

IMPACT OF INTRINSIC AND EXTRINSIC MOTIVATION ON INTERNET USAGE IN MALAYSIA

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Abstract: Using the Technology Acceptance Model (TAM) as its basis, this study looks at the impact of intrinsic motivation (perceived enjoyment) and extrinsic motivation (perceived usefulness) on Internet usage in Malaysia, where the penetration of this technology is relatively low compared to the more developed nation. Data collected from respondents were factor analysed and the constructs showed good construct validity with high reliability coefficients. The results confirm previous findings that the main driver of Internet usage is perceived usefulness, followed by perceived enjoyment and perceived ease of use. The findings also show that perceived usefulness and perceived enjoyment have consistent impact on the two dimensions of usage, namely frequency of use and extent of daily usage. Although perceived ease of use can be viewed as an important driver of usage behavior, its impact is insignificant in the presence of perceived usefulness.

Keywords: Internet, Adoption, Intrinsic and Extrinsic Motivation, Perceived usefulness, Perceived ease of use, Perceived enjoyment

Introduction

The advent of Internet has pervaded our daily lives. The Internet has experienced explosive growth and the Internet traffic has grown exponentially in the last decades. The number of websites has increased from 130 in 1993 to well over 17 million in 2000 (Connolly, 2000). It is expected that the number of Internet users in the Asia Pacific region will grow to 374 million by year 2005, as reported by the "Yankee Group".

The introduction of the Internet in Malaysia is relatively late, and it is only recently when we see rapid growth in Internet usage. This is largely due to government's effort. As of end of 2001, there are over 2 million Internet users, in a population of about 22 million people, whilst PC ownership stands at 8 people for every 100 population. The Internet penetration rate is expected to increase to 25% by the year 2005 (Teoh, 2001). In its effort to transform its economy from an agricultural based to an industrial based and more recently into a knowledge based economy, the government is putting greater emphasis on ICT. Like most other Asian nations, Malaysia is working overtime to catch with the developed world, with an extensive Internet to-do list. This list includes building up the necessary communication networks, infrastructural support for access, setting up the legal framework, and most importantly promoting the use of Internet amongst its populace. Thus, in trying to promote greater usage of the Internet amongst its citizen, there is a need to address issues of what will promote and what will hinder greater use of Internet.

Conceptual Foundation

Studies of technology adoption and usage in general, and information technology in particular, have relied on the Technology Acceptance Model (TAM). TAM is outgrowth of the model of individual behavior as posited by Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). TAM posits that two variables, perceived usefulness and perceived ease of use influences the acceptance behavior of individuals. TAM has grown to become one of the most influential models widely used in the studies of the determinant of IS/IT acceptance. Many previous studies have adopted and expanded this model which was empirically proven to have high validity (Chau, 1996; Davis, 1989; Mathieson, 1991; Adams et al., 1992; Segars & Grover, 1993; Igbaria, 1992, 1995; Igbaria et al., 1997).

In Malaysia, the TAM model has been used by Jantan, T. Ramayah & Chin (2001) to study in various factors influencing personal computer acceptance by small and medium sized companies in Malaysia. Basyir (2000) replicated the TAM model to study the various factors associated with acceptance of Internet shopping behavior. Fok (2001) adopted TAM that explicitly incorporates self-efficacy and its determinants as factors that are affecting perceived ease of use, perceived usefulness and the use of the Internet. Wong (2001) extended the TAM model into examining the impact of extrinsic and intrinsic motivational factors in influencing individual's acceptance of Internet job search. Whereas Koay (2002) used the TAM model to measure receptiveness of E-banking by Malaysian consumers. Ramayah, Dahlan, Mohamad and Siron (2002) used the TAM model together with demographic variables such as gender, income and educational level in determining technology usage of owners/managers of SME's in Malaysia. This research also bases its model on the basic TAM model but introduces another intrinsic motivation variable which is perceived enjoyment.

Figure 1 shows the research model. The aim of this study is to examine the impact of intrinsic and extrinsic motivation on the Internet usage among Malaysians.

