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An Analysis of the Perceptions of Innovation by University Of Botswana Staff Members

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Abstract

The paper uses the responses of a stratified sample of 279 staff members of the University of Botswana to explore the staff perceptions on innovation in terms of perceived use and acceptability of innovation technology. The results show that between 73% and 94%, of staff are aware of ASAS, I-ERP, Blackboard and Moodle, and 97.6% reported using at least one of the them, yet close to 40% of the staff are classified as early majority, late majority or laggards. While 67.5% of the staff perceived innovation as either important or very important, innovation performance was perceived as the most interesting. The results of the Probit analysis shows that while gender and education positively affect the staff perception of innovation, age negatively significantly affects the perception while holding other variables constant. The study recommends improved computer education of staff through training, since training can enable staff to experiment with the latest technologies in such a way that something new is created. Such training for awareness creation and improvement of computer skills should be age specific and take into consideration the different levels of computer skills possessed by the staff.

Key words; Perception, innovation, University of Botswana, probit analysis

1.0 Introduction

Rogers (2003) defined innovation as an idea, practice or object that is perceived as new by an individual or other unit of adoption. Innovation can also be defined as "involving changes in current patterns of production or consumption". It is the successful implementation of a new and widely-used product or business practice with the aim of improving performance, cost-effectiveness, quality, safety, and to reduce environmental consequences" (Gatignon and Robertson 1989). The World Economic Forum (2015) defined innovation as the successful commercialization of novel ideas, including products, services, processes and business models, which are critical component of economic growth. Sorensen and Torfing, (2012) noted that "innovation drives growth in two ways: through the introduction of new or improved products or services that tap into existing or latent demand in the market, thereby creating additional value for enterprises and

consumers; and also by increasing the productivity of firms employing such innovations. Innovation helps private companies to cut costs, improve their products and open new markets".

In the definitions of innovation, the central theme in innovation is that it is something new or unique (product or service) (Baregheh, et al., 2009). An invention is the common result of the innovation process. Thompson (1965, p. 2) defines innovation from a historical perspective as, "the generation, acceptance, and implementation of new ideas, processes products and services." However, Wang, et al. (2010, p.767) states that innovation is "conceptually a process that begins with a novel idea and concludes with market introduction." Zhuang (1995) and Zhuang, et al., (1999), clarify innovation to mean one or all of the following: (1) An invention, that is, creation of something entirely new; (2) An improvement, that is, a refinement of what has been developed; and (3) The diffusion or adoption of innovation developed elsewhere (Zhuang, et al., 1999, p. 58). Innovation is a critical need for all organizations. It adds value and sustains competitive advantage (Baregheh, et al., 2009, p.1323). Businesses need to innovate to increase performance (McLaughlin, et al., 2004) and as a primary source of wealth creation (de Waal, et al., 2010).

Flight, et al. (2011) state that ability to measure how individuals perceive innovation is important for identifying problems related to success. Thus, given that innovation is a key ingredient for success, one might ask, 'Is there a simple but effective method of understanding innovation from an individual perspective'. Is there a difference between individual perceptions of innovation across demographic characteristics such as gender, employment status, and age? For instance, it has been shown that decisions to purchase an innovation within any organization is the net result of the inputs of various functional departments and specialists as well as various in-company political alliances and interest groups (Morris et al., 1999). Innovation flourishes best when organizations appreciate their employees and place them in a supportive and creative environment (Zhuang, et al. (1999). Understanding how individuals perceive attributes of innovations and how social mechanisms can be leveraged to enhance adoption provides valuable support for companies commercializing their innovations (Ha¨ggman, 2009). Ha¨ggman (2009) has shown that individual characteristics and how the individuals perceive innovation attributes are interrelated. Also the perceptions of different functional actors on innovation attributes differ, and the actors' differing perceptions and the resulting interaction influence the duration and outcome of adoption process (op cit). There is a necessity for involving personnel in innovation projects for both competitive advantage and human perspective, as ideas and needs drive innovation. Rogers (2003) summarizes that innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability and observability and less complexity will be adopted more rapidly than other innovations. Thus, how staff, at the University of Botswana, perceive the innovation technologies in the institution will, to a great extent, affect the effective utilization and this needs to be investigated.

