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Mobile phone appropriation of students and staff at an institution of higher learning

Mobile phone appropriation

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Abstract

Purpose – The purpose of this paper is to investigate the adoption and appropriation of mobile phone (MP) technologies by building on the technology appropriation theories. The paper also looks into the choice of MP use through various attractors, the purposes of MP use and the extent of use of various MP applications and features by the targeted users. This paper also explores the influences of age, gender, and occupation type on MP appropriation.

Design/methodology/approach – The paper used a survey method in order to achieve the intended objectives. The staff (academic and non-academic) and students of three academic faculties of a university in Malaysia were used as the study's population. A sample of 201 was selected and used for the purpose of this paper.

Findings – The result of the paper allows us to describe important elements of MP appropriation and explore the influence of individual characteristics such as gender, age and occupation on different patterns of MP use through our conceptualization of appropriation. It is found that all of the individual characteristics investigated were significantly related with the MP appropriation and use.

Research limitations/implications – Limitations in this paper are related to the ability of the result to be generalized to other user groups as well as other user groups at other institution of higher learning. More research needs to be conducted to ensure the robustness of the findings by comparing with other users.

Practical implications – The results of the paper are expected to assist in understanding the use of MPs across different ages and occupation and serve as a mechanism in guiding the development of MP applications and design by service providers and manufacturers, respectively; as well as in aiding policy formulation on MP use at the work place.

Originality/value – The paper has taken a different approach from the commonly applied IT adoption and acceptance model in understanding MP use. The rationale for the use of appropriation theory from the study can contribute to similar areas with similar types of technology applications.

Keywords Mobile communication systems, Communication technologies, Universities, Malaysia, Institution of higher learning, Mobile phone technology use

Paper type Research paper

Introduction

Mobile phone (MP) which is essentially a communication device has undergone numerous transformations making its functionalities transcending the traditional voice communication between two individuals (Kushchu, 2007). Then, the unprecedented level of MP adoption coupled with the rate at which new technological services can be deployed through the gadget; are factors motivating the day-to-day research efforts



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on the technology. While other wireless technologies like mobile laptops and personal digital assistance (PDA) have been shown to have had significant impacts on human conducts, MP technology with its unprecedented penetration has done more. But despite the widespread of MP adoption across regions of the world, its usage and appropriation are poorly understood (Carroll *et al.*, 2002a, b, c; Bar *et al.*, 2007). In other words, there is a need to understand the use of MP beyond the concept of use and adoption.

MP usage has been studied from various different approaches. These approaches range from the marketing perspectives of MP use (Karjaluoto *et al.*, 2003; Lin, 2005), to social, cultural, and public contexts use and applications (Aoki and Downes, 2003; McGuigan, 2005) and adoptions (Kim, 2008). As the MP technology is becoming the basis of daily communication device to many societies worldwide, its complexity and sophistication have been quite intriguing to many users and researchers alike. Understanding its use is supposedly more complicated than just what the adoption theory alone can provide. Users of MP are more adaptive, definitive, and subjective to how they use the communication device (or is it just a communication device?). While the basic functions and features of the technology can be common across all communication devices in MPs, the technology itself is found varying to suit one user to another. The subjectivity in the use of the MP technology may have triggered the need to understand the use of MP as appropriated by the users. In this regard, appropriation refers to the use of the technology as designed by the designers to satisfy different purposes beyond the conception of the designer (Carroll *et al.*, 2002a, b, c; Bar *et al.*, 2007). Appropriation signifies how the technology is used, adapted, and fitted in the users' daily life.

One appropriation process of mobile technologies has been described by Carroll *et al.* (2002a, b, c) through technology appropriation model developed from their qualitative studies on teenagers. This study accounts for MP usage by establishing the link between how users take ownership of the technology and how the technology is adapted to satisfy different purposes intended by the users. Some other studies too have shown that MPs are used to gratify or satisfy different purposes (Okabe and Ito, 2005; Walsh *et al.*, 2007). Wirth *et al.* (2008) also proposed the notion of appropriation through object-oriented and functional usage, which are pragmatic and symbolic in nature. Their MP appropriation model also elaborated on influential factors that are both functional and symbolic, and tied to various attractors from social and psychological perspectives such as norms and restrictions, and meta-communication.

