

**MOBILE PHONE ADOPTION AND APPROPRIATION AMONG THE MALAYSIAN TEENAGERS: The influence of Intrinsic and Extrinsic Motivation**

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**Abstract:** Given the significant impact the wireless technologies provided to date, not many research can be found conducted in understanding the pattern of wireless use and adoption among various cohorts of the Malaysian population particularly those of teenagers. This research conducted in order to find out about the pattern of wireless technologies' adoption and use among the Malaysian teenagers. Subsequently, this study expects to establish an understanding of the usage pattern based on the intrinsic and extrinsic motivations theory and the adoption/appropriation of technology perspective. This study should provide a very important contribution to the understanding of teenagers and their mobile phone use behavior. At the same time, this study can also assist in policy development of wireless phone application among high school students and allows for respective authority to re-think of how to exploit the technology to benefit the teenagers for the purpose of learning and motivation. In addition, the findings may also contribute to the modeling of mobile phone use as a strategy to match mobile phone design to user's technological needs and expectations.

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**Keywords:** Information Technology adoption, Information Technology Appropriation, Information Technology and Teenagers, Wireless Technology Application

## Introduction

With the widespread adoption of mobile phone across regions of the world and the consequent adoption studies as well as the day to day technological breakthroughs in the mobile phone technology, researchers are facing numerous issues and perspectives in seeking to understand the behavior of the users of such technology. Several approaches have been used including the classical theory of technology adoption and acceptance model. However other perspectives are also beginning to emerge such as the use of motivational (Moon & Kim, 2001; Shang et.al., 2005) and technology appropriation model in understanding the users of mobile phones (Wirth et al., 2008).

Evidences from the literature have indicated that very little research was conducted in identifying the patterns of wireless phone adoption, and the researches on wireless technology users based on the adoption and appropriation model are also found scarce worldwide. One similar study was conducted by the authors in 2009 for the Malaysian Communication and Multimedia Commission (Karim

et.al. 2010). Some aspects of the adoption model such as the intrinsic and extrinsic motivational perspectives also deserve special attention. The choice of teenagers as the focus of the study is seen as important due to phenomenal impact and growth of utilization among this cohort group, which is hardly understood due to limited amount of research done in this area.

The research will provide a significant contribution to the understanding of teenagers and their communication behavior using wireless technologies. Given that teenagers are heavy users of such technology, it is important that this understanding can be transformed into various policies and development that exploit the technologies to their advantages such as mobile learning, mobile counseling, etc. rather than prohibiting them in school for their negative impacts. Most importantly, this research should also allow for the modeling of wireless technology behavior that can be repeated among other Malaysian cohorts such as elderly, women, students, rural community, etc. Consequently, the model can be used as a strategy to match mobile phone design to user's technological needs and expectations.

### Research questions:

Accordingly, the research seeks to answer the following research questions: What are the patterns of wireless technology (mobile phone) use and adoption among the Malaysian teenagers?; What are the intrinsic and extrinsic motivational factors that influence their use and appropriation of mobile phone?

### Literature Review

Mobile technologies, particularly mobile phones and text messaging, have been widely adopted by young people and integrated into their everyday lives (Carroll et. al. 2002). This includes Malaysian young people. In Malaysia, the penetration rate of mobile phone as of fourth quarter of 2009 is 106.2% (MCMC, 2010). The pervasive penetration rate over 100% can occur because of multiple subscriptions.

In the past decades, two constructs of Technology Acceptance Model (TAM); perceived ease of use and perceived usefulness constructs have been considered important in determining the individuals' acceptance and use of IT (King & He, 2006), (Moon & Kim, 2001). While TAM have been highly cited in wireless or mobile phone research, newly found model such as technology appropriation model of mobile phone use is also gaining acceptance in explaining the mobile phone use phenomena (Wirth et.al., 2008). 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), (Carroll et. Al., 2002b). Appropriation signifies how the technology is used, adapted, and fitted in the users' daily activities. Therefore, using the appropriation approach, we can understand the mobile phone usage more meaningfully through how the technology is used, the purposes it serves, and the context in which it is used through choice of features and services (Wirth et al., 2008; Karim & Isfolahan, 2009)

Another theory which has been used to understand individuals' IT acceptance behaviors is the motivation theories [(Kwon & Chidambaram, 2000), (Moon & Kim, 2001), (Shang, Chen, & Shen, 2005), (Hsu & Lu, 2004)]. In technology acceptance research, most of the work has been conducted from an extrinsic motivation perspective [(Moon & Kim, 2001), (Tan

& Chou, 2007)]. Thus in the recent study, we seek to explore teenager's wireless phone appropriation by examining both intrinsic and extrinsic motivators to better understand this area.