Research (e.g.,Sharit, et al., 2004) shows the relevance of the perception of technology benefits, beside costs, for technology adoption. Melenhorst and Bouwhuis, (2004) suggested that older adults might not be motivated to buy a computer or to learn new skills, even if they could, as they do not perceive the expected result as desirable or helpful in fulfilling their aspirations. The lack of perceived benefit and not the perception of cost seemed to have motivated their negative opinions of new technology (Melenhorst et al., 2006). Melenhorst and Bouwhuis (2004) citing CBS (Statistics Netherland) (2001) stated that "higher socio-economic status and a higher level of education distinguished the older internet users from the older internet non-users". This, however, explains in greater depth the common belief that removal of the economic and ergonomic obstacles would automatically result in a higher technology use among older adults. The model of Selective Optimization with Compensation (Baltes and Baltes, 1990), assumes that, "with age, people increasingly tend to focus their limited energy on activities and domains that they perceive as being most essential and valuable in their lives. Optimizing their performance in these domains is an adaptive way of maintaining well-being in spite of limitations". For innovation to be selected, therefor, the use of the new technology ought to be perceived as sufficiently valuable or beneficial, compared to the investment of effort required.

The University of Botswana has staff strength of 2678 which include: Academic, Support and Industrial Staff. The institution has a number of innovation technologies that have been put in place to facilitate the working systems. They include the following: Blackboard (management of online teaching), ASAS (Academic and Student Administration System), I-ERP (on-line financial management system), Moodle (a software package for producing internet-based courses and websites), and Research Management System (RMS). It is mandatory for academic staff to use on daily basis the Blackboard, Moodle, ASAS, I-ERP and Research Management System to upload research outputs and apply for research funding. The support staff use mainly the I-ERP, Moodle (for those that are running some academic programmes) and the ASAS and RMS. The staff perceptions of these innovations have never been investigated empirically and constitute the crux of this paper.

This paper, derived from a main study on consumer resistance to innovation, has as its objectives to: (i) find out the areas of innovation that staff members are mostly interested in improving; (ii) explore the perceived use and acceptability of innovation technology by staff of the University of Botswana; and (iii) determine, using the probit model analysis, if there are differences between individual perceptions of innovation across socio-demographic characteristics: gender, education and age of the staff.

1.1 The Theoretical Framework of this paper

Kombo and Tromp (2006: p.56) explain that the theoretical framework is important because it '…uses a theory to account for and clarify why things are the way they are,' in this case, why the perceptions of the staff of University of Botswana are important in explaining their understanding of innovation. Most relevant theories and explanations of perception (Gibson, 1950, 1979: p.139; Bruce et al 1981; Eysenck and Keane,

2008: p.74; Gregory, 1990, 219) as a process of acquiring and processing of information may be divided into two basic groups, the bottom-up and the top-down theories.

The characteristic feature of bottom–up theories of perception is the fact that the content and quality of sensory input play a determinative role in influencing the final percept. For example, when perceiving a tree, our sensors collect the basic data (such as points, horizontal or vertical lines) as the main individual characteristics of the object which are later connected to build more complex, assembled surfaces and shapes in order to create complex perception of the object we identify as a tree (Anndrej, 2013). The author, Anndrej (2013), calls this data–driven processing perception. On the contrary, the top–down theories suppose that in the process of discrimination, but mainly when processing sensory stimulus, we start by "feeling" sensory data on receptors, but their processing presumes a downward influence of higher cognitive contents which organize and later determine them. Such influence is called the top–down effect. The core of this approach is the fact that in order to process sensory stimulus, one needs to have prior experience or knowledge, or other influences which help to organize and form cognitive contents and in this case the utility of the innovation technologies.