Research on the usage of MP has been commonly approached through adoption and technology acceptance model using intention to use and use. In most cases the technology need to be focused to specific MP technologies such as PDA or wireless application protocol phone (Kim, 2008; Venkatesh *et al.*, 2003). Given the variation in the technology within the MP which users can appropriate its use to their desired needs and purposes, more attention needs to be given in understanding usage through this point of view. Therefore, using the appropriation approach, we can understand the MP usage more meaningfully through how the technology is used, the purposes it serves, and the context of its use through choice of functions and features (Bar *et al.*, 2007; Lindqvist and Svensson, 2007; Okabe, 2004; Wirth *et al.*, 2008). A review of literature helps to shed some light on the limitation of the existing studies which were based on solely quantitative adoption and acceptance model (Kim, 2008; Venkatesh *et al.*, 2003) and, appropriation perspectives which were mostly qualitative in nature (Carroll *et al.*, 2002a, b, c; Wirth *et al.*, 2008).

While only little empirical research can be found investigating actual use of MP technologies as compared to adoption studies, it is also difficult finding studies combining these different concepts of MP usages as well as investigating relationship between the concepts and personal attributes of users.

In view of the above discussions, the following questions are considered to reflect a set of enquiries to be addressed by the study:

- Q1. What is the appropriation patterns of MP use among the respondents in terms of:
 - Q1a. The attractors such as brand familiarity, fashion and style or physical appearance and cost influencing the choice of MP ownership?
 - Q1b. The common purposes of MP use?
 - Q1c. The frequently used functions and features?
- Q2. Are there relationships between age, gender, and occupation status and the appropriation pattern variables?

Methodology

A. Participants and procedures

Case study approach using survey as the data collection means was adopted by the study in order to achieve the intended objectives. The staff (academic and non-academic) and students of three academic faculties of the International Islamic University Malaysia (IIUM) were used as the study's population with a 201 usable sample. The faculties are engineering, human science, and economic and management sciences. Stratified random sampling was used to select respondents among the staffs, while cluster sampling was used to select respondents among the students by randomly selecting three classes which hold on same day and time in each of the aforementioned faculties.

B. Instruments

Measurements of variables used in this research were developed based on technology adoption model (Caroll *et al.*, 2002b), survey of MP usage patterns (James and Drennan, 2005), study on actual usage patterns of mobile data services (Bina *et al.*, 2006) and survey of young people preference for mobile multimedia (Lindqvist and Svensson, 2007).

The questionnaire was divided into two parts. The first part (Part1) comprised of questions aimed at collecting demographic information from respondents. The second part (Part 2) consisted of 50 items aimed at investigating appropriation process. The 50 items were measuring attractors influencing the choice of MP (11 items), MP purpose of use (11 items), and usage of MP functions and features (28 items). Attractors were measured using a five-point Likert scale which comprised of (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree. Then both purposes of MP use and usage of mobile functions and features were measured using the frequency scale of (1) never, (2) rarely, (3) sometimes, (4) often, and (5) always.

C. Analysis

To ensure the validity and reliability of items measuring attractors influencing MP choice for subsequent analyses, data reduction process using factor analysis

with principle component and varimax rotation techniques were used, followed by the performance of reliability test with Cronbach is alpha for reliability score in the scale.

According to Hair *et al.* (2006), a factor loading of 0.40 and above is significant for sample size not less than 200; therefore, with a sample size of 201 used in this study, items with factor loading less than 0.40 were omitted from further analysis. Also, following Hair *et al.* (1998), factors with alpha value less than 0.70 were considered low in reliability and therefore omitted from further analysis. The data were then analyzed in SPSS for descriptive analyses, *t*-test, and analysis of variance (ANOVA).

Results and discussion

D. Participants profile

The distributions of the respondent's profile are such that:

- student; 50 (24.9 percent), non-academic staff; 34 (16.9 percent), and academic staff; 117 (58.2 percent);
- 62.2 percent of the respondents are male and 37.8 percent are female;
- 25.3 percent of the respondents fall into age of between 18 and 24 years, another 25.3 percent fall into age category of between 25 and 35 years, then 33.3 percent fall into age category of between 36 and 50 years, while the rest; 16.5 percent are those with age above 50 years; and
- 24.9 percent of the respondents are students, then 16.9 percent are those categorized as support staff/non-academic staffs and the remaining 58.2 percent constitute the lecturers/academic staffs.

