

# Adoption of ICT enabled Agricultural Extension Services through Perceived Economic Wellbeing: ICT and PEWB

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## ABSTRACT

This article investigates the technology acceptance factors in the context of information communication technology enabled agricultural extension services. Behavioral intention has always been a consequence of the technology acceptance model. The purpose of this study was to examine if the consequence of adoption be an economic benefit to the customer. It examines how these factors influence perceived economic well-being of such users. A stratified sampling procedure was adopted to obtain data from 325 valid responses from rural Indians using a structured survey instrument. A two step method was applied to analyse the data. First, the measurement model was calibrated for the reliability and validity of constructs. Then, the strength and direction of the hypothesized relationships were investigated by the structural model using structural equation modeling. Users of mobile application were checked for their perceived usefulness, perceived ease of use, subjective norm and attitude for their perceived economic well-being. These four factors, when regressed upon the perceived economic well-being using structural equation modeling predict that all but attitude is significant. This article improvises the extant technology acceptance model by replacing behavioral intention with a perceived economic well-being as a consequence. A consumer who perceives economic benefits is more likely to adopt an innovative product. Marketers can advertise the economic benefits so that the target customers adopt such technologies. By this research, the authors have identified a different outcome for perceived usefulness, perceived ease of use, attitude and subjective norm. A new relationship between the exogenous variables perceived usefulness, perceived ease of use, subjective norm and attitude and the endogenous variable perceived economic well-being is established by this study. Behavioral intention can be replaced by perceived economic well-being as the outcome in the technology acceptance model.

## KEYWORDS

Perceived Economic Well-Being, Perceived Usefulness, ICT Enabled Agricultural Extension Services, Subjective Norm

## INTRODUCTION

Low cost innovation is a challenge (Williamson & Yin 2014) and opportunity for companies (Chesbrough 2010) but its cost should not compromise on the utility of the product (Wernerfelt 1995). Therefore, a useful low-cost product should benefit the end customer. “Unless it benefits him he shall not use it” (Lundvall, 2016). This paper looks at the relationship between the technology acceptances

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constructs for a product and its perceived benefit. Perceived benefits arise if the well-being of the individual is anticipated to change for better. Perceived well-being is a relative term (Diener et al., 1993) and therefore is a belief about one's future. One can form a belief about the economic situation (Smets, 1995) after adoption of an innovative product. Before reaping any economic benefits, the customer should have a positive attitude towards such innovative product.

Intention to use is governed by perceived ease of use, perceived usefulness, attitude and subjective norm. This is based on the technology acceptance model (TAM) developed by Davis (Davis 1989) and modified several times later on. It has been articulated that the intention of using an information system drives the actual use. A key purpose of TAM is to provide a basis for tracing the impact of external variables on internal beliefs, attitudes, and intentions. Perceived ease of use (PEOU), perceived usefulness (PU) and attitude explain the intention of a user to use any system. PU and PEOU are beliefs (Rossiter & Braithwaite 2013) and defined as “the degree to which a person believes that using a particular system would enhance his or her performance” and “the degree to which a person believes that using a particular system would be free of effort”, respectively. Attitude is defined as “the degree to which an individual evaluates and associates the target system with his or her job” (Davis, 1993).

Many researches have measured intention to use. However, it does not measure any benefit created for the user. While there are numerous measures of economic and tangible benefits, a clear, sophisticated methodology for measuring the intangible perceived economic benefits has been developed for the first time.

This study proposes that apart from intention to use, perceived economic well-being during use of a technologically innovative product is the consequence of attitude, which is affected by PEOU and PU, which are the major beliefs of the user. Characteristics of the system or external factors affect the cognitive factors PEOU and PU (Davis, 1989). There is evidence in the literature demonstrating a positive impact of PU on attitude (Davis 1989; Venkatesh & Davis 2000). Studies have established a relationship between attitude and PEWB (Li, Xiao, & Gong, 2015; Lee & Glasure, 2002). Furthermore, studies also show that PEOU has a direct impact on attitude and PU (Davis, 1989; Chen, Gillenson, & Sherell, 2002).

Many innovative ICT based programs have been initiated in rural India which is helping farmers in reducing poverty (Cecchini & Scott, 2003; Jha, Pinsonneault, & Dubé, 2016). The research is based on the proposition that a consumer who benefits economically is more likely to use an innovative product. Mobile phones are the most widely embraced technologies (Revels, Tojib, & Tsarenko, 2010) and mobile based agricultural extension services are one such innovative product (Aker 2011). It has been reaffirmed that farmers make land use and management decisions through mobile based AES to maximize their perceived economic well-being (Antle & Valdivia, 2006). It can help in more farms and small enterprises become more productive by lowering the cost of searching for information, adding new skills, or advertising to customers, and are good for the families which depend on the enterprises for their livelihoods (Donner, 2009).