Rogers' (2003) model is the most commonly used diffusion model. It examines the rate of innovation adoption and the factors influencing it. Rogers defines "rate of adoption" as: . . . the relative speed with which an innovation is adopted by members of a social system. It is generally measured as the number of individuals who adopt a new idea in a specific period. Rogers (2003) proposes five variables which determine the rate of adoption:(1) perceived attributes of innovations;(2) type of innovation decision;(3) communication channels; (4) nature of social system; and (5) extent of change agents' promotion efforts.

Most diffusion studies within organizations have focused on the rate of adoption (e.g.Kearns, 1992, quoted in Rogers, 2003; Frambach, 1993). Another research perspective within organizational diffusion assesses adoption of innovations by individuals within the organizations (e.g. Premkumar and Ramamurthy, 1995; Leung, 2001; Shaw-Ching Liu et al., 2005). The Technology Acceptance Model (Davis, 1989) identified two main factors necessary for technology acceptance: perceived usefulness (PU) and perceived ease of use (PEOU). PU as defined by the author is the extent to which a person believes using a system will enhance (job) performance. PEOU explains the person's estimation if using a technology is related to effort or not.

The key indicators of perception in this work, in the light of the foregoing theories, will be awareness, use and acceptability of innovation measured by importance of innovation to participants and classification of

one's innovation adoption (Innovator (the first to adopt), Early adopter, Early majority, Late majority, and Laggard (does not adopt the product/service)).

2.0 Methodology

2.1 Coverage: The study covered all staff at the University of Botswana. Data available from the Institutional planning shows that as at 2013/2014 there were 902 academic staff, 1425 support staff and 351 industrial staff at the University of Botswana.

2.2 Sample size: The Creative Research Systems (2012) shows that a statistically appropriate sample size for this study for a population of 2678 staff is 384 at 95% confidence level and 5% confidence interval (margin of error).

2.3 Sampling Design and Sample size allocation: The study used the stratified random sampling method, where the academic, support staff and industrial class cadres constituted the strata. The sample size of 384 was proportionately allocated to the 3 strata (Table 1) and the simple random sampling was then used in identifying staff to be studied in each stratum. The stratified random sampling, apart from ensuring a better representation of the different groups in the sample, provides a more efficient (greater precision) estimate of the parameters than the simple random sampling.

Table 1: Proportional allocation of sample size

Staff Category	Population	Sample size	Achieved Sample size
Academic	902	130	179
Support Staff	1425	204	69
Industrial Staff	351	50	31
Total	2678	384	279

2.4 Data Collection: Questionnaires were self-administered to the selected staff by trained research assistants working with the researchers, after the research assistants had explained the purpose of the study to them and obtained their consent. The self-administration of the questionnaire was because staff members could not find time to sit with the research assistants/researchers for a face-to-face interview, while at work. The participants were assured of the confidentiality of responses provided and anonymity of participants, as they would be no trace of who completed any questionnaire. The participants were informed that participation was voluntary, and there would be no financial reward for participation. Those who were willing signed a consent form or indicated their willingness orally before the questionnaires were dropped with them.

At the end of data collection, 279 completed questionnaires were retrieved giving a response rate of 72.7%. This response rate is very much higher than that obtained by Sevick and Bradham (1997) (19.7%) and Härkönen (2004) (50%) in similar studies. Visser et al. (1996) demonstrated that surveys with low response rates are not necessarily low in validity. Table 1 shows that the academic were oversampled. This was to make up the drop in the responses of the support and the industrial staff who were less responsive in answering the questions.