In terms of usage rate of MP technologies generally; 6.5 percent describe themselves as very low users, 19.4 percent described themselves as low users, 58.7 percent described themselves as moderate users, and then 10.9 percent described themselves as heavy users while the rest 4.5 percent indicated that they are heavy users of MP technologies.

E. The appropriation process of MP technologies

As mentioned earlier, three variables (attractors, purpose of use, and usage of functions and features) were identified when exploring the appropriation process of MP users. Attractors were measured using five-point Likert scale and the rest were measured using frequency scale. To answer *Q1a* of the study, an exploratory factor analysis with varimax rotation was conducted on the items measuring "attractors". With 0.40 as threshold, three factors emerged in the resulted rotated component matrix. However, a reliability test conducted on the three factors resulted in the discarding of two factors with α -value less than 0.70. The only reliable factor ($\alpha = 0.801$) emerged was measuring attractors influencing the choice of MP is termed "mobile phone physical attributes and perceived level of accentuating user's status". The items measuring this factor and their corresponding factor loading are shown in Table I.

Findings from the descriptive analyses, as depicted in the mean and standard deviation column of Table I, indicate a somewhat slightly below average in the consideration for MP physical appearance and social status accentuation among users of mobile telephone in the university. A look at the items measuring the variable call for further attention on three of the items: the brand name interests me to buy the phone (mean = 3.6418), I like a phone with big screen (mean = 3.4925) and, the shape

Variables and items	Mean	SD	Factor loading
<i>MP physical attributes and perceived level of accentuating user's status</i> ($\alpha = 0.801$)			
The brand name interests me to buy the phone	3.642	1.155	0.524
I like expensive phone	2.572	1.125	0.631
I love changing my phone to the latest model	2.124	1.109	0.635
The colour of the phone interests me to buy the phone	2.6020	1.184	0.792
The screen colour interests me to buy the phone	2.891	1.212	0.753
I like a phone with big screen	3.493	1.141	0.614
The shape design interests me to buy the phone	3.508	1.120	0.738
Average	2.976	0.776	
<i>Common purposes of MP use</i>			
To contact family	4.612	0.6154	
For scheduling purposes	4.119	1.061	
For emergency contact or personal safety	4.030	1.044	
To socialize with friends	3.990	0.985	
To discuss with colleagues (job-related)	3.617	1.135	
For education purposes	3.055	1.270	
For business-related purposes	3.030	1.280	
<i>Frequently used functions and features</i>			
SMS	4.478	0.889	
Alarm clock	4.080	1.218	
Voice call	3.762	1.443	
Calendar	3.514	1.3642	
Address book	3.408	1.422	
Camera	3.179	1.434	
Music	2.796	1.557	

Table I.
Variables of MP
appropriation process

design interest me to buy the phone (3.5075), indicate that respondents were moderately high in their consideration for trust in brand and fashion and style or physical outlook of the technology. This is in contrast to Carroll *et al.*'s (2002a, b, c) finding, where cost (expensive phone) was found among the factor leading to rejection of MP. Further analyses in this study indicate that majority of the students prefer expensive phone and love to explore the latest model of their preferred MP brand; an indication that cohort group may influence what constitute these attractors.

Furthermore, to answer *Q1b*, a descriptive findings on the purpose of MP use as depicted in the mean and standard deviation columns of Table I indicate that there are seven common purposes of use among users of the university community. Respondents vary between averagely frequent to a very high frequent use of MP for family contact, scheduling purposes, emergency needs and safety, socializing with friends, collaborate with colleagues, for education purpose, and for business-related needs.

Lastly, in answering *Q1c*, descriptive analyses of functions and features usage depth was conducted and shown in mean and standard deviation column of Table I. The findings indicate that respondents are characterized by average to high frequency in their use of mobile feature and services like SMS, alarm clock, voice call, calendar, address book, camera, and music.

Further analyses exploring the relationship between the identified variable of MP appropriation and three personal characteristics (age, gender, and occupation status)

in the next section are expected to shed more light on the appropriation patterns among different cohort used in the study.