The two types of motivation that will be studied in this research is extrinsic and intrinsic motivation. Intrinsic and extrinsic types of motivation have been widely studied, and the distinction between them has shed important light on both developmental and educational practices (Ryan & Deci, 2000). The research framework used for this study is the extrinsic and intrinsic motivation to explain teenager's mobile phone appropriation.

#### Extrinsic motivation

Extrinsic motivation is a construct that pertains whenever an activity is done in order to attain some separable outcome contrasting intrinsic motivation which refers to doing an activity simply for the enjoyment of the activity itself (Ryan & Deci, 2000). As many of the tasks that educators want their students to perform are not inherently interesting or enjoyable, knowing how to promote more active and volitional forms of extrinsic motivation becomes an essential strategy for successful teaching (Ryan & Deci, 2000). In addition to that, in schools, for example, it appears that intrinsic motivation becomes weaker with each advancing grade (Ryan & Deci, 2000).

In this study, three dimensions of extrinsic study were explored which are performance expectancy (Venkatesh, Morris, Davis, & Davis, 2003), compatibility and relative advantage (Rogers, 1986)

#### Intrinsic motivation

According to Ryan and Deci (2000), intrinsic motivation is defined as the doing of an activity for its inherent satisfactions rather than for some separable consequence. Moreover, when intrinsically motivated a person is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards [R&D, 2000]. In this study, we have identified four dimensions of intrinsic motivation which are social and emotional well-being groups (Dordick & LaRose, 1992) (Williamson, 1993), satisfaction with life scale (Diener, Emmons, Larsen, & Griffin, 1985), curiosity and flow experience (Moon & Kim, 2001).

Building from the concept of intrinsic and extrinsic motivation discussed earlier, a research framework is derived. In this regards, the components of the extrinsic motivation have been identified as

performance expectancy from UTAUT, compatibility with the life of a student, and relative advantage. On the other hand, the concepts under intrinsic motivations have been identified as social and emotional well beings, curiosity, satisfaction with life scale and concentration (flow theory).

**Methodology**

**Population and Samples**

This research used the quantitative survey approach on the target population. The target population of this study is the teen users of mobile phone in Malaysia aged 13 to 20 years old and able to understand English or Malay language.

The questionnaires were pre-tested and distributed to the members of the Foundation of Quantitative Analysis who collected the data in the actual fieldwork. They were asked to critically evaluate the questionnaire with regards to its objective, contents, clarity and ease of completion. After the pre-testing stage, a modified questionnaire was developed for the purpose of conducting a pilot study. Subsequently, the questionnaires were refined and rephrased accordingly. The questionnaires were also translated to the native language to cater for the rural school students. Out of 1194 questionnaires that were distributed, 1173 questionnaires were usable for further analysis.

**Findings**

The data comprised of 100 percent mobile users among teenagers and distributed into 55% male and 45 % female; 83 % (967) Malays with a balance of about 36 Chinese and 32 Indians; a well distributed age groups from 13 to 19; and 71% from secondary schools and 29 % from university colleges. Majority of the respondents lives with parents and depends on them to acquire and use their mobile phone devices.

Most of the users (47 %) spent 1-5 minutes to make their calls and spent about RM10 – RM30 on their average monthly expenditures. 83% of the teenagers used prepaid as their method of subscription, and about 60 % used Nokia as their preferred phone brand, followed by Sony Erickson and other brands.

The findings also indicate how teenagers are a bit different from adults in terms of how they use the technology. This comparison is made based on the study conducted by the authors earlier (Karim et.al. 2009). Facilitating social interactions and

entertainment have been the major reasons for teenage dependency on their mobile phones and devices.

Based on the top six extrinsic motivation measured, majority of the teenagers used the mobile phone due to: Using mobile phone would make my daily life easier (65% agree and strongly agree); I would find mobile phone useful in my daily life (60%); Using mobile phone fits well with the way I live my life(study/work) (58%); Using mobile phone makes it easy to do my school work (reverse)(46 %); Using mobile phone in my daily life would enable me accomplish work/study more quickly (45%); and Using mobile phone would enhance my effectiveness in my daily life (43%).

Based on the top six intrinsic motivation measured, these are: Using mobile phone enables me to maintain cohesion within family and friendship groups (71% agree and strongly agree responses); Using mobile phone enables me to increase social interactions (62%); Using mobile phone reduces my loneliness and anxiety (54%); Using mobile phone gives me fun and enjoyment (51%); I am satisfied with my life with the use of mobile phone (48%); and Using mobile phone promotes a sense of security and well-being in me (46%).