This article begins with an introduction of the theme followed by literature review section that covers examination of the persistent literature. Subsequent sections cover research methodology, data analysis using structural equation modeling, discussion on results, limitations of the study and the conclusion.

## LITERATURE REVIEW

### Perceived Economic Well Being

PEWB is an economic outcome of the individuals' comparisons of his current financial situation to his past situation and to other people who are important to him. This output is manifested by level of income, having money for necessities, ability to handle financial emergencies, amount one owes, level of savings, having money for future needs and economic cum financial security (Hayhoe &

Wilhelm, 1998). This perception is mediated by gender and mostly due to socialization (Bristor & Fischer, 1993). It has been defined as perceived economic position relative to peers (Karraker, 2014).

Although research on income poverty and inequality in India is very well established, there has been little work on perceived indicators of economic well-being. Due to the intangible nature of some of the benefits, these factors are difficult to monetize (Bhavnani et al., 2008). It is fair to believe that the benefits and development impact of mobile based AES (Mittal & Mehar, 2012) outstrip these barriers consumer's willingness to pay and 'consumer surplus' can be the proxies to estimate the market value placed on such factors (Deloitte & Touche LLP, 2007). Like AES subscribers, adopters and users of mobile internet are individuals who play the dual roles of technology user and service consumer. Most of them adopt and use it for personal purposes, and the cost of voluntary adoption and usage is borne by the individuals (Kim, Chan, & Gupta, 2007). In their finding they noted that consumers' perception of the value of M-Internet is a principal determinant of adoption intention, and the other beliefs are mediated through perceived value. And this paper also tries to prove the same point.

### **Perceived ease of use**

Perceived ease of use is described by (Davis, 1989) as the belief that usage of the system will be free of effort. In an experiment on engineering students, perceived ease of use could be treated both as an exogenous and an endogenous variable (Pan et al., 2005). Perceived ease of use was a dominant factor in explaining perceived usefulness (Igarria et al., 1997). In an e commerce experiment perceived ease of use has been correlated with motivational factors of arousal and consumer self-determination (Sun, Tai, & Tsai, 2010). Experience and beliefs are the determinants of PEOU (Venkatesh, 2000).

### **Perceived Usefulness**

It can be defined as the degree to which a person believes that using a particular system would enhance his or her performance. A system high in perceived usefulness, in turn, is one for which a user believes in the existence of a positive use-performance relationship. Usefulness is the degree to which a person believes a certain technology will help to perform a particular task (Read, Robertson, & McQuilken, 2011). Perceived usefulness of information technology plays a significant role in explaining the motivations for which individuals accept or reject it (Davis, 1989). Usage may result from behavioral intention derived from both a person's attitude toward using a computer and level of perceived usefulness; or, solely from an individual's level of perceived usefulness (Davis, Bagozzi, & Warshaw, 1989). In a study on benefits of soil conservation it was found that unless the provider's intended influence be tempered with realistic ability to act farmers are unlikely to find the information useful for conservation production decisions (Bamwine, 1997). There is a relationship between perceived usefulness and perceived value (Dansky et al., 1999). PU and PEOU have been found invariant across different office applications (Doll, Hendrickson & Deng, 1998). Perceived usefulness leads to intent of using a mobile internet (Kim, Chan & Gupta, 2007). However, relationship between perceived usefulness and perceived economic well-being has not been established. This gap has been addressed in this paper. Based on these findings, the following hypotheses can be tested for a mobile application like agricultural extension services:

- H1: PEOU has a positive effect on PU to use mobile based agricultural extension services in rural India
- H2: PU has a positive effect on PEWB to use mobile based agricultural extension services in rural India

### **Subjective Norm**

A subjective norm (SN) is defined as an individual's perceptions of what significant others think about the individual performing a specific behavior (Ajzen & Fishbein, 1975). Theory of reasoned action (TRA) posits that subjective norms are influenced by the normative expectations of other people and

an individual's motivation to comply with these expectations. This relationship is suggested because people may choose to perform a behavior even if they are not favorable towards it as long as it is favorable to the reference group. Subjective norm influences attitude and perceived usefulness (Pan et al. 2005). The term subjective norm is used here to refer to this phenomenon, namely, the extent to which members of a reference group influence one another's behavior and experience social pressure to perform particular behaviors (Kelman, 1958).