F. Age and relationship with appropriation variables

The relationship between three personal characteristics (age, gender, and occupation) and the identified appropriation pattern was explored using the ANOVA. The analysis gives a significant difference among different age groups in terms of their choice for physical appearance and its role as a means of social accentuation. Respondents between the ages of 18 and 24 (mean = 3.29) and those between the ages of 25 and 35 (mean = 3.14) place higher preference for this attribute in their choice of MP than those with ages above 35. This may be explained by the likelihood of these age groups to engage more in social activities as well as being more conscious about fashion and style. Table II shows the summary of the findings from the ANOVA conducted.

In line with the study's hypothesis, age was found impacting significantly on all the common purposes of use identified in the study. As expected, all the respondents show a very high use of MP for family contact, but those with ages between 25 and 35 (mean = 4.80) and those between 35 and 50 (mean = 4.67) show significantly higher use for family contact, followed by those with age 18-24 (mean = 4.51) and those above 50 years (mean = 4.38). While all respondents greatly value the technology for this purpose, the differences in their mean values may be explained by the fact that those whose ages are between 25 and 50 have multiple roles to play in the coordination of family affairs. Among these roles is the need to coordinate children's movements, contact spouses, and reach out to extended family member and in particular, to give necessary assistance to the aged ones.

In the case of MP use for scheduling purposes, the significant difference can be observed between the first three age groups and those with age above 50. The inverse trend between age and mean value for this purpose of use may be explained by the degree of responsibility to superior ones among the respondents and the need to use the gadget to meet up deadlines or targets. Cross tabulation of age and occupation status shows the two age groups with the highest mean values; 18-24 (mean = 4.55) and 25-35 (mean = 4.31) are students and non-academic staff, respectively. In an academic environment, these two groups may feel more responsible to the targets of the third group (lecturer or academic staff) than vice-versa.

In the same vein, the use of MP for emergency needs and safety, socializing with friends, collaborate with colleagues, and for education purpose follow similar trend with a significant difference among age groups. It is observed that as age group increases, the usage of MP for these purposes decreases. This may imply that respondents with younger age engage more in social activities and rely more on one another for task or study accomplishment than the elder ones.

The significant difference in the use of MP for business related purposes can be observed between those with age 25-35 and 36-50 on one side and those with ages 18-24 and above 50 on the other side. While respondents between 25 and 50 year show an averagely high use for business, those with age above 50 fall slightly below average and the least are those with age between 18 and 24 (mean = 2.61). This result is expected in an academic environment where the active working groups are between the ages with the highest mean values, and the students are expected to give priority to their study than to any business engagement.

Variables	Age	<i>n</i>	Mean	SD	<i>F</i>	Sig.
Symbolic evaluations and brand familiarity	18-24	49	3.289	0.765	7.358	0.000
	25-35	49	3.137	0.732		
	36-50	64	2.717	0.711		
	Above 50	32	2.737	0.788		
To contact family	18-24	49	4.510	0.79379	3.915	0.010
	25-35	49	4.796	0.407		
	36-50	64	4.672	0.536		
	Above 50	32	4.375	0.609		
For scheduling purposes	18-24	49	4.551	0.614	8.481	0.000
	25-35	49	4.306	0.847		
	36-50	64	4.078	1.131		
	Above 50	32	3.469	1.244		
For emergency contact or personal safety	18-24	49	4.306	0.822	4.741	0.003
	25-35	49	4.265	.974		
	36-50	64	3.969	1.098		
	Above 50	32	3.531	1.135		
To socialize with friends	18-24	49	4.429	0.913	6.244	0.000
	25-35	49	4.061	0.944		
	36-50	64	3.844	0.946		
	Above 50	32	3.562	1.014		
To discuss with colleagues (job-related)	18-24	49	3.959	0.999	3.975	0.009
	25-35	49	3.713	1.080		
	36-50	64	3.594	1.205		
	Above 50	32	3.094	1.174		
For education purposes	18-24	49	3.694	1.103	7.959	0.000
	25-35	49	3.204	1.172		
	36-50	64	2.625	1.363		
	Above 50	32	2.781	1.128		
For business-related purposes	18-24	49	2.612	1.320	2.730	0.045
	25-35	49	3.245	1.234		
	36-50	64	3.219	1.278		
	Above 50	32	2.969	1.231		
SMS	18-24	49	4.837	0.472	9.902	0.000
	25-35	49	4.694	0.713		
	36-50	64	4.297	1.019		
	Above 50	32	3.906	1.058		
Alarm clock	18-24	49	4.633	0.603	9.209	0.000
	25-35	49	4.367	0.951		
	36-50	64	3.844	1.428		
	Above 50	32	3.438	1.343		
Calendar	18-24	49	4.122	0.992	6.278	0.000
	25-35	49	3.694	1.342		
	36-50	64	3.219	1.442		
	Above 50	32	3.031	1.448		
Camera	18-24	49	3.898	1.141	10.612	0.000
	25-35	49	3.286	1.528		
	36-50	64	3.078	1.395		
	Above 50	32	2.188	1.256		
Music	18-24	49	4.204	1.172	30.034	0.000
	25-35	49	2.939	1.547		
	36-50	64	2.219	1.278		
	Above 50	32	1.813	1.030		