2.5 Ethical Issues: The study was approved by University of Botswana Institutional Review Board (IRB).

Results

Table 2 shows the characteristics of the sampled staff of the University of Botswana. The table reveals that 57.7% were males while 42.3% were females. Older adults (50 years and over) constituted 30.5% and 69.5% were below 50 years. Academic staff was in the majority (64.2%) while 24.7% were support staff and 11.1% were industrial staff. An overwhelming majority of the staff, 88.3%, had ten or more years of internet experience while 82.9% had at least a Bachelor's degree. While 34.8% were single (never married), 59.1% were married and 2.9%, 1.1%, 1.8% and 0.4% were, respectively, divorced, cohabiting, widowed and separated. About one in every four (25.1%) of the staff earn at least P33, 000.00 per month (USD 3, 000.00) while 3.9% earn below P3, 000.00 (USD 272.00)

Table 2: Socio-economic characteristics of interviewed staff members

Characteristics of sample staff members		Number	%
Sex of respondent	Male	161	57.7
	Female	118	42.3
Age of respondent	Below 50	194	69.5
	50 years and over	85	30.5
Job classification	Academic	179	64.2
	Support Staff	69	24.7
	Industrial staff	31	11.1
Number of years of internet experience	0-4	3	1.2
	5-9	26	10.5
	10-14	94	38.1
	15-19	69	27.9
	20-24	44	17.8
	25-29	7	2.8
	30-34	4	1.6
Highest educational qualification			
	Secondary	6	2.2
	Diploma	42	15.1
	Bachelor's Degree	113	40.5
	Professional	25	9.0
	PhD	32	11.5

	Masters' degree	60	21.5
	AAT(Association of Accounting Technicians)	1	0.4
Marital Status	Single	97	34.8
	Married	165	59.1
	Cohabiting	3	1.1
	Divorced	8	2.9
	Separated	1	0.4
	Widowed	5	1.8
Monthly income	Below 3000.00	11	3.9
	3000-7999.00	13	4.7
	8000-12999.0	27	9.7
	13000-17999.00	33	11.8
	18000-22999.00	48	17.2
	23000-27999.00	37	13.3
	28000-32999.00	40	14.3
	33000 and above	70	25.1

Awareness of innovation

Figure 1 shows the level of staff awareness of innovation technology available at the University of Botswana. The figure reveals that 94% of the staff was aware of ASAS, I-ERP (92%), Blackboard (91%), Moodle (73%). Only 37% were aware of the use of mobile technology for data collection and statistical production.

