

The Role of Demographic Factors on Academic Social Networking Sites Use Behaviour from Academic Researchers Perspective

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Abstract

Academic Social Networking Sites (ASNS) is one of the important tools to facilitate the development of international collaborations among researchers. Academic researchers at different disciplines and different levels of their research activities are becoming more interested in ASNSs. Many factors impede using collaboration technology among academic researchers. Demography is one of those factors. The purpose of this paper is therefore to find out the differences among academic researchers' ASNS use behaviour in terms of demographic factors. Due to lack of ASNSs studies especially which studies regarding the different type of ASNS users, the result of this research gains its importance. Survey-based questionnaire has been used for this study. Hypotheses were tested using Statistical Package for Social Science (SPSS) on data collected from 628 ASNS users. The results show that gender, age and experience are not significant predictors to academic researchers' ASNS use behaviour.

Keywords: Academic Social Network Sites, Researcher, Demographic Factors, Malaysia

1. Introduction

Web 2.0 led to the tremendous expansion of knowledge through real-time collaboration and knowledge sharing between people from all works of life, at any place, and at any time (Gunawardena et al., 2009). Academic Social Networking Site (ASNS), is a product of Web 2.0 technologies. Academic researchers use these tools for their research, such as sharing their work; collaborating and developing and maintaining their social networks; or getting research trends in their field (Rebiun, 2010). As suggested by He et al. (2009), technologies that facilitate the collaboration and sharing of knowledge and expertise among academic researchers can play a major role in research enhancement and productivity. The universities' academic rank has shown to be positively related to the university research productivity (Da Silva and Davis, 2011; Liu and Cheng, 2005). Consequently, ASNSs can play a major role in research enhancement and productivity by providing the platform that allows other researchers to see the results and exchange views with the authors of the research and to collaborate with other researchers for a project. Understanding its importance, universities seem like to pay attention on collaboration technology such as ASNSs in relation to increase research outreach, their effectiveness in fulfilling their vision and goals and their impact on society. Conrad et al. (2012) stated that the identification of successful factors toward usage of technologies at the individual level is critical to any

organization performance. Research on specific factors have been only received a little academic attention (Brown et al., 2010) particularly for ASNSs adoption. Therefore, it is vital to find factors affecting ASNS use behaviour among researchers including demographic factors.

2. Literature review

2.1 Academic Social Networking Sites

Analysis of the global movement regarding SNS application over the last decade indicates a need for an online social network system which can assist students, academics and scholars to connect and grow their academic network, share and show their research accomplishments. SNS that addresses these issues and targets this audience is known as ASNSs. Considering their potential of various uses, academic researchers can use ASNSs to improve scholarship (Vala Ali, 2014).

ASNS is a web-based service that allows individual researchers to maintain identity by creating a public or semi-public profile within a system, facilitate communication by sharing a list of other researchers in connection, to enable information sharing with other researchers in the system, and simplify collaboration with other researchers of the system (Bullinger et al., 2011). Some examples of ASNSs are Academia.edu, ResearchGate, Mendeley and Zotero.

ASNS allows group of two or more researchers to work in a professional online environment together. One of the reasons for using Social Networking Site (SNS) by researchers in academic institution is collaboration among researchers (Banmeke and Oose, 2012). While research institutes and universities have the facility of connecting with each other, it is still very problematic to reach out to their target audience particularly those which are in the geographically dispersed region. It is, however, appropriate for researchers of the developing nations to explore and become acquainted with this kind of collaboration technology as it can allow access to the current research trends or latest issues in their field of work. This can result in an enhanced quality of research output. Moreover, it can enable researchers to maintain relations among the researchers as it will provide their expertise and help mentor other researchers around the globe (Banmeke and Oose, 2012).

All of ASNSs come with all of the non-academic SNSs features, and more, however they are tailored to a more specific need of the users from academia. ASNSs offer collaboration tools such as emails, discussion boards, and a public network of contacts of followers. According to Espinoza Vasquez and Bastidas (2015), common features in ASNSs such as ResearchGate, Academia.edu, Mendeley and Zotero have been identified as: file repository, discussion boards, email, instant messaging, altmetrics citation count, group collaboration, public/semi-public profile, reference management, network visibility, collaborative document processing, upload publications and linking of information to social media sites.