Table II.
Relationship between age
and modes of MP
appropriation

ANOVA gives significant differences in the frequency of use of some important functions of MP. These are SMS, alarm clock, calendar, camera, and music by age. The significant differences observed in usage frequency of SMS, alarm clock, and calendar follow the same trend where the youngest age group (18-24) is significantly different from those in the age groups 36-50 and above 50, while the age group 25-35 is significantly different from those above 50 years of age. Though as age increases, the usage frequency of these functions and features tends to decrease, the difference becomes notable when the age difference is large. A likelihood explanation for this trend may be in the desire to engage more in socialization by the youths; of which camera is greatly valued and which SMS encourages virtually because of the cost effectiveness. Then the need to meet up with different responsibilities which; alarm clock and calendar can help to manage as those in age groups 18-24 and 25-35 have earlier been confirmed through cross-tabulation to be mostly student and non-academic staff, respectively, and are more responsible to the rest groups. Furthermore, the significant difference in the usage frequency of using the MP to listen to music is such that respondent in the age group 18-24 (mean = 4.20) who are mostly students are significantly different from the rest age groups: 25-35 (mean = 2.94), 36-50 (mean = 2.22), and above 50 (mean = 1.81). This may imply that the student use the technology greatly to entertain themselves more than the rest groups.

G. Gender and relationship with appropriation variables

Analysis of *t*-test conducted on gender against all the variables of appropriation (attractors influencing MP choice, common purposes of MP use, and usage of mobile functions and features) showed significant differences. These differences can be found between gender in some of the common purposes of use variables and usage of functions and features. As for the common purposes of use, the significant differences are observed in the use of MP to contact family, for scheduling purposes, for emergency needs and safety, and to collaborate with colleagues on education or job issues. Looking at the mean values it can be seen that female have higher mean values in all of the common purposes of MP use; implying that females use the technology more for all the purposes than their males counterpart. This result is partially in line with an earlier study by Oyefolahan (2008) which found women in Malaysia to be significantly different from men in the usage of MP for family contact and scheduling activities.

Furthermore, the analysis also reveals significant differences between gender and the use of MP functions and features such as SMS, alarm clock, camera, and music. Similar to the former analysis as depicted in mean and standard deviation columns of Table II, women also have higher mean values compared to men in the usage frequency of these functions and features. A look at some of these functions and features like SMS and alarm clock shows that SMS use can facilitate frequent family contact and easy scheduling or vice-versa. Also, alarm clock is a feature of the MP mostly used to facilitate schedules. The result is also similar to Oyefolahan's (2008) finding, where Malaysian women were found to be significantly higher in the usage of SMS, alarm clock, address-book, and camera.

H. Occupation and relationship with appropriation variables

Occupation type is used in this study to group the respondents into three groups namely: student, non-academic staff, and academic staff. ANOVA shows significant

differences among these groups in terms of their choice of a particular phone, purposes of MP use, and six frequently used functions and features of MP.

A look at the differences in occupation type in terms of MP physical attributes and perceived level of accentuating user's status indicate significant differences between students and non-academic staff (mean = 3.29 and 3.15, respectively), and students and academic staff (mean = 2.79). Further analysis using cross-tabulation reveals that all the students and some of the non-academic staff fall in the age range of 18-35 years which have earlier been found to engage more in socialization. Therefore, this may suggest that those who engage more in socialization are likely to consider MP with attractive physical look as well as other qualities of the gadget (an example is high cost) that are perceived as means towards accentuating their social status.