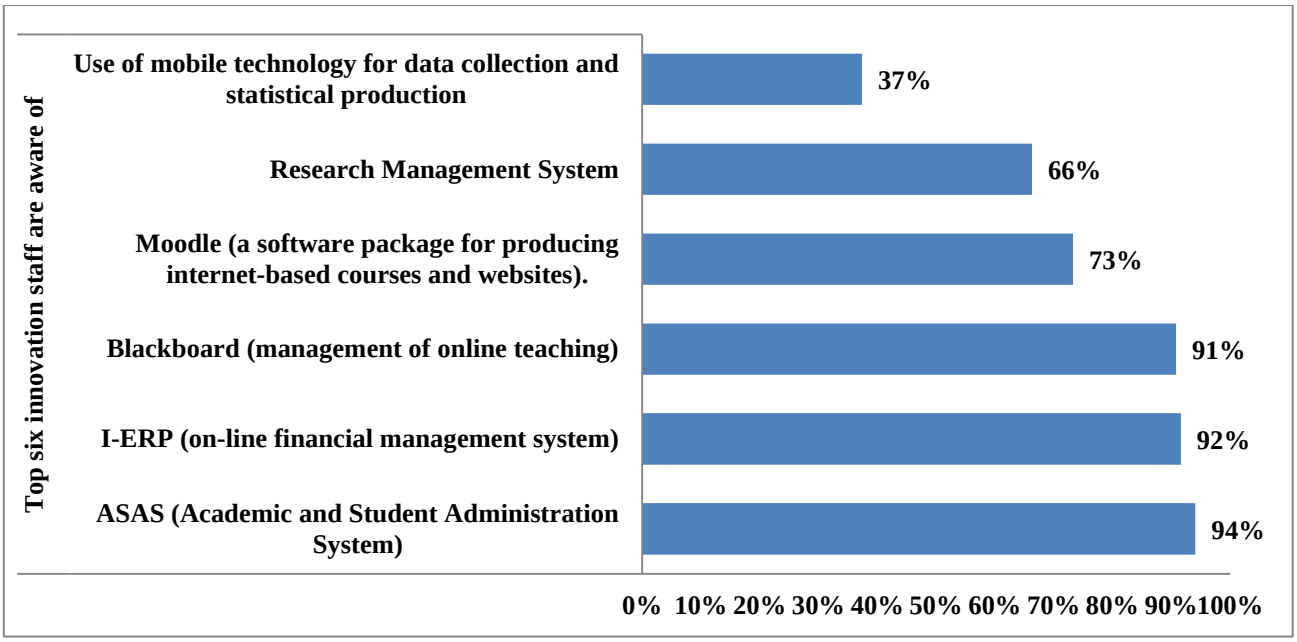

Figure 1: Top six innovation technologies staff are aware of (n=273)

Use and acceptability of innovation

The study explored how the staff perceived innovation technology in terms of its perceived usefulness (importance to their performing their day-to-day activities) and the ease of use. Table 3 shows that a little over one in every four (26.8%) of the staff considers innovation to be very unimportant or unimportant (0.4%). However, 67.5% of the staff perceived innovation as either important (23.1%) or very important (44.4%). A little over six in every ten staff members (62.6%) were classified as either innovators (22.2%) or early adopters of innovations (40.4%) while 37.4% were respectively early majority (26.3%), late majority (10.4%) or laggard (0.7%). However, usage of the innovation technology was very high (97.6%).

Table 3: Perceived use and acceptability of the innovation by staff members

Use and acceptability of innovation		Number	%
Importance of innovation to you	Very unimportant	73	26.4
	Unimportant	1	0.4
	Neutral	16	5.8
	Important	64	23.1
	Very important	123	44.4
Classification of one's innovation adoption	Innovator (the first to adopt)	60	22.2
	Early adopter	109	40.4
	Early majority	71	26.3
	Late majority	28	10.4
	Laggard (does not adopt the product/service)	2	0.7
Do you use any of them?	Yes	241	97.6
	No	6	2.4

Interest in innovation

In response to the question on what areas of innovation the staff members were mostly interested in, performance (27.3%), quality (22.7%) and cost effectiveness (20.5% were the top three areas that staff were mostly interested in (Figure 2).

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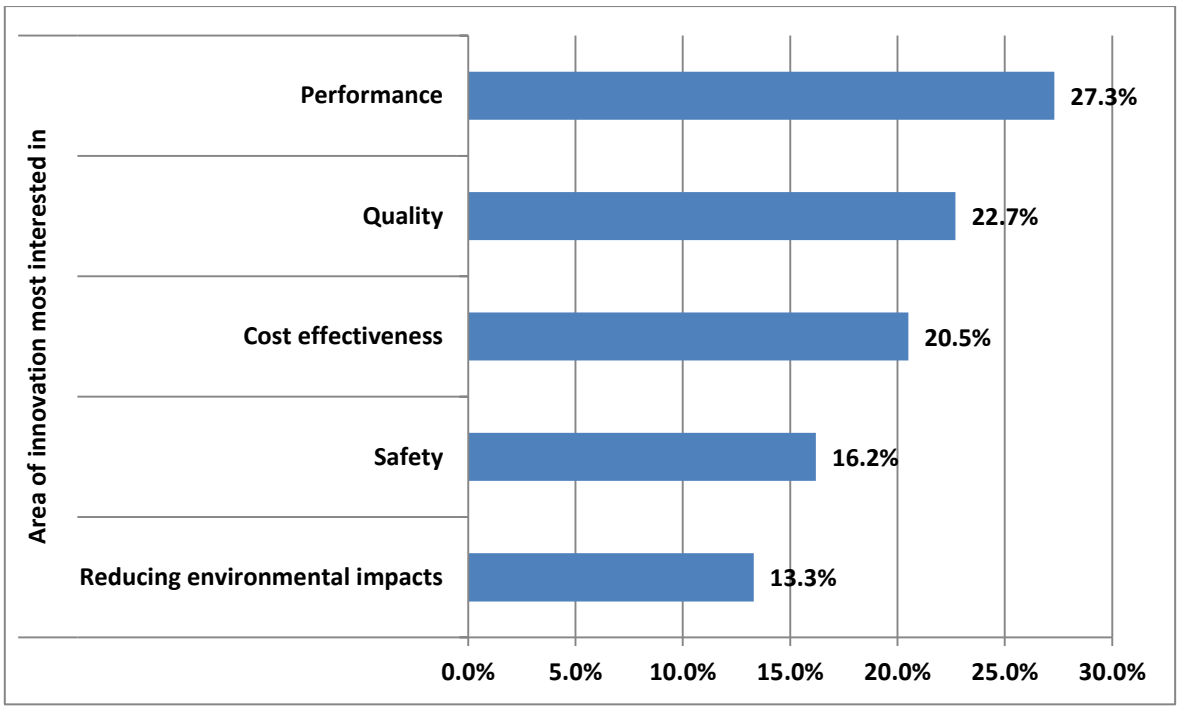