Webster and Trevino (1995) confirmed that subjective norm can be useful in explaining the adoption and use of new media. Subjective norm interacts with PEWB to influence theft in South Africa (Pecenka & Kundhlande, 2013) and influenced political attitude in America (Mutz & Mondak, 1997). This paper fills the gap of the influence of subjective norm on PEWB. Based on these findings, the following hypotheses can be tested for a mobile based application like agricultural extension services:

H3: SN has a positive effect on PEOU to use mobile based agricultural extension services in rural India

H4: SN has a positive effect on PU to use mobile based agricultural extension services in rural India

H5: SN has a positive effect on PEWB to use mobile based agricultural extension services in rural India

## Attitude

Attitude toward the behavior refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior in question (Ajzen, 1991). Moreover, attitude includes judgment on whether the behavior under consideration is good or bad, and whether the actor wants to do the behavior (Leonard et al., 2004). Ramayah et al. (2010) pointed that attitude includes perceived consequences associated with behavior. Attitude is the psychological emotion routed through consumers' evaluations and, if positive, behavioral intentions tend to be more positive (Chen & Tung, 2014). Attitude toward behavior is an individual's positive or negative feelings about performing the target behavior, and plays a mediating role between behavioral beliefs and intention (Ajzen & Fishbein 1975). Studies have found a relationship between attitude and PEWB (Li, Xiao, & Gong, 2015; Lee & Glasure, 2002). PU and PEOU have influenced attitude for adoption of mobile application (Kim, Yoon & Han, 2016). Social groups have influenced political attitudes (Mutz & Mondak, 1997).

Based on these findings, the following hypotheses can be tested for a mobile application like agricultural extension services:

H6: SN has a positive effect on attitude to use mobile based agricultural extension services in rural India

H7: PEOU has a positive effect on attitude to use mobile based agricultural extension services in rural India

H8: PU has a positive effect on attitude to use mobile based agricultural extension services in rural India

H9: Attitude has a positive effect on PEWB to use mobile based agricultural extension services in rural India

## RESEARCH METHODOLOGY

This study emphasized on a homogeneous group of Bottom of the Pyramid (BOP) segment who would be the users of mobile agricultural extension services. The type of research design was descriptive in nature wherein a survey method was followed with the purpose of collecting and analyzing data. At the first stage, the identification of variables was done based on literature review. At the second stage, the study was carried out following the descriptive research design to test relative significance of each of the factors affecting customer wealth of users of low-cost innovative products in India.

Based on the hypothesized model through a review of the related literature, a 19-item questionnaire was devised as a measurement scale for this research. A 3 item subjective norm scale was adapted from Venkatesh, Morris, Davis, and Davis (2003); four items for PU and 3 items for PEOU scale

were adopted from Venkatesh and Davis (1996); PEWB with 6 items from Chaudhuri, Mazumdar, & Ghosal (2011) and a three item attitude scale of Ajzen and Fishbein (1980) were used. Content validation of the questionnaire was done through two experts each from academia and agricultural scientist. Stratified sampling method was used to collect the data. Surveys were handed out to only those participants who consented to participate voluntarily. 325 valid responses were received.

The measurement model was tested for the relationship among PU, PEOU, SN and attitude and perceived economic well-being using structural equation modeling based on the hypothesis developed in the literature review. Table 1 shows the mean, variance, and internal reliability, and table 2 shows inter construct correlations.

**Table 1. Mean, variance and internal reliability**

Factor	Mean	Variance	Cronbach Alpha $\alpha$	Composite Reliability	AVE
PEWB	3.159	0.033	0.844	0.8846	0.5617
PEOU	3.889	0.002	0.676	0.8215	0.6056
PU	3.787	0.014	0.828	0.8861	0.6613
Attitude	3.877	0.020	0.808	0.8863	0.7224
SN	3.544	0.002	0.795	0.8795	0.7088

**Table 2. Inter construct correlations**

	PEOU	PU	SN	Att	PEWB
PEOU	<b>0.778</b>				
PU	0.498	<b>0.813</b>			
SN	0.289	0.490	<b>0.842</b>		
Att	0.490	0.576	0.562	<b>0.850</b>	
PEWB	0.211	0.484	0.560	0.379	<b>0.749</b>

## DATA ANALYSIS

The measurement model contains the constructs PEWB, PU, PEOU, SN and Attitude. The descriptive statistics of the data and reliability mentioned in Table I was done using SPSS. The mean of the constructs varies between 3.159 and 3.889.

