

The Influence of Demographic Factor on Personal Innovativeness Towards Technology Acceptance

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ABSTRACT

Library and Media Teacher (LMT) readiness of accepting and using technology innovation earlier than their colleagues could expedite the technology innovation process into the school education system. The aim of this study was to explore the impact of experience in using computer and the level of ICT knowledge towards personal innovativeness. This study employed a quantitative approach in the form of a survey. A total of 546 LMTs were randomly selected as research samples from Malaysian secondary and primary schools. Data were gathered through a set of instruments adapted from Rogers, using a five-point Likert scale. The construct consist of personal innovativeness and ICT knowledge. Data were analyzed descriptively and inferentially using means, percentage, frequency and multivariate analysis of variance (MANOVA). Findings demonstrated that the majority of the Library and Media Teachers had moderate personal innovativeness. Experience in using computer, level of education and ICT knowledge level are found to influence and contribute to Library and Media Teachers' personal innovativeness significantly.

Keywords: *Personal Innovativeness; Library and Media Teacher; Innovation.*

INTRODUCTION

Information and communications technology (ICT) has become a prominent issue of our everyday lives over the past decade. Increasing use of ICT in the teaching and learning environment has changed the teachers' classical role from teacher-centered educational environment to a student-centered environment. However, teachers are having difficulty accepting the new introduced teaching pedagogical practices because of the personality factor. Recently, there has been a growing interest in using personality as an explanatory tool in the literature to help us understand the usage of IT (Devito Da Cunha & Greathead, 2007; Oreg & Nov, 2008; Pratt & Chudoba, 2006). Personality traits predispose technology users to behave in certain ways under different situations (Thatcher & Perrewé, 2002). The psychology literature used personality as a predictor of human beliefs and behavior. There is substantial evidence for the role of personality traits as predictors of beliefs and behavior across a variety of contexts (Mischel 2004; Pulford & Sohal 2006). According to Schillewaert et al. (2000), personal innovativeness is a characteristic that greatly affects consumer acceptance of technology. Personal innovativeness or general innovativeness, is defined as the "the degree to which an individual is relatively early in adopting an innovation than other members of his (social) system" (Rogers et al., 1971), while personal innovativeness in IT is defined as the willingness of an individual to try out any new information technology (Agarwal & Prasad 1998). High innovativeness level in a person reflects greater readiness in accepting new technology. Level of innovativeness can be influenced by demographical factors too (Roger & Shoemaker 1971).

Background of Study

Web-based learning has become the trend and the state of the art of teaching and learning in this globalization era, networking, k-workers and k-economy. Therefore, in an effort to provide quality education for all through ICT, the Ministry of Education Malaysia has launched a web-based educational portal known as the Educational Web Television or EduwebTV, since March 2008. This video-based interactive educational portal aims at developing the teaching and learning of the nation through creative information and communications technology (ICT). The mission of EduwebTV is in line with the Education Development Master Plan 2006-2010. It is recognized as one of the key efforts by the ministry to enhance the teaching and learning processes in schools regardless of geographical locations (Fong et al. 2010). EduwebTV portal offers eight channels, namely news, academic, documentary, interview, curriculum, interactive, live and guidance. Thus, this innovation brings comfort and an effective learning through the web, which allows teachers and students to access a range of information without the limitations of time and place, as well as Internet facilities available in schools. With this development, the teachers need to be more open and willing to accept updates of educational technology introduced in schools. Therefore, teachers should be aware of the presence of any innovation implemented in schools, and know the importance of using technology for teaching and learning in the classroom (Littrell et al., 2005).

In the context of the dissemination of EduwebTV innovation in schools, Library and Media Teachers (LMT) play an important and significant role as a catalyst to other users towards the acceptance of using new technology in teaching and learning (Harada & Hughes, 2007). To ensure the successful diffusion of EduwebTV in school, LMT should be the model where they need to become a leading consumer of EduwebTV in teaching and learning, a consultant to other teachers on EduwebTV and able to convince the other teachers on the convenience and usefulness of EduwebTV. In other words, the LMT need to be more innovative and confident to face the variety of educational innovations introduced as an effort to promote, persuade and convince other teachers in school. LMT also needs to be the early adopter of innovation compared to other teachers in their schools. Therefore, LMT must have high personal innovativeness and personal innovativeness in IT. In this study, personal innovativeness refers to the willingness of LMT to receive any innovation implemented in school voluntarily without any force, while personal innovativeness in IT is defined as the willingness of an individual to try out EduwebTV as a domain specific innovation.