Figure 2: Areas of innovation technology staff are mostly interested in

Differences between individual perceptions of innovation across socio-demographic characteristics: gender, educational qualification and age

To find out if there are differences between individual perceptions of innovation across some socio-demographic characteristics of the staff members, the probit model was fitted to the data. The model assumes that a continuous latent variable, Z, that cannot be observed directly, can be modelled as a linear additive model:

$$Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots + \beta_k X_k + \varepsilon_k \qquad (1)$$

where $X_i; i = 1, 2, \ldots, k$ are a set of independent or predictor variables. However, instead of Z, there exists a dichotomous indicator, Y, defined as

$$Y = \begin{cases} 0, if \ Z \leq 0 \\ 1, if \ Z > 0 \end{cases} \qquad (2)$$

The probit model is given as

$$\Pr(Y = 1) = \Phi(Z) = \Phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots + \beta_k X_k) \qquad (3)$$

where P(Y=1) defines the probability that Y equals 1, and Φ is the cumulative normal distribution. The model (3) basically says that, conditional on the repressors, $X_{i's;}$ i= 1, 2, …..k, the probability that the outcome variable, *Yi* is 1, is a certain function of a linear combination of the repressors. That is,

$$\Pr(Y=1) = \frac{e^{z}}{(1+e^{z})} = \frac{1}{(1+e^{-z})} = \frac{e^{\beta_0+\beta_1 X_1+\beta_2 X_2+.....+\beta_k X_k}}{(1+e^{\beta_0+\beta_1 X_1+\beta_2 X_2+.....+\beta_k X_k})} \quad (4)$$

where e is exponential function and equal to 2.718.Table 4 shows the variables in the model and how they were coded.

Table 4: Variable in the model

Variable in the model	**Name**	**Codes using SPSS**
Dependent variable	Perception of innovation (Y)	Not Important= 1; Important = 2
Independent variables	Sex (X_1)	Female = 1; Male =2
	Age (X_2)	Less than 50 years = 1; 50 years and above = 2
	Highest qualification (X_3)	Diploma and below = 1; Degree and above =2

The SPSS programme version 23was used in fitting the profit model and results shown in Tables 5 and 6. The equation (5) is derived from results from Table 5 where the coefficients of the variables X are the estimates shown in the table.

$$\Pr(Y=1) = 0.692 - 0.381X_1 + 0.182X_2 + 0.003X_3 \quad (5)$$

The Table 5 shows the parameter estimates, the standard error of the estimated coefficients, the Z-test of significance of the parameters, significant probabilities and 95% confidence interval for the parameters. The Probability that Y equals 1 (Pr (Y=1)), defines the probability that a staff member perceives innovation as important. The results show that the probability of a staff perceiving innovation as important decreases significantly ($p < 0.05$) by 0.381 with a unit change in age, increases by 0.182 with level of education and 0.003 with sex of respondent. The chi-square goodness test of the model shows that the model is good (Chi-square =2.26, d.f. = 4, $p > 0.05$).