Two tests were conducted to examine the reliability of the items. First, Cronbach's  $\alpha$  reliability test was carried out. All constructs are above the recommended cut-off point 0.60 for Cronbach's  $\alpha$  test (Fornell & Larcker, 1981). Secondly, composite reliability of each construct is  $> 0.7$  which are within the acceptable limits (Nunnally, 1967). All constructs achieved coefficient above 0.68 for Cronbach's alpha and coefficient above 0.82 for composite reliability. Both tests suggest that the items measuring the designated constructs are reliable. No items needed to be dropped because all constructs achieve higher than acceptable scores in both tests. Table I depicts the results of the reliability tests.

Items have a factor loading higher than 0.6 with reliability of the scales above 0.800, which is as per the acceptable limits (Wang & Stanley, 1970). AVE and Composite Reliability (CR) predict the convergent validity of the scales while AVE predicts the discriminant validity of the scales.

Construct validity comprises of four main components: face validity, convergent validity, discriminant validity, and nomological validity (Hair et al., 2009). Face validity was achieved by conducting a comprehensive literature review and factoring the opinions from agricultural experts in the survey. Convergent validity was examined by the standardized loadings and average variance extracted (AVE) estimates. Standardized factor loadings estimates should be 0.5 or higher and AVE estimates should be 0.5 or greater to suggest adequate convergent validity (Hair, Black, Babin, & Anderson, 2009). All five constructs reached these targets.

Since square root of AVE is larger than squared inter-construct correlation (SIC) from correlations in Table II, the scales have discriminant validity (Hair, Black, Babin, & Anderson, 2009). To check for common method bias, Harman's (1967) single factor test was employed. Result showed that first factor accounted for 18.07% of the variance which is less than 50%. Hence common method bias can be ruled out.

The relationships involved in the pathways obtained using SEM was analyzed using AMOS20. Table III indicates the maximum likelihood estimates for each parameter, showing the analytical results of the research model and suggesting that the antecedents of behavioural are highly relevant to the theoretical arguments. The  $\chi^2$ -value, root mean square error of approximation (RMSEA), AGFI, TLI and comparative fit index (CFI) were 264.794, 0.0519, 0.883, 0.934, and 0.949, respectively. All these values indicate an acceptably accurate fit for the research model (Bollen, 1989). From an empirical perspective, this model provides a satisfactory solution. The estimate parameters ( $\beta$ -coefficients) shown in Table III demonstrate the relationships of the pathways by their respective standardized regression weights.

The structural model is concerned with the direct and indirect relationships between the latent variables. The SEM technique is therefore well suited for the present research purposes. Table III summarizes the results of the measurement model.

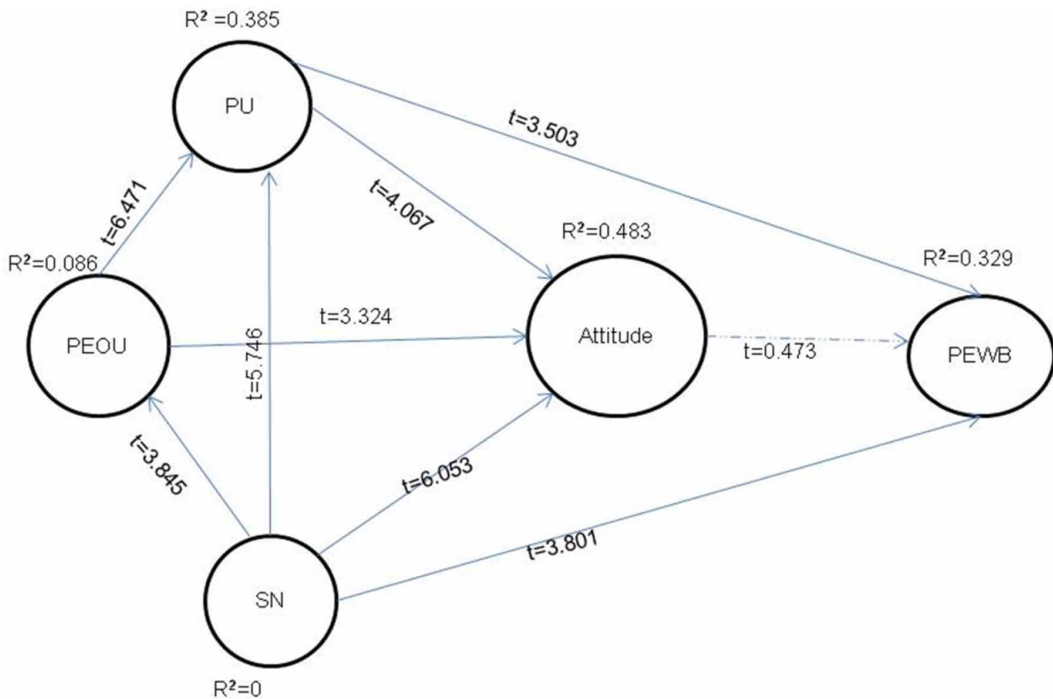
It was possible to test the hypotheses developed for this study by the final structural equation model. These hypotheses were tested by evaluating the path coefficients and the significance levels among the constructs in the model. The related hypothesis was accepted only if the significance