Many factors have been pointed out as barriers for teachers in adopting new technology. Factors such as knowledge, skills, attitude, perception, beliefs and commitment (Dusick, 1998), gender, age and experience in using ICT (Wong, 2002), access to computer, ICT training experience and support (Norizan, 2003) are frequently cited and associated with barriers to successful ICT integration in schools. According to the British Educational Communications and Technology Agency (BECTA 2004) the hindering factors that affect teachers include confidence level in using technology, access to facilities, courses and training attended that lacked focus on pedagogical skills and teachers' reluctance to change teaching practice. Research has shown that teachers who have more years of computer experience have positive attitudes towards computers (Rozell & Gardner, 1999; Shashaani, 1997). Education level and mobility are positively related to innovativeness because they broaden people's outlook and render them more open to new ideas, ways of living, and products (Tellis et al., 2009). Previous research has shown that prior experience with related products can be a determinant for consumers' early adoption of an innovation (Gatignon & Robertson, 1991). Specifically in the area of information technology, numerous studies have shown that previous experience in using computer will influence the degree of technology acceptance (Jiang et al., 2000; Thompson et al., 1994; Venkatesh, 2000). Based on past studies, experience using computers, exposure as well as education level will influence the level of individual innovativeness in accepting new technologies. Therefore, this study will try to answer whether the present LMT has high level of personal innovativeness on the acceptance of EduwebTV. Is personal innovativeness a constant of trait or can it be influenced by the social system?

METHODOLOGY

Research Design

EduwebTV is a new innovation currently implemented in Malaysian schools as one of the alternatives for Teaching and Learning. For the purpose of diffusion at schools, Ministry of Education (MoE) has appointed LMT teachers to further enhance and quicken the acceptance of EduwebTV. Currently, there is no research on LMT and EduwebTV being conducted; thus this study is important to assess their level of personal innovativeness towards new innovation and the factors that influence them. This study employed quantitative research methodology in the form of survey, using a set of questionnaires posted to selected schools in Malaysia. The method was chosen because the sample is widely spread around the schools in Malaysia.

Population and Sampling

The target population for this study are LMT serving in government secondary and primary schools in Malaysia. The population of the Library and Media Teachers from four different states were randomly selected based on four zones (N = 2456). The sample was selected using a systematic random sampling technique because this technique is effective to obtain the information from each of the states (Sekaran, 2000). The information is related to the usage, acceptance and perception toward usability of EduwebTV. This technique was used to ensure that each state has enough representatives to be the studied. Besides, it can control the internal validity of the sample. In this study, a total numbers of 546 LMT been selected to ensure sufficient data for analysis, including those who are graduates and non-graduates.

Instrumentation

A set of instrument was employed for data collection. The instrument consisted of personal innovativeness questionnaire, personal innovativeness in information technology questionnaire and ICT Knowledge questionnaire. The personal innovativeness questionnaire consisted of 20 items related to openness, enthusiasm and reluctance. The personal innovativeness information technology questionnaire consisted of 6 items. The ICT Knowledge questionnaire consisted of 28 items related to knowledge of basic ICT, the knowledge of application ICT and the knowledge of integrated ICT. All the questionnaires were self-report form with the Likert scale ranging 1 to 5 (strongly disagree to strongly agree). Based on pilot testing conducted on 250 teachers, the instrument reliability was as follows: .829 (personal innovativeness), .833 (personal innovativeness information technology) and .947 (ICT Knowledge).

To examine construct validity of measures adopted in this study, a factor analysis was performed. Principal factor analysis with varimax rotation was conducted to assess the underlying structure for the 20 items of the personal innovativeness questionnaire. After rotation, three constructs appeared. Based on the fact, the items were namely: openness, enthusiasm and reluctance (Table 3). The first factor accounted for 25.71% of the variance, the second factor accounted for 15.15% and the third factor accounted for 7.88%. For openness, enthusiasm and reluctance, the total variance explained was 48.8%.

