hypotheses

Table 3 Analysis of Research Hypotheses

Hypothesized Paths	β	Standard Error	T Statistics	Decision
PEOU -> BIU	0.1234	0.1709	0.7218	Accepted
PEOU -> SE	0.6862	0.1113	6.1645	Accepted
PU -> BIU	0.1881	0.1381	1.3619	Accepted
PU -> SE	0.1299	0.1343	0.9673	Accepted
SE -> BIU	0.5425	0.1020	5.3207	Accepted

Source: Estimated Result

Based on the t-statistics calculated, and the decision criteria which hinges on the formulated hypotheses, it can be speculated that all hypothesized paths were accepted.

V. CONCLUSIONS AND IMPLICATIONS AND FUTURE RESEARCH DIRECTION

Through this study, we wanted to identify factors that sway rural consumers self-efficacy (SE) that concurrently lead them to adopt ICTs driven products and services in a technology mediated environment.

The study suggests some useful implications to the companies, such as value-added service (VAS) providers, e-commerce providers, mobile wallet providers targeting rural consumers with the ICTs enabled products mix and services. These are as follows:

1. IMC activities should not be centered to raise awareness among the villagers. Rather, these may contain contents on how to use these services along with the associated benefits and usefulness of the desired services which may lead them to belief in their abilities to perform the task by themselves.
2. Technical part of the any system/platform should be user-friendly enough by which most of the tasks can be accomplished without any complicity and uncertainty which may trigger their personal efficacy to perform any complicated operation.

This study can further be extended in the following ways:

1. To measure the mediating role of self-efficacy (SE) in infiltrating behavioral intention (BI) in technology mediated environment.
2. To measure the moderating role of the variable, Social Influence (SI) in expediting the relationships: SE and BI, PEOU and BIU, PU and BIU.

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