**Table 3. Hypothesis summary**

	Relationship	Standardised Estimate	S.E.	C.R.	p
H1	PEOU → PU	.527	.117	6.246	***
H2	PU → PEWB	.339	.096	3.389	***
H3	Subjective Norm → PEOU	.392	.054	4.896	***
H4	Subjective Norm → PU	.392	.063	5.775	***
H5	Subjective Norm → PEWB	.495	.094	4.718	***
H6	Subjective Norm → Attitude	.448	.062	5.823	***
H7	PEOU → Attitude	.324	.114	3.411	***
H8	PU → Attitude	.223	.087	2.202	.028
H9	Attitude → PEWB	-.121	.129	-1.047	.295
Fit Statistics $\chi^2/df = 2.006$ , GFI = 0.919, CFI = 0.949, IFI = 0.950, NFI = 0.905, RMSEA = 0.056					

level for each relationship is below or equal to 0.05. For this study, nine hypotheses were developed. Analysing the results proved that eight hypotheses are supported. The enclosed figure 1 shows the model with its variables and path coefficients. Figure 1 shows an SEM model.

Figure 1. SEM model



## DISCUSSION ON RESULTS

Little research has connected TAM constructs with perceived economic well-being. This research seeks to refine our knowledge of PU, PEOU, SN and Attitude on perception of economic well-being for low cost innovative products like mobile agricultural extension services.

The objective of this research is to understand applicability of perceived usage, perceived ease of use, attitude, subjective norm, and perceived economic well-being for Indian consumers. Several studies have examined the applicability of the concept in other cultures; however, the applicability of these concepts in an Indian sample is limited. Consumers' attitudes and perceptions to use and well-being are influenced by cultural values. This was confirmed by (Venkatesh & Davis, 1996) that understanding of dimension of perceived ease of use can help researchers and practitioners design training interventions to foster increased acceptance and usage.

The contribution of this research lies in how study participants understand the typical technology acceptance model questions and whether they implicitly or explicitly relate them to perceived economic well-being.

The results support eight of the nine hypotheses and have a critical ratio greater than 1.96. PU, and SN are positively related to PEWB ( $\beta = 0.339, 0.495$ ) which is similar to the study of online banking by Khan & Dominic (2014), supporting H2 and H5. SN has been a popular significant predictor, as

many past studies showed the association (Hew et al. 2015). In this study as well, SN has supported PEOU, PU, Attitude and PEWB, supporting H3-H6.

Hubona and Blanton (1996) measured the predictive capabilities of Perceived Ease of Use and Perceived Usefulness to three variables: task accuracy, task latency (i.e., response time), and user confidence in decision quality; their findings suggested that users' Perceived Ease of Use affects the three outcome variables much more significantly than users' Perceived Usefulness. It is well established that PU influences behavioral intention. On similar grounds, the findings of this study show that PEWB is dependent on PU,  $\beta = 0.339$  with a critical ratio of 3.389, supporting H2; which cements another study on retail credit choice where PEWB helps in selection (Ricci & Caratelli, 2014). This research supports the relationship of SN and PEWB ( $\beta = 0.495$ , CR = 4.718), proving H5. Interaction of social factors and perceived economic well-being influenced theft in South African study (Pecenka & Kundhlande, 2013). In this study, attitude does not influence PEWB rejecting H9, which is different from another study where an increase in perceived economic wellbeing increases the attitude (Li, Xiao, & Gong, 2015; Lee & Glasure, 2002).

Perceived ease of use, perceived usefulness and social norms influence attitude supporting H6-H8. In a study of acceptance of mobile application, PEOU and PU influenced attitude (Kim, Yoon & Han, 2016). Perceived ease of use influencing perceived usefulness is a well-established relationship (Pavlou, 2003) is proven here as in H1 with  $\beta = 0.527$  and CR of 6.246.