Table 5: Parameter estimates and significance tests

Parameter	Estimate	Std. Error	Z	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Age of respondent (X_1)	-0.381	0.179	-2.136	0.033	-0.731	-0.031
Educational qualification (X_2)	0.182	0.218	0.836	0.403	-0.245	0.609

Sex of respondent (X_3)	0.003	0.175	0.015	0.988	-0.34	0.345
Intercept	0.692	0.556	1.243	0.214	0.135	1.248

Table 6 shows the predicted probability of perceiving the innovation as important at various combinations of levels of the explanatory variables. For instance, the probability that a staff member whose age is less than 50 years, has Diploma qualification or less and is female perceiving innovation as important is 0.69 (last column of row number 1). Also, the probability that a staff member whose age is 50 years and over, has Diploma qualification or less and is female perceiving innovation as important is 0.545 (last column of row numbered 5). Thus for a change of one unit in age, there is corresponding decrease of 0.145 (0.545-0.69) in the probability of perceiving innovation as important. The impact of change in sex on the probability of perceiving innovation as important can be seen by the positive difference. For instance, the probability of a staff member who is less than 50 years of age, has diploma or less qualification, and is a female perceiving innovation as important is 0.69, while the corresponding probability when male is 0.691, giving a positive difference of 0.001 (0.691-0.69). Thus while younger people have better perception of innovation than the older adults, the males have better perception of innovation than females, holding other factors constant. With a change in level of education, there is an increase of 0.061 in the response variable (e.g. 0.751-0.69) while holding the other variables, age and sex at constant levels, showing that with higher education, one's perception of innovation becomes better.

Furthermore, the lowest probability of 0.545 is associated with being 50 years and over, having diploma or less qualification and being female while the largest probability of 0.752 is associated with being young, having a at least a degree and being male.

Table 6: Summary of the predicted probability of combination of levels of the explanatory variables

Number	Age	Educational qualification	Sex	Number of Subjects	Observed Responses	Expected Responses	Residual	Probability
1	1	1	1	16	12	11.035	0.965	0.690
2	1	1	2	24	15	16.575	-1.575	0.691
3	1	2	1	74	56	55.561	0.439	0.751
4	1	2	2	57	43	42.844	0.156	0.752
5	2	1	1	1	1	0.545	0.455	0.545
6	2	1	2	7	4	3.824	0.176	0.546
7	2	2	1	55	32	33.896	-1.896	0.616
8	2	2	2	19	13	11.729	1.271	0.617

Discussion of results

The paper set out to accomplish the following objectives: (i) find out the areas of innovation that staff members are mostly interested in improving; (ii) explore the perceived use and acceptability of innovation technology by staff of the University of Botswana; and (iii) determine if there are differences between individual perceptions of innovation across gender, education and age of the staff.

The results of the analysis showed that perceived awareness of the existing innovation technology is high among the staff (between 60% and 94% are aware of the different innovation technologies). This result is very much expected as there are regular calls for training on the use of these innovation technologies by the Centre for Academic Development (CAD) of the University. Information on the procedure to use these technologies available at University of Botswana websites. These efforts are aimed at creating awareness on available innovations, which is critical to the use of the innovations. It has been argued (Larsen, 2011) that both awareness and influence mainly manifest themselves through communication and networks of communication in form of: actors observe, hear, and speak which all constitute forms of communication. All these play a role in understanding awareness and influence regarding the innovation diffusion process.