Analysis of principle component analysis provides a revised scale for both extrinsic and intrinsic motivation factors to the use and appropriation of the mobile phone. Table 2 provides the revised items used for measuring extrinsic and intrinsic motivation. Further analysis using a stepwise regression technique indicates strong and significant relationship between both extrinsic and intrinsic motivation with mobile phone use and appropriation. At this juncture, the model is partially tested through the results found using the stepwise regression analysis. The findings indicate significant relationship between different mode of use or appropriation with various different motivational factors.

Table 2 Extrinsic Factors

Items	Mean	Std. Dev.	Factor loading
<i>Extrinsic Factor 1 – Performance Expectancy (α=0.818)</i>			
Using mobile phone in my daily life would enable me accomplish work/study more quickly	3.33	1.149	.704
Using mobile phone would improve my school work/study performance	2.84	1.025	.858
Using mobile phone in my daily life would increase my productivity	2.95	1.005	.805

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Using mobile phone would enhance my effectiveness in my daily life	3.35	1.020	.546
Using mobile phone increases my effectiveness on school work/study	2.94	1.029	.672

*Extrinsic Factor 2 - Compatibility with the life of a student ( $\alpha=0.774$ )*

Using mobile phone would make my daily life easier	3.81	1.005	.784
I would find mobile phone useful in my daily life	3.75	1.024	.824
Using mobile phone is compatible with every aspects of my life as a student	3.29	.969	.533
Using mobile phone fits well with the way I live my life(study/work)	3.71	1.053	.757

*Extrinsic Factor 3 - Relative advantage ( $\alpha=0.654$ )*

Using mobile phone reduces the quality of school work I do(reverse)	3.30	1.087	.858
Using mobile phone makes it difficult to do my school work (reverse)	3.29	1.152	.857

**Table 3 Intrinsic Factors**

Item	Mean	Std. Dev.	Factor loading
<i>Intrinsic Factor 1 – Social And Emotional Well Beings (<math>\alpha=0.806</math>)</i>			
Using mobile phone enables me to maintain cohesion within family and friendship groups	3.96	1.025	.800
Using mobile phone enables me to increase social interactions	3.75	1.036	.758
Using mobile phone reduces my loneliness and anxiety	3.57	1.067	.591
Using mobile phone gives me fun and enjoyment	3.56	.999	.533
Using mobile phone promotes a sense of security and well being in me	3.46	1.015	.602
<i>Intrinsic Factor 2 – Curiosity (<math>\alpha=0.776</math>)</i>			
Using mobile phone makes me happy	3.45	1.004	.489
Using mobile phone leads to my exploration	3.45	1.010	.713
Using mobile phone stimulates my curiosity	3.34	1.000	.733
Using mobile phone reinforces my sense of existence	3.31	1.051	.516
Using mobile phone arouses my imagination	3.28	1.013	.789
Using mobile phone increases my feeling of freedom	3.27	1.065	.433
<i>Intrinsic Factor 3 - Satisfaction with life (<math>\alpha=0.783</math>)</i>			
So far I have gotten the important things I want in life with the use of mobile phone	3.24	1.034	.663
The conditions of my life are excellent with the use of mobile phone	3.04	.983	.776

In most ways my life is close to my ideal with the use of mobile phone	3.36	1.051	.654
I am satisfied with my life with the use of mobile phone	3.51	1.295	.739

*Intrinsic Factor 4 – Concentration (Flow Experience) ( $\alpha=0.758$ )*

When interacting with mobile phone, I do not realize the time elapsed	3.15	1.167	.820
When interacting with mobile phone, I often forget the work I must do	2.90	1.183	.806
When interacting with mobile phone, I am not aware of any noise	2.88	1.110	.819

### Conclusion

This research was conducted in an attempt to understand the behavior of mobile phone users among teenagers. The establishment of the research framework is made based on the ground that users not only adopt the technology for simple use, but they are actually appropriating the technology according to their lifestyle and individual needs. Indeed some patterns can be found in this use and appropriation concept based on different cohort groups. Acknowledging the importance of age in influencing the motivational and appropriation factors, this study only focus on teenagers in order to provide more focus understanding of the behavior of this specific user group.

The findings turned out to be very insightful with much to learn about teenagers' use and appropriation of mobile phone and how much such use are influenced by motivational factors. In addition, the study also established a good initial ground on the importance of motivational factors namely extrinsic and intrinsic motivation. Both variables have been measured, with the findings of which contribute significantly to their measurement and validation.

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