Demographic factors such as age and gender which could influence usage habits. Teo and Lim (2000) has explored the role of individual differences influencing the acceptance and usage of technology. Zhou et al. (2011) provide an overview of exemplary demographic factors exerting influence on technology usage. Nandez and Borrego (2013) explored the usage patterns of Academia.edu and the results show that users were young. Similarly, Thelwall and Kousha (2014) focused their study on Academia.edu and examined whether it is principally used as a general SNS, such as Facebook, for instance, in which case younger female users should be more active and over-denoted. A recent study by Jordan (2014), aimed at exploring whether the structure of academic communities is alike among different ASNSs. The study revealed several position within the network varies according to "academic seniority". Salahshour et al. (2016) revealed that academic position has an effect on ASNSs use. Hence, their findings suggest more senior academics will have more connections and occupy a more valuable position within the junior ones. A study conducted by Procter et al. (2010) revealed that one of the factors that has effect on use of SNSs among researchers is experience. Bullinger et al. (2011) explored that the degree of experience with social software and web-based tool has effect on academic researchers use behaviour. Based on a review of the previous literature regarding the effect of demographic factors on ASNS use behaviour no study has been carried out on the connection

between demographic factors and ASNS use behaviour among academic researchers in developing country contexts like Malaysia.

2.2 Demographic Factors and ASNS Use Behaviour

One of the factors that affect IT usage behaviour are changes in demography (Venkatesh et al., 2003). However, demographic factors such as gender, age, academic position and academic researchers' experience with SNS in research activities have been considered in previous studies, but the impact of demographic factors on ASNS use behaviour have been examined by a few studies (Salahshour et al., 2016; Jamali et al., 2014; Jeng et al., 2015).

In terms of relationship between gender and ASNS use behaviour, previous study conducted by Jamali et al. (2014) discovered that gender did not have a significant impact on collaboration technology use behaviour. However, a study by Jeng et al. (2015) reported that for joining a group in ASNS there are differences regarding to users' gender. Their results show that Female had significantly stronger motivations for joining a group in Mendeley. There have been studies in the context of social networking based on gender differences. Procter et al. (2010) showed that in using Web 2.0 for scholarly communication purposes there are differences between male and female. In addition, Raacke and Bonds-Raacke (2008) stated that the probability of men was higher using dating based social site and in finding new events and news, as compared to women. Similarly, Barker (2009) stated that the interest of men is more instrumental based regarding SNS in order to learn, report, socialize, and for social identity fulfillment than women. Therefore, it is hypothesized that:

H1: ASNS use behaviour differs between male and female.

A study by Jamali et al. (2014), Salahshour et al. (2016) and Rahman et al. (2011) revealed that age does not affect collaboration technology use behaviour. However Brown et al. (2010) noted that one of the potential factor for collaboration technology could be difference of age. This is supported by a study by Nandez and Borrego (2013) in the usage patterns of Academia.edu. They explored that between age groups there were significant differences and younger academic researchers more interested to use of this kind of SNS. Al-Aufi and Fulton (2014) found that younger researchers are more engagement with social networking tools. Furthermore, Rowlands et al. (2011) discovered that there researchers under the age of 35 are generally more likely to use at least one social media application than the over 35. This leads to the second hypothesis:

H2: ASNS use behaviour varies according to age group.

Academic position is another variable that has been studied beside gender and age. Chan et al. (2012) found that academic position has no significant impact on e-collaboration. In contrary, a study by Jordan (2014)

revealed that there is a relationships between network structure and academic position in ASNS. The results showed that more senior academics have more connections and occupy a more valuable position within the junior ones. A study by Almousa (2011) and Salahshour et al. (2016) showed that users' behaviour in ASNS is influenced by position. Based on previous studies, it is hypothesized that:

H3: ASNS use behaviour differs among researchers in terms of position.

Venkatesh et al. (2003) point out that experience in usage influence technology acceptance and usage. Experience in using a technology can influence and use of a technology (Brown et al., 2010). Users' online experiences affect and facilitate the use of online services (Novak et al., 2000). This is supported by a study by Huang and Lin

(2011) stressed the need of Facebook users experience to engage them in continued behaviors. According to Lee and Ma (2012), earlier experience with social media is also a main determinant of the intention of sharing news. In contrary, the studies that conducted by Nysveen and Pedersen (2014) and Salahshour et al. (2016) revealed that experience does not effect on technology use behaviour. This leads to the fourth hypothesis.

H4: ASNS use behaviour differs among researchers in terms of academic researchers' experience with SNSs in their research activities.

Based on the proposed hypothesis, the connection between demographic factors and ASNS use behaviour is showed in Fig. 1:

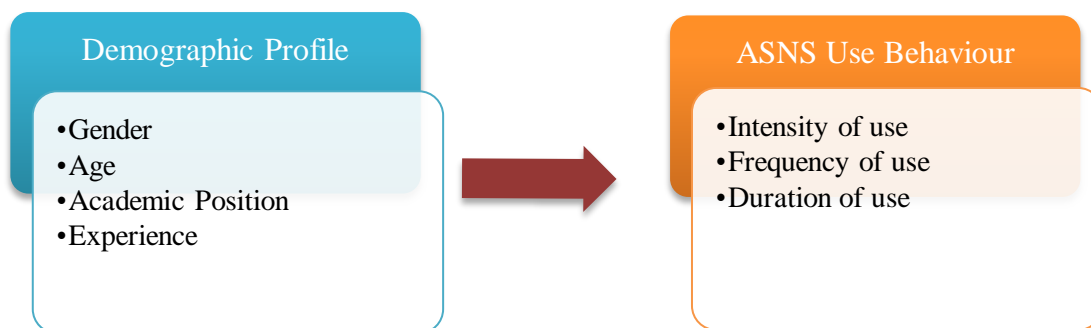


Fig. 1. Proposed theoretical framework

3. Methodology

A. Sample and Methods

In accessing the mentioned hypotheses, data was collected from questionnaire surveyed to ASNS users in five Research Universities (RUs) in Malaysia namely UM, UPM, USM, UKM, and UTM. The sample of this study consists of users with different cultures, religions, ethnics, and from different parts in Malaysia, therefore according to Leong et al. (2011), this study demonstrated the different multi-ethnic and multi- religion of the Malaysia's population. The study adopted purposive sampling. The purposive sampling was used to collect the data from academic researchers who have experience with ASNS. To determine a sample size to minimize random sampling error, this paper followed Zikmund (2003). With an estimation of over 65000 academic researchers in 5 RUs in Malaysia, the sample size for this research project is estimated at 321, with 95% confidence level and 5% error, when the size of population is between 50000 and 60000. The subjects for this study included users of ASNS, including, Professors, Associate Professors, Senior-Lecturers, Lecturers, Research Fellows, Research Assistants and Postgraduate Students (PhD and Master). Out of 750 distributed paper-based questionnaires in five

RUs, 686 were returned (91%). Out of these questionnaires that were collected, in total, 58 questionnaires were excluded from the analysis in data screening procedure. The overall duration of data collection took up to 2 months from 25/03/2015 to 25/05/2015. Statistical Package for Social Science for Windows (SPSS for Windows Version 22.0) has been used to analyze the data. Descriptive analysis used frequency and percentage to examine the profile of the respondents. In addition, to investigate the effect of age, gender, academic position and academic discipline on the use of ASNSs, T-test and one way ANOVA were used. The significance level of 5% was used in this study.

B. Instrumentation

Four independent factors namely gender, age, academic position and experience of using ASNS in research activities in this study. The dependent factor which is ASNS use behaviour which was derived from Brown et al. (2010). ASNS use behaviour was conceptualized as the rate of frequency, duration, and intensity of a person and system interaction (Venkatesh et al., 2008). Response to the items were made on a 5-point Likert scale. To test the validity the questionnaires were pre-tested with five academic researchers. Based on the feedbacks received, a few

modifications were made to the questionnaires. The items for ASNS use behaviour “I rate my intensity of use of ASNSs for my research activities to be”, “How frequently do you use ASNSs in your research activities?”, and “On an average week, how much time (in hours) do you use ASNSs in your research activities?”. The result of reliability test from this factor demonstrate alpha Cronbach of 0.768. Sekaran (2006) recommended the value greater

than 0.70. Therefore, the result indicates that the items used to represent the ASNS use behaviour constructs is reliable.

4. Findings and Discussion

Total of 750 questionnaires were distributed to the five research universities in Malaysia. The total validated responses prepared for analysis were 628. Table 1 presents an overview of the respondents’ profile as derived from their demographic information in the questionnaire.

Table 1
Respondents’ Demographic Characteristics (n=628)

Demographic	Characteristics	n	%
Gender	Male	341	54.3%
	Female	287	45.7%
Age	Less than 25	71	11.3%
	25-30	231	36.8%
	31-35	144	22.9%
	36-40	58	9.2%
	41-45	69	11.0%
	More than 45	55	8.8%
Academic position	Professor	12	1.9%
	Associate Professor	22	3.5%
	Senior lecturer	88	14.0%
	lecturer	40	6.4%
	Research Fellow	22	3.5%
	Research Assistant	43	6.8%
Experience of using SNS in research activities	Postgraduate Student	401	63.9%
	Less than 6 months	122	19.4%
	6 months to a year	123	19.6%
	1-3 years	118	18.8%
	3-5 years	133	21.2%
	More than 5 years	132	21.0%

Out of the 628 respondents, 54.3% of the respondents were male, 45.7% of the respondents were female, which also reflected a good ratio among two genders which were distributed well in five RUs. The respondents mostly come from age between 25-30 (36.8%).