## MANAGERIAL IMPLICATIONS

Surprisingly, there is still lack of studies investigating the consequences of TAM for mobile applications even though the mobile AES app is regarded as an important tool for agri-based companies seeking to build and expand their business and boost sales. Therefore, findings of this study may be of significance to marketers given its usefulness in positioning and communication development with respect to products and services that aim to enhance perceived economic well-being in specific or one or more life domains. It was seen that the individuals value themselves largely as a function of how they perceive themselves with respect to their society and their past. Smartphone apps could be the optimum channel for mobile service operators to educate their customers and connect with them on the go by providing features which are perceived beneficial.

Over the years, human being's desire to improve perceived economic betterment has not waned. The results of this study add new insights into TAM literature by exploring its outcomes in the mobile application. Perceived usefulness can also enhance the economic status. Therefore, marketers need to relate economic benefits costs and time of the mobile based application with perceived usefulness. Reduction of transaction costs during use of mobile applications shall result in economic benefit and subsequently perceived usefulness. Information provided by this application shall results in time and costs of visiting the centre. Use of mobile applications could also result in time savings leading to perceived usefulness. A consumer shall find usefulness within a product for its economic benefits.

Peer groups behavior also directs their economic benefits. Their talk can transform to economic benefits by the user. Moreover, attitude does not influence PEWB. This is important for managers to know that attitude towards economic benefits need not be worked upon. Unlike behavioral outcomes, where attitude positively influences behavior, in this instance, there is no need to inculcate a positive attitude. PU, PEOU and SN shall directly influence perceived economic well-being.

## CONCLUSION

Innovations perceived as useful and easy to use, backed by favorable social norms and attitude is a harbinger of benefits to the adopter. This is relevant more so for the bottom of the pyramid section. For their financial inclusion, farmers are encouraged to use ICT enabled agricultural extension services. It also provides them an opportunity to increase their customer wealth.



The purpose of this research was to use the theoretical framework of TAM and apply perceived economic well-being as the consequence of use of mobile based agricultural services in a developing country like India. The researchers propose that PEWB can be used as an instrument to measure the outcome of accepting a low-cost innovative product like agricultural extension services over a mobile.

This study provides important and helpful information to marketers and researchers in understand what influence BOP farmers' intention to use ICT enabled agricultural extension services. It has been concluded that mobile based AES is a safe method for the smallest farm and nonfarm users which have often been at the limits of the recognized wealth.

### **Limitations**

It would be prudent to make the assessment of BOP farmer's information and service needs that take into account gender differences and have the potential to alter economic condition of the users. The study's findings may not be generalized beyond the population which is generally a homogenous group. Secondly, the utility of the diffusion model in high scale societies is not expected to be significant due to the homogeneity of respondents, extensive information dissemination, and the high level of awareness and technology diffusion in the study area. Thirdly, the classification of subjects into the various levels of treated distribution may have limitations because there are other ways this could have been done but were not examined for any significant differences and/or impact on the results.

Inclusion of additional rural locations across different geographies while conducting the survey may provide additional insights. Finally, this study focused merely on adoption of AES and can be expanded further to understand continued usage trends of AES. Satisfaction as an output variable could have been included in this study.