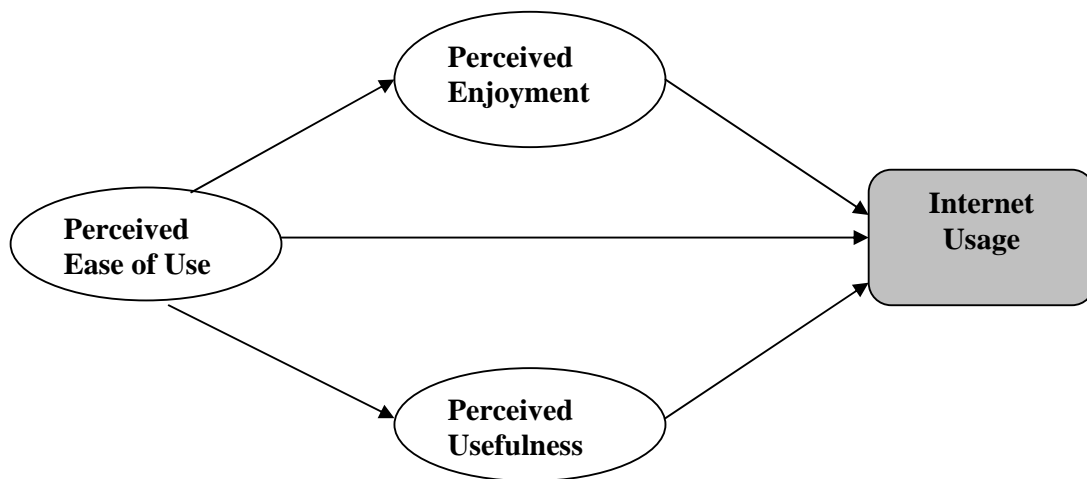


Figure 1: Research Model

Research Hypotheses

Intrinsic Motivation.

Intrinsic motivation refers to the performance of an activity for no apparent reinforcement other than the activity per se (Deci, 1975; Deci & Ryan, 1985; Ji-Won Moon & Young-Gul

Kim, 2001). Perceived ease of use is a form of intrinsic motivation (Deci, 1975; Deci & Ryan, 1985).

Perceived ease of use. Perceived ease of use is defined as “the degree to which a person believes that using a particular system would be free from effort” (Davis, 1989). Effort is a finite resource that a person may allocate to the various activities for which he or she is responsible (Radner & Rothschild, 1975). All else being equal, an application perceived to be easier to use is more likely to be accepted by the users. Although most researches have found perceived usefulness to be directly related to usage, there are some findings that show no significant effect on usage such as Ndubisi, Jantan & Richardson (2001). There are also many researches that have found ease of use to be influential in system usage (Adams, Nelson & Todd, 1992; Davis, 1989; Ramayah, Dahlan, Mohamad & Siron, 2002). Perceived ease of use has also been found to influence usage indirectly through perceived usefulness (Davis, 1986; Davis, 1989) and perceived enjoyment (Igbaria et al., 1995). It can be inferred that a system which is perceived easy to use will influence the usefulness and enjoyment because systems that are difficult to use are less likely to be perceived as useful or enjoyable and thus lead to decreased usage. Thus we hypothesize that:

- H1a: Perceived ease of use is positively related to frequency of internet usage.
- H1b: Perceived ease of use is positively related to daily internet usage.
- H1c: Perceived ease of use will positively affect frequency of internet usage indirectly through perceived usefulness.
- H1d: Perceived ease of use will positively affect daily internet usage indirectly through perceived enjoyment.

Perceived enjoyment. Perceived enjoyment is defined as the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Carol & Thomas, 1988; Deci, 1971; Malone, 1981). A person will be motivated to do or repeat an activity which is enjoyable more as compared to the same activity which is not enjoyable. This is supported by the works of Triandis (1971, 1980 as cited in Teo, 1999) who posits “the feeling of joy, elation, pleasure or depression, disgust, displeasure and hate associated by an individual with a particular act” has an impact on his/her behavior. Importance of enjoyment in the workplace have been researched by many researchers (for example Webster, 1989; Webster & Martocchio, 1992; Malone 1981). Teo et al. found Singapore Internet users use internet because it is perceived to be enjoyable. Thus for this research we hypothesize that:

- H2a: Perceived enjoyment is positively related to frequency of internet usage.
- H2b: Perceived enjoyment is positively related to daily internet usage.

Extrinsic motivation.

Extrinsic motivation is defined as the performance of an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself (Deci, 1975; Deci & Ryan, 1985, Ji-Won Moon & Young-Gul Kim, 2001). Perceived usefulness is described as a form of extrinsic motivation (Deci, 1975; Deci & Ryan, 1985).