As for the differences in terms of occupation type and the purposes of MP use, significant differences were observed as shown in Table III. A look at the mean and standard deviation columns reveal the level of importance of the technology to satisfy different needs and purposes among the three groups. The students and the non-academic staffs (mean = 4.56 and 4.53, respectively) are significantly different from academic staff (mean = 3.81) in the use of MP for scheduling purposes. As explained in the previous section, these two groups (students and non-academic staffs) are likely to be more responsible to the targets or delegated duties of the third group (lecturer or academic staff) than vice-versa in an academic environment; and they are most like need to use the gadget more for scheduling so as to meet up with various obligations. In the same trend, students and non-academic staffs (mean = 4.30 and 4.38, respectively) were found to be significantly higher from the academic staff (mean = 3.81) in the use of the technology for emergency needs and safety. As explained under the age influence, the previous two groups are likely to engage more in individual outings mostly for socialization or task accomplishment and are likely to be in the need of the gadget for safety and emergency needs.

As for the use of MP to socialize with friends and for education purposes, the students (mean for socialization = 4.44 and mean for education purposes = 3.68) are significantly different from the non-academic and academic staffs (mean for socialization = 3.79 and 3.85, respectively, and mean for education purposes = 2.88 and 2.84, respectively). A likely reason for the differences may be that students who can all be categorized as youths engage more in social activities and being students, use the technology to collaborate things like assignment, group project, class presentations, and soon.

Lastly, on the use of MP for business-related purposes, the non-academic staffs (mean = 3.29), and the academic staffs (mean = 3.15) are found significantly higher users than the students (mean = 2.58). As expected, the tendency to engage in business transaction is likely to be higher among the working than the students who are mostly dependent on their parents.

ANOVA between occupation and MP functions and features also shows significant differences. The differences in frequency of use of SMS, alarm clock, calendar, and camera are found similar. There are significant differences between students and academic staffs as well as non-academic staffs and academic staffs. No significant difference is observed between the students and non-academic staffs in terms of common functions and features of MP.

Furthermore, the analysis on the frequency of use of mobile address book indicates that the non-academic staffs (mean = 4.06) used the functions significantly more than

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Variables	Occupation	<i>n</i>	Mean	SD	<i>F</i>	Sig.
Trust in brand and symbolic evaluations and expectations of MP by users	Student	50	3.294	0.758	9.180	0.000
	Non-academic	34	3.151	0.847		
	Academic	117	2.789	0.709		
For scheduling purposes	Student	50	4.560	0.611	13.197	0.000
	Non-academic	34	4.529	0.748		
	Academic	117	3.812	1.181		
For emergency contact or personal safety	Student	50	4.300	0.814	6.504	0.002
	Non-academic	34	4.382	0.888		
	Academic	117	3.812	1.121		
To socialize with friends	Student	50	4.4400	0.907	7.447	0.001
	Non-academic	34	3.7941	1.067		
	Academic	117	3.8547	0.940		
For education purposes	Student	50	3.6800	1.096	8.711	0.000
	Non-academic	34	2.8824	1.25		
	Academic	117	2.8376	1.266		
For business-related purposes	Student	50	2.5800	1.326	4.434	0.013
	Non-academic	34	3.2941	1.268		
	Academic	117	3.1453	1.227		
SMS	Student	50	4.8400	0.468	11.153	0.000
	Non-academic	34	4.765	0.554		
	Academic	117	4.233	1.023		
Alarm clock	Student	50	4.560	0.787	13.966	0.000
	Non-academic	34	4.618	0.652		
	Academic	117	3.718	1.364		
Calendar	Student	50	4.060	1.077	11.223	0.000
	Non-academic	34	3.971	1.167		
	Academic	117	3.145	1.416		
Address book	Student	50	3.400	1.385	4.729	0.010
	Non-academic	34	4.059	1.099		
	Academic	117	3.222	1.475		
Camera	Student	50	3.900	1.1294	20.685	0.000
	Non-academic	34	3.8529	1.234		
	Academic	117	2.6752	1.401		
Music	Student	50	4.200	1.161	54.410	0.000
	Non-academic	34	3.294	1.426		
	Academic	117	2.051	1.245		

Table III.
Relationship between
occupation and MP
appropriation

students (mean = 3.40) and academic staffs (mean = 3.22). This output may be explained by previous findings in the study, whereby, most of the non-academic staffs are found to be in the age range of 25-36 years. Analysis has also shown that they are highly likely to engage in socialization and in various business activities. Therefore, by combining these attributes, they are likely to have higher contacts with different people physically or virtually on a daily basis and may engage the use of address book more to keep track of their contacts for reference purposes.