## REFERENCES

- Ajzen, I., & Fishbein, M. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, NJ: Prentice Hall.
- Aker, J. C. (2011). Dial “A” for agriculture: A review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics*, 42(6), 631–647. doi:10.1111/j.1574-0862.2011.00545.x
- Antle, J. M., & Valdivia, R. O. (2006). Modelling the supply of ecosystem services from agriculture: A minimum-data approach. *The Australian Journal of Agricultural and Resource Economics*, 50(1), 1–15. doi:10.1111/j.1467-8489.2006.00315.x
- Bamwine, P. (1997). Factors that influence the farmers’ perceived usefulness of information for conservation decisions in the Darby Creek Watershed.
- Bhavnani, A., Chiu, R. W.-W., Janakiram, S., & Silarszky, P. (2008). *The role of mobile phones in sustainable rural poverty reduction*. GICT.
- Bristor, J. M., & Fischer, E. (1993). Feminist thought: Implications for consumer research. *The Journal of Consumer Research*, 19(4), 518–536. doi:10.1086/209320
- Cecchini, S., & Scott, C. (2003). Can information and communications technology applications contribute to poverty reduction? Lessons from rural India. *Information Technology for Development*, 10(2), 73–84. doi:10.1002/itdj.1590100203
- Chaudhuri, H. R., Mazumdar, S., & Ghosal, A. (2011). Conspicuous consumption orientation: Conceptualisation, scale development and validation. *Journal of Consumer Behaviour*, 10(4), 216–224. doi:10.1002/cb.364
- Chen, L. D., Gillenson, M. L., & Sherell, D. L. (2002). Enticing online consumers: An extended technology acceptance perspective. *Information & Management*, 39(8), 705–719. doi:10.1016/S0378-7206(01)00127-6
- Chen, M.-F., & Tung, P.-J. (2014). ‘Developing an extended Theory of Planned Behavior model to predict consumers’ intention to visit green hotels’. *International Journal of Hospitality Management*, 36, 221–230. doi:10.1016/j.ijhm.2013.09.006
- Chesbrough, H. (2010). Business model innovation: Opportunities and barriers. *Long Range Planning*, 43(2-3), 354–363. doi:10.1016/j.lrp.2009.07.010
- Dansky, K. H., Gamm, L. D., Vasey, J. J., & Barsukiewicz, C. K. (1999). Electronic Medical Records: Are Physicians Ready? *Journal of Healthcare Management*, 44(6), 440–455. doi:10.1097/00115514-199911000-00007 PMID:10662431
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information. *Management Information Systems Quarterly*, 13(3), 318–341. doi:10.2307/249008
- Davis, F. D. (1993). User acceptance of information technology: System characteristics, userperceptions and behavioral impacts. *International Journal of Man-Machine Studies*, 38(3), 475–487. doi:10.1006/imms.1993.1022
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003. doi:10.1287/mnsc.35.8.982
- Deloitte & Touche LLP. (2007). *Economic Impact of Mobile in Bangladesh*. Malaysia, Pakistan: Serbia, Thailand & Ukraine.
- Diener, E., Sandvik, E., Seidlitz, L., & Diener, M. (1993). The relationship between income and subjective well-being: Relative or absolute? *Social Indicators Research*, 28(3), 195–223. doi:10.1007/BF01079018
- Doll, W. J., Hendrickson, A., & Deng, X. (1998). Using Davis’s perceived usefulness and ease-of-use instruments for decision making: A confirmatory and multigroup invariance analysis. *Decision Sciences*, 4(4), 839–869. doi:10.1111/j.1540-5915.1998.tb00879.x

- Donner, J. (2009). Mobile-based livelihood services in Africa: pilots and early Mobile-based livelihood services in Africa: pilots and early Mobile-based livelihood services in Africa: pilots and early deployments. In *Communication technologies in Latin America and Africa: A multidisciplinary perspective*. Academic Press.
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *JMR, Journal of Marketing Research*, 18(1), 39–50. doi:10.1177/002224378101800104
- Hair, J. F. J., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate Data Analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.
- Harman, H. H. (1967). *Modern Factor Analysis*. Chicago: University of Chicago.
- Hayhoe, C. R., & Wilhelm, M. S. (1998). Modeling Perceived Economic Well-Being In A Family Setting: A gender perspective. *Financial Counseling and Planning*, 9(1), 21–34.
- Hew, J.-J., Lee, V.-H., Ooi, K.-B., & Wei, J. (2015). What catalyses mobile apps usage intention: An empirical analysis. *Industrial Management & Data Systems*, 115(7), 1269–1291. doi:10.1108/IMDS-01-2015-0028
- Hubona, G. S., & Blanton, J. E. (1996). Evaluating system design features. *International Journal of Human-Computer Studies*, 44(1), 93–118. doi:10.1006/ijhc.1996.0005
- Igbaria, M., Zinatelli, N., Cragg, P., & Cavaye, A. L. (1997). Personal computing acceptance factors in small firms: A structural equation model. *Management Information Systems Quarterly*, 21(3), 279–302. doi:10.2307/249498
- Jha, S. K., Pinsonneault, A., & Dubé, L. (2016). The evolution of an ICT platform-enabled ecosystem for poverty alleviation: The case of eKutir. *Management Information Systems Quarterly*, 40(2), 431–445. doi:10.25300/MISQ/2016/40.2.08
- Karraker, A. (2014). Feeling Poor”: Perceived Economic Position and Environmental Mastery among Older Americans. *Journal of Aging and Health*, 26(3), 474–494. doi:10.1177/0898264314522296 PMID:24567367
- Khan, H., & Dominic, P. D. (2014). User acceptance of online system: A study of banking and airline sector. *International Journal of Business Information Systems*, 16(4), 359–374. doi:10.1504/IJBIS.2014.063926
- Kim, H.-W., Chan, H. C., & Gupta, S. (2007). Value-based Adoption of Mobile Internet: An empirical investigation. *Decision Support Systems*, 43(1), 111–126. doi:10.1016/j.dss.2005.05.009
- Kim, S. C., Yoon, D., & Han, E. K. (2016). Antecedents of mobile app usage among smartphone users. *Journal of Marketing Communications*, 22(6), 653–670. doi:10.1080/13527266.2014.951065
- Lee, A.-R., & Glasure, Y. U. (2002). Political Cynicism in South Korea: Economics or Values? *Asian Affairs: An American Review*, 29(1), 43–58. doi:10.1080/00927670209598875
- Li, H., Xiao, H., & Gong, T. (2015). The impact of economic well-being on perceptions of anti-corruption performance: Evidence from China. *Policy and Society*, 34(2), 97–109. doi:10.1016/j.polsoc.2015.05.001
- Lundvall, B.-A. (2016). *Product innovation and user-producer interaction*. London: Anthem Press.
- Mittal, S., & Mehar, M. (2012). How mobile phones contribute to growth of small farmers? Evidence from India. *Zeitschrift für Ausländische Landwirtschaft*, 51(3), 227–244.
- Mutz, D. C., & Mondak, J. (1997). Dimensions of sociotropic behavior: Group-based judgments of fairness and well-being. *American Journal of Political Science*, 41(1), 284–308. doi:10.2307/2111717
- Nunnally, J. C. (1967). *Psychometric Theory*. New York: McGraw Hill.
- Pan, C.-C. S., Sivo, S., Gunter, G., & Cornell, R. (2005). Students’ perceived ease of use Ofan elearning management system: an exogenous or endogenous variable? *J. Educational Computing Research*, 33(3), 285–307. doi:10.2190/7M4G-R742-W9FT-JX1J
- Pavlou, P. A. (2003). Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model. *International Journal of Electronic Commerce*, 7(3), 101–134. doi:10.1080/10864415.2003.11044275