This study examines the role of gender in ASNS use behaviour. Table 2 shows the Result of t-test. Since the p-value is higher than 0.05, there is no significant effect of researchers’ gender on use of ASNSs. Male and female researchers show the same affinity towards technology usage. This is contrary to prior studies that found a significant effect between gender and use of ASNSs (Jeng et al., 2015; Thelwall and Kousha, 2014; Procter et al., 2010; Raacke and Bonds-Raacke, 2008; Barker, 2009). This result aligned with Jamali et al. (2014) and Salahshour et al. (2016) that gender is not a significant factor in terms of online communities for research purposes. A possible justification would be in the educational context and especially in research universities, researchers from both genders have face same features such as technological experience and learning objectives.

To analyze the difference between age, Academic position, Academic disciplines and mean values on ASNS Use Behaviour one-way ANOVA was used. Table 3 illustrates the results of ANOVA analyses.

The results from Table 3 show that there is no significant difference among academic researchers regarding to different age group in their ASNS use

behaviour where F-value is 1.397 and p-value is 0.223. This result of this study is in line with previous studies (Jamali et al., 2014; Rahman et al., 2011; Salahshour et al., 2016). As discussed by Marchewka et al. (2007), this result maybe because of the research respondents in this research are young academic researchers (71% under age 35 years old) who they are familiar enough with the use of technology. In terms of academic position, it can be seen that the difference is highly significant ($p=0.000$). This result is in line with previous studies by Jordan (2014), Almousa (2011) and Salahshour et al. (2016). Tukey HSD test is applied in order to find out the groups which create the difference (see Table 4). The results of Tukey HSD test show that, there are significant differences between academic researchers, those who are Research Assistants and Senior lecturer ($p=0.001$). In addition, there are significant differences between academic researchers, who are Postgraduate Student and those who are Senior lecturer ($p=0.016$). In terms of academic researchers’ experience with SNSs there was no significant different among academic researchers where F-value is 2.084 and p-value 0.081. This is contrary to prior studies that found significant effects between academic researchers’ experience with SNSs and use behaviour (Brown et al., 2010; Novak et al., 2000; Lee and Ma, 2012; Bullinger et al., 2011). As discussed by Nysveen and Pedersen (2014) this result can explained through the novelty of new technology.

Table 2
Result of T-test

Variable	Item	Mean	Std.Deviation	T-value	P-value
Gender	Male	2.74	0.773	0.909	0.067
	Female	2.68	0.852		

Table 3
Results of One-Way ANOVA and Mean Values on ASNS Use Behaviour

Variables	Item	Mean	Std.Deviation	F- value	P-value
Age	Less than 25	2.73	0.737	1.397	0.223
	25-30	2.79	0.832		
	31-35	2.73	0.822		
	36-40	2.53	0.672		
	41-45	2.70	0.832		
	More than 45	2.56	0.861		
Academic position	Professor	2.33	0.569	4.578	0.000
	Associate Professor	2.35	0.800		
	Senior lecturer	2.41	0.677		
	lecturer	2.68	0.823		
	Research Fellow	2.88	0.655		
	Research Assistant	2.90	0.805		
	Postgraduate Student	2.79	0.828		
Experience of using SNS in research activities	Less than 2 year	2.57	0.807	2.084	0.081
	2-4 years	2.78	0.775		
	5-7 years	2.66	0.747		
	8-10 years	2.84	0.856		
	More than 10 years	2.71	0.836		

Table 4
Tukey HSD Post-hoc Test

Position(I)	Position(J)	Mean difference(I-J)	Std.Error	Significance
Research Assistant	Senior lecturer	0.494*	0.094	0.001
Postgraduate Student	Senior lecturer	0.384*	0.148	0.016

* The mean difference is significant at the 0.05 level.

In summary, in terms of gender, age and academic disciplines in their ASNS use behaviour there is no significance difference among academic researchers. In this study, academic researchers only in terms of academic position, they are different. Consequently the results of this paper only support H3 but the other hypotheses fail to accept.

5. Conclusions

Prior studies suggested that there have been mix results on the relationship between ASNS use behaviour and demographic factors. Furthermore, there is absolutely no study has been completed particularly on the relationship between ASNS use behaviour and demographic factors in developing country such as Malaysia. The first assumption of this study was, that would have a substantial relationship between demographic factors and ASNS use behaviour among academic researchers. However, the results otherwise showed. The results of this study showed that demographic factors (gender, age and experience) have no significant impact on ASNS use behaviour. This shows ASNS use behaviour among academic researchers does not influenced by demographic factors. Findings from previous studies were predicated on sample from developed country, which is culturally not the same as developing countries such as Malaysia. There have been a few limitations in this

study due to financial constraints and time. There are about 21 public universities in Malaysia. The sample confined to five RUs in Malaysia. Future research can be conducted on non-research universities in the Malaysia. Furthermore, it is recommended that a research can be conducted on private universities in Malaysia. A comparative study to understand the difference of ASNS use behaviour between private universities and public universities and also between RUs and non-research universities should be undertaken. Other factors such as personality traits and culture can be studied in future studies.

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