Table 3: Factor Analysis for personal innovativeness

Items	Factor 1	Factor 2	Factor 3
PI6	.749		
PI 13	.743		
PI 7	.742		
PI 17	.719		
PI 14	.690		
PI 10	.689		
PI 20	.665		
PI 4	.453		
PI 19		.746	
PI 16		.742	
PI 18		.675	
PI 15		.657	
PI 3		.507	
PI 5		.474	
PU 1			.733
PI 9			.705
PI 12			.622
PI 11			.619
PI 8			.585
PI 2			.479

Factor 1 = reluctance; Factor 2 = openness; Factor 3 = enthusiasm

Principal factor analysis with varimax rotation also was conducted to assess the underlying structure for the 6 items of the personal innovativeness information technology. After rotation, a construct appears. For personal innovativeness information technology, the total variance explained was 71.95 %.

Table 4: Factor Analysis for personal innovativeness information technology.

Items	Factor 1
PIIT 21	.814
PIIT 22	.830
PIIT 23	.909
PIIT 24	.837
PIIT 25	.622
PIIT 26	.619

Data Analysis

Data were analyzed using SPSS v. 12.5 descriptively and inferentially using mean, standard deviation, frequency, percentage, and multivariate analysis (MANOVA). Besides assessing the factors items, mean and standard deviation for the items were validated. All means scores were > 2.5 of the midpoint, ranging from 2.5 to 3.1. This indicated an overall positive response to the scales in the study. Multivariate normality can be assessed through the inspection of univariate distribution index values, with univariate skew indexes greater than 3.0 and kurtosis indexes greater than 10 indicative of unacceptable non-normality (Kline, 2005). Skew and kurtosis indices for all scales were acceptable. It means the data was normal distributed and can be used for the MANOVA analysis.

FINDINGS

The majority of the LMTs were female ($n = 436$, 78.6%) while another 110 were male (21.4%). In terms of education level, a total of 286 LMTs (52.4%) are graduates and 260 LMTs (47.6%) are non-graduate. A total of 103 LMTs (52.5%) had low level of ICT knowledge, another 259 LMTs (47.4%) had moderate, while 184 LMTs (33.7%) had high level of ICT knowledge. As for their experience in using computers, many of the LMT ($n = 320$, 42.1%) had experience between 5 to 10 years, 210 LMTs (36.8%) had more than 10 years, while 115 LMTs (21.1%) had less than 5 years of experience in using computers.

For the level of personal innovativeness among the LMTs, this finding shows that the level of personal innovativeness among LMT is moderate and the mean score was 3.38 ($SD = 0.38$). Only 0.8% LMTs ($n = 4$) had low level of personal innovativeness. Majority of the LMTs ($n = 428$, 78.4%) had moderate, while another 20.8% LMTs ($n = 114$) demonstrated a very high level of personal innovativeness.

The level of personal innovativeness in information technology (PIIT) among the LMTs in this finding is moderate and the mean score was 3.27 ($SD = 0.58$). Only 0.8% of LMTs ($n = 13$) demonstrated low level of PIIT. This means that curiosity did not motivate LMTs to learn and accept EduwebTV. Majority of the LMTs ($n = 330$, 60.5%), had moderate level while another 30.2% LMTs ($n = 116$) had very high PIIT.

Multivariate variance analysis (MANOVA) was able to establish that ICT knowledge level (Wilks' value (λ) = 0.737, $F_{(4, 1087)} = 44.404$, $p < .05$), education level (Wilks' value (λ) = 0.945, $F_{(2, 539)} = 15.562$, $p < 0.05$) and experience in using computer (Wilks' value (λ) = 0.941, $F_{(4, 1804)} = 8.399$, $p < .05$) contributed to the difference mean for LMTs' acceptance readiness of EduwebTV in term of personal innovativeness and personal innovativeness in information technology.