- Pecenka, C. J., & Kundhlande, G. (2013). Theft in South Africa: An Experiment to Examine the Influence of Racial Identity and Inequality. *The Journal of Development Studies*, 49(5), 737–753. doi:10.1080/00220388.2012.754431
- Read, W., Robertson, N., & McQuilken, L. (2011). A novel romance: The Technology Acceptance Model with emotional attachment. *Australasian Marketing Journal*, 19(4), 223–229. doi:10.1016/j.ausmj.2011.07.004
- Revels, J., Tojib, D., & Tsarenko, Y. (2010). Understanding consumer intention to use mobile services. *Australasian Marketing Journal*, 18(2), 74–80. doi:10.1016/j.ausmj.2010.02.002
- Ricci, O., & Caratelli, M. (2014). Consumer choice in retail banking: Are prices really relevant? *Journal of Strategic Marketing*, 22(3), 240–256. doi:10.1080/0965254X.2013.876071
- Rossiter, J. R., & Braithwaite, B. (2013). C-OAR-SE-based single-item measures for the two-stage Technology Acceptance Model. *Australasian Marketing Journal*, 21(1), 30–35. doi:10.1016/j.ausmj.2012.08.005
- Smets, P. (1995). The canonical decomposition of a weighted belief. *JCAI*, 95, 1896–1901.
- Sun, T., Tai, Z., & Tsai, K.-C. (2010). Perceived Ease of Use in Prior E-Commerce Experiences: A Hierarchical Model for Its Motivational Antecedents. *Psychology and Marketing*, 27(9), 874–886. doi:10.1002/mar.20362
- Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model. *Information Systems Research*, 11(4), 342–365. doi:10.1287/isre.11.4.342.11872
- Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision Sciences*, 27(3), 451–481. doi:10.1111/j.1540-5915.1996.tb01822.x
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 46(2), 186–204. doi:10.1287/mnsc.46.2.186.11926
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Towards a unified view. *MIS Quarterly Management Information System*, 27(3), 425–478. doi:10.2307/30036540
- Wang, M., & Stanley, J. (1970). Differential weighting: A review of methods and empirical studies. *Review of Educational Research*, 40(5), 663–705. doi:10.3102/00346543040005663
- Wernerfelt, B. (1995). A rational reconstruction of the compromise effect: Using market data to infer utilities. *The Journal of Consumer Research*, 21(4), 627–633. doi:10.1086/209423
- Williamson, P. J., & Yin, E. (2014). Accelerated innovation: The new challenge from China. *MIT Sloan Management Review*, 55(4), 2–8.

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