Perceived usefulness. Perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). Within the organizational context, a system that is high in perceived usefulness is one

that the user believes will have a positive use-performance relationship. Past researches (Davis, 1989; Mathieson, 1991; Adams et al., 1992; Segars & Grover, 1993, Igbaria et al. 1995, 1996, 1997; Ndubisi, Jantan & Richardson, 2001) has shown that perceived usefulness influences computer usage directly. Thus we hypothesize that:

H3a: Perceived usefulness is positively related to frequency of internet usage.

H3b: Perceived usefulness is positively related to daily internet usage.

Methodology

This study collected data from 11 states in Peninsular Malaysia using a convenience sampling by using a questionnaire which was self administered. The questionnaire was divided into 3 sections, Section A (demographic), Section B (motivation variables i.e. perceived usefulness, perceived ease of use and perceived enjoyment) and Section C (Usage).

The items used to measure perceived usefulness and perceived ease of use were adapted from Davis (1989) and Igbaria et al. (1995). Respondents were asked to indicate their agreement or disagreement with several statements on a five-point Likert scale with 1=strongly disagree to 5=strongly agree. Perceived enjoyment was measured using seven different pairs of a seven point semantic differential scale adopted from Teo (2001). The Cronbach alpha obtained for the measures were 0.81 for perceived usefulness and 0.75 for perceived ease of use and 0.79 and 0.73 for perceived enjoyment.

Internet usage was measured using frequency of usage and daily internet usage.

- i. Frequency (Teo, 2001)
Measured using a 6-point scale ranging from 1=never/almost never to 6=several times a day.
- ii. Daily Internet usage (Teo, 2001)
Measured using a 6-point scale ranging from 1=never/almost never to 6=more than 3 hours per day.

A factor analysis with varimax rotation was done to validate whether the respondents perceived the two constructs to be distinct. The results showed a three factor solution with eigenvalues greater than 1.0 and the total variance explained was 62.26% of the total variance. KMO measure of sampling adequacy was 0.819 indicating sufficient intercorrelations while the Bartlett's Test of Sphericity was significant ($\chi^2=2771.627$, $p < 0.01$). The criteria used by Igbaria et al. (1995) to identify and interpret factors were: each item should load 0.50 or greater on one factor and 0.35 or lower on the other factor. Table 1 shows that result of the factor analysis. These results confirm that each of these constructs is unidimensional and factorially distinct and that all items used to measure a particular construct loaded on a single factor except for perceived enjoyment which became a 2 factor solution.

Table 1: Result of Factor Analysis

Items	Factor 1	Factor 2	Factor 3	Factor 4
PU1	0.74	0.30	0.08	0.04
PU2	0.83	0.16	0.01	0.09
PU3	0.71	0.23	0.03	0.14
PU4	0.77	0.17	0.08	0.15
PEU1	0.14	0.78	0.08	0.00
PEU2	0.23	0.71	0.09	0.03
PEU3	0.23	0.75	0.06	0.02
PEU4	0.19	0.66	0.08	0.17
PE1	0.02	0.06	0.11	0.66
PE2	0.11	0.09	0.19	0.77
PE3	0.02	0.10	0.85	0.02
PE4	0.14	0.01	0.06	0.78
PE5	0.09	0.03	0.76	0.26
PE6	0.05	0.06	0.87	0.04
PE7	0.14	0.08	0.28	0.65
Eigenvalue	4.25	2.28	1.66	1.15
Variance (62.26%)	16.94	15.65	14.87	14.80
Cronbach Alpha	0.81	0.75	0.79	0.73
Mean	3.87	3.83	5.68	4.67
Std. Deviation	0.68	0.64	0.93	1.40

Findings

Table 2 presents the demographic profile of the respondents who participated in this survey whereas Table 1 shows the descriptive of the main variables of the study.

Table 3 presents the intercorrelation matrix between the main variables of this study. As can be seen perceived ease of use, perceived usefulness and perceived enjoyment is positively related to both the Internet usage measures.