The ANOVA analysis results showed significant differences mean score in the levels of alpha using Bonferroni correction ($0.05 / 2 = 0.025$) for the two dependent variables (personal Innovativeness and personal innovativeness in information technology) based on ICT knowledge level, experience in using computer and education level. LMTs with high ICT knowledge level had the highest mean scores (PI = 3.63, PIIT = 3.79) in the personal Innovativeness and personal innovativeness in information technology compared to with low ICT knowledge level (PI = 3.44, PIIT = 3.16). LMTs with high education level had the highest mean scores (PI = 3.81, PIIT = 3.68) in the personal Innovativeness and personal innovativeness information technology compared to those with low education (PI = 3.42, PIIT = 3.48). LMTs with more than 10 years' experience in using computer had the highest mean scores (PI = 3.58, PIIT = 3.35) in the personal Innovativeness and personal innovativeness information technology compared to those with less than 5 years' experience in using computer (PI = 3.35, PIIT = 3.08).

Further analysis found that there was a significant interaction effect between education and ICT knowledge level (Wilks' value (λ) = 0.959, $F_{(4, 1087)} = 5.755$, $p < .05$) on LMTs personal innovativeness ($F_{(2, 540)} = 5.312$, $p < 0.025$) and personal innovativeness information technology ($F_{(2, 540)} = 7.010$, $p < 0.025$). LMT who had high ICT knowledge level and high education level had the highest mean scores in the personal Innovativeness and personal innovativeness information technology compared to those who have high ICT knowledge level but low education level.

DISCUSSION & RECOMMENDATION

LMTs graduates had high level of personal innovativeness and personal innovativeness information technology compare to non-graduates LMTs. This is due to the exposure in using the latest technologies while studying in higher institutions among the graduate LMTs. Based on this study, the demographics of the LMT graduates seem to have their own higher initiatives (62.5%) to attend ICT courses without administrative direction compared to non-graduate LMTs. This finding is consistent with the Lin (2006), LaBbay and Kinnear (1981), and Hasrul Nizam (2006) findings, that the higher education level makes for higher willingness of acceptance to innovation. The findings also showed that LMTs with higher ICT knowledge have high level of personal innovativeness, compared to LMTs with low ICT knowledge level. This is because they have the basics of ICT and the integration of ICT in teaching and learning, thus making it easier to understand and

apply new technology in classrooms. Fadilah and Balakrishnan (2010), Mahmet Akif and Omur (2008) also obtained similar findings that teachers with higher computer literacy level have more willingness to use computers in their teaching compared to teachers with low computer literacy.

An interaction was seen between education level and the ICT knowledge level in the willingness to accept EduwebTV among LMTs. It means that LMT who had high educational level, and often engage in technology use are more committed to the technology programs in schools. The findings also showed that LMTs with more experience in using computers are more willing to adopt new technology. Based on the experience, they can use existing skills to adjust with the use of EduwebTV. These findings are consistent with the findings of Jiang et al. (2000), Thompson et al. (1994) and Venkatesh (2000) that previous experience in using computers will influence the degree of technology acceptance.

Therefore, demographic characteristics are likely to increase or decrease the level of personal innovativeness and personal innovativeness in information technology. Users with high education and knowledgeable in ICT are more receptive to accepting the new technology. Its shows that innovativeness is not a constant genetic characteristic but it can be influenced by the social system and can be continuously improved. This finding is consistent with studies of Chang et al. (2005), Vrechopoulos et al. (2001) and Rosen (2008) who found that the level of consumer innovativeness is influenced by user demographic characteristics.

CONCLUSION AND RECOMMENDATION

Based on the studies, it can be concluded that LMT should be aware of a product to promote in advance. In another words, they should be ready and confident to be in the category of “early adopters”. LMT need to be early users of EduwebTV compared to other teachers in the school and as individuals referred to concerning the EduwebTV innovation. LMT should be able to serve as a catalyst in implementing innovative programs especially related to the use of media and technology in teaching and learning. As stated, the higher education level with higher ICT level and computer experience is associated with higher innovativeness, which is affecting the role of LMTs as technology development agents in school. Hence, to appoint Library and Media Teachers, the candidates must be selected based upon their level of education, level of ICT knowledge and ICT skills besides having attended specific training in school library management. One of the limitations of this research is that it only used questionnaire and not interview because of time constraints. The survey was also conducted only in peninsular Malaysia, excluding Sabah and Sarawak. Hence, further research should consider investigating the usage of EduwebTV in the classroom using qualitative research and expanding the sample to include LMTs in Sabah and Sarawak.

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