Lastly, ANOVA shows significant differences in all the three groups in the frequency of use of the technology for entertainment purposes. As expected, the student (mean = 4.20) use the technology significantly more than the non-academic staffs (mean = 3.29). The academic staff (mean = 2.05) seems less likely to use MP for

this purpose. Based on cross-tabulation of age and occupation, this output further explains that; when it comes to entertainment or leisure, the younger the age, the more the likelihood for them to engage MP to gratify the purpose.

Conclusion

This research attempts to investigate the appropriation patterns of MP technologies in terms of attractor of choice of MP ownership, the common purposes of MP use, and the frequently used functions and features. The study also investigates the influences of age, gender, and occupation on the appropriation patterns among the different cohorts of people in an academic environment.

Rogers (1995) asserted that perceived attributes of innovations were significantly associated with the adoption rate and were significant determinants of attitudes towards innovation. Subsequently, Carroll *et al.* (2002b) identified brand familiarity and physical appearance to be among the attractors of MP. Similar to these earlier studies, MP physical attributes and perceived level of accentuating user's status was found as a factor of consideration prior to purchase among the study's participants.

Furthermore, some earlier studies had found the use of MP for different purposes. Among which were the use for social purposes such as family and friend contact (Walsh *et al.*, 2007), the use for social management, safety and security, information management and life style organization (Carroll *et al.*, 2002a, b, c) and the use for hedonic, utilitarian, and social values (Bina *et al.*, 2006). In consistent with these earlier studies, this study found the use of MP technologies for different purposes namely for family contact, scheduling purposes, emergency contact and personal safety, socialization, collaboration with colleagues, knowledge seeking purposes, and for business needs. These results which fit into different categories of use found in earlier studies contributes to our knowledge that the use of the technology in Malaysia is similar to what is common in some other parts of the world.

Lastly, on the appropriation patterns, seven functions, and features were found in this study as the frequently used functions and features among the respondents. These services were SMS, voice calls, music, alarm clock, address book, calendar, and camera. These functions and features were also found to be correlated with purposes of use such as socialization and entertainment purposes. The findings are found consistent with previous studies such as those conducted by Carroll *et al.* (2002a, b, c), Bina *et al.* (2006), and Walsh *et al.* (2007). Walsh *et al.* (2007) found that the use of SMS had been more prevalent than any other MP functions and features in Australia. The findings are also supported by Karim *et al.* (2009), through a similar study looking at the Malaysian nationwide use of MP.

The analyses of relationship on the influence of personal attributes (age, gender, and occupation), with the appropriation patterns, purposes of use, types of functions and features used, have revealed some interesting findings. All of the attributes investigated are found significant contributors or determinants of how MP technologies are being appropriated. Age has been found to be influencing the choice of MP through physical and social status attractors; the purpose of MP use; and the types of MP functions and features used. Younger age groups have the tendency to be more attracted to adopt or purchase MP due to physical attributes and the status quo it reflected. They also use MP more for the purpose of socialization and entertainment. As for gender, female participants are more likely to use MP for information management purposes

and socialization purposes. As for occupation type, those in the student and support group categories have the tendency to use more gadgets to facilitate their life which require more socialization and entertainment. The findings in this study further highlight the importance of age, gender, and occupation in understanding information technology appropriation, which fits well with MP technologies. Karim *et al.* (2009) have found similar findings and conclusion.

This study, which has been conducted at an institution of higher learning environment, is expected to provide a more generic understanding to MP phone appropriation of its users. While most of the research relating to the use of MP has been approached through IT adoption and acceptance theories (Rogers, 1995; Venkatesh *et al.*, 2003), this study further enrich the framework through the concept of IT appropriation. Such contribution should shed some lights into more research in IT which have similar attributes to MP technologies. Advancement in MP technologies has been observed to be able to provide huge opportunities for academic institutions to utilize the technology accordingly in both teaching and administration purposes. The study provides knowledge that can facilitate the understanding of user behavior in MP use within the academic compound for better development and services in the area of mobile technologies.

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