On the perceived use and acceptability of the innovation technology, 97.6% reported using at least one of the innovations; two out of every three staff members acknowledged the innovations as either important or very important yet only 62.6% of them were classified as innovators or early adopters. It would have been expected that the high level of usage of the innovation would imply that most of the staff members would see innovation as important and also be innovators. However, this result must be informed by the large proportion of older adults (30.5%). The results show that age is negatively correlated with correct perception of innovation while education has a positive correlation. These findings are in line with previous studies. Docampo et al., (2001) have shown that generational differences, factors such as education, socioeconomic status, attitudes towards technology, access to and costs of technology have an effect on technology use and acceptance (Czaja et al., 2006). The Pew Internet and American Life Project (Pew Internet and American Life Project, 2007) showed that lesser use of computer and Internet is related to higher age, lower education and socioeconomic status, while Ellis and Allaire (1990) found a negative correlation between age and computer knowledge and computer interest, and a positive correlation between age and computer anxiety.

Males, who are young and have higher education, have more positive perceptions of innovation (probability of positive perception = 0.752) than females who share the same academic qualifications and are young (probability is 0.751). Similarly, younger male staff members who have higher qualification have more positive perception about innovation (probability is 0.752) than older male staff members with similar qualification (probability is 0.617). Higher education has positive effect on the individual's perception of innovation holding age and gender constant. These results are consistent with previous studies. For instance, age has been found to be either negatively correlated with adoption, or not significant in farmer's

adoption decisions. In studies, cited by Asiedu-Darko (2014), on adoption of land conservation practices in Niger (Baidu-Forson, 1999), rice in Guinea (Adesiina and Baidu-Forson, 1995), fertilizer in Malawi (Green and Ng'ong'ola, 1993), IPM sweep nets in Texas (Harper et al, 1990), Hybrid Cocoa in Ghana (Boahene et al, 1999), age was either not significant or was negatively related to adoption. Education is thought to create a favourable mental attitude for the acceptance of new practices, especially information-intensive and management-intensive practices (Waller et al, 1998; and Caswell et al, 2001). Gender issues in agricultural production and technology adoption have been investigated for a long time. Most of such studies show mixed results regarding the different roles men and women play in technology adoption. Doss and Morris (2001) in their study on factors influencing improved maize technology adoption in Ghana, and Overfield and Fleming (2001) studying coffee production in Papua New Guinea showed insignificant effects of gender on adoption. Nyberg (2009) stated that being an innovator is not regarded as a feminine trait since the image of the innovator is not easily compatible with the image of being a woman. Sanditov and Verspagen (2011) reported a study by Koellinger (2008) which found that innovative entrepreneurs are mostly males. Nahlinder, (2010) argued that the innovativeness of women is hampered by low self-confidence and low prioritization of work issues over family or household issues. In another view, Crowden (2003) stated that "men are more likely to radically innovate than women because of their personal and social characteristics, thus business cycles initiated by radical innovations can be deemed male-based

The study revealed that a little over six in every ten staff members (62.6%) perceived themselves as either innovators or early adopters of innovations while 37.4% were respectively early majority, late majority or laggard**.** This result has implications for innovation technology acceptance and use in the university and explains why older adults are uncomfortable using the available technology.

From the findings of the study it is clear that although perceived awareness and use of the innovation are high, yet close to two in every five staff member are perceived to be early majority (feel that the innovation is too risky and postpone the adoption decision), late majority have a very active resistance (convinced that the innovation is unsuitable and decide to launch an attack against its adoption or laggard (does not adopt the product/service). The implication here is that staff might be using the system not because they enjoy using them or have the requisite skills but because it is mandatory. For instance, every academic staff is expected to enter the students' marks in the ASAS at the end of each semester, irrespective of how they feel about the system and its usability.

Recommendation

We recommend that since training enables staff to experiment with the latest technologies in such a way that something new is created, staff should be further trained. This will contribute to the University's overall

knowledge stock. A University's knowledge stock, in turn, is the basis for the production of new knowledge and eventually, the entire innovation process. Such training, however, should be age-specific and should take into consideration skills levels on innovation and education of staff.

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