Table 2: Profile of respondents

Variable	Frequency	Percentage
Age		
20 years and less	30	4.0
21 to 30 years	355	47.4
31 to 40 years	211	28.2
41 to 50 years	113	15.1
Above 50 years	39	5.2
Gender		
Male	343	45.8
Female	406	54.2
Race		
Malay	305	40.7
Chinese	251	33.5
Indian	158	21.1
Others	35	4.7
Education level		
Primary or lower	10	1.3
Secondary	108	14.4
Diploma	174	23.2
Graduate	327	43.7
Post Graduate	129	17.2
Annual Income		
Less than RM10,000	127	17.0
RM10,001 – RM24,999	317	42.3
RM25,000 – RM49,999	211	28.2
RM50,000 – RM74,999	74	9.9
RM75,000 and more	19	2.6

Table 3: Intercorrelation matrix

	1	2	3	4	5
1. Perceived Usefulness	1.000				
2. Perceived Ease of Use	0.517**	1.000			
3. Perceived Enjoyment 1	0.348**	0.218**	1.000		
4. Perceived Enjoyment 2	0.169**	0.143**	0.285**	1.000	
5. Frequency of Internet usage	0.311**	0.215**	0.255**	0.158**	1.000
6. Daily Internet usage	0.279**	0.181**	0.254**	0.010	0.469**

** p<0.01

Hierarchical regression was used to test the hypotheses. We used a two step hierarchical regression where perceived ease of use was entered in the first step. In the second step, perceived enjoyment and perceived usefulness is entered to see the additional variance explained in addition to that explained by perceived ease of use. The reason for this is that perceived ease of use can also influence perceived usefulness and perceived enjoyment.

As shown in Table 4, perceived ease of use is positively related to perceived usefulness and perceived enjoyment.

Table 4: Results of regression analysis with perceived ease of use as the predictor

Variable	PU	PE 1	PE 2
Perceived Ease of Use	0.517**	0.218**	0.143**
F value	271.34**	37.421**	22.42**
Adjusted R ²	0.266	0.059	0.049

* p<0.05, ** p < 0.01

Table 5: Results of regression analysis for the full model

Variable	Frequency		Daily usage	
	Step 1	Step 2	Step 1	Step 2
<i>Motivation variable</i>				
Perceived ease of use	0.167**	0.036	0.179**	0.054
Perceived Usefulness		0.193**		0.214**
Perceived Enjoyment 1		0.165**		0.198**
Perceived Enjoyment 2		0.083*		0.082*
F value	16.89**	19.34**	19.463**	20.439**
Adjusted R ²	0.026	0.111	0.032	0.123
Adjusted R ² change	0.026	0.085**	0.032	0.091**

* p<0.05, ** p < 0.01

From the results in Table 5, the percentage of variance explained although is quite low but it is comparable to the similar kind of research done by Teo (1999) (frequency of usage Adj. R²=0.17, daily usage Adj. R²=0.06) on Singaporeans use of Internet although Teo's research had an additional 3 variables eg: gender, age and education level. So the adjusted R² obtained in this study which is 0.085 and 0.091 can be considered good. It can also be seen that perceived ease of use is positively related ($\beta=0.167$, $p<0.01$) to frequency of Internet usage and also daily Internet usage ($\beta=0.179$, $p<0.01$). Thus hypotheses H1a and H1b is supported.

The positive relation between perceived usefulness and frequency of usage ($\beta=0.193$, $p<0.01$) and daily internet usage ($\beta=0.214$, $p<0.01$) is also supported. Thus H2a and H2b is accepted. The positive relation between perceived enjoyment and frequency of usage ($\beta=0.165$, $p<0.01$), ($\beta=0.198$, $p<0.01$) and daily internet usage ($\beta=0.083$, $p<0.05$), ($\beta=0.082$, $p<0.05$) is also supported. Thus H3a and H3b is also accepted.

A variable may be considered a mediator to the extent to which it carries the influence of a given independent variable (IV) to a given dependent variable (DV). According to MacKinnon, Warsi, and Dwyer (1995), generally, mediation is present when (1) the IV significantly affects the mediator, (2) the IV significantly affects the DV in the absence of the mediator, (3) the mediator has a significant unique effects on the DV, and (4) the effect of the IV on the DV shrinks upon the addition of the mediator to the model. Baron & Kenny (1986) formulated the steps and conditions to ascertain whether full or partial mediating effects are present in a model.

As can be seen from Table 4, perceived ease of use is significantly related to perceived usefulness and perceived enjoyment. From Table 5 it can also be seen that perceived ease of use, perceived usefulness and perceived enjoyment is also significantly related to internet usage. When the 3 mediators are added the significant effect of perceived ease of use becomes insignificant thus suggesting a full mediator relationship being present. Thus H1c and H1d is supported.

Discussion

The support for H1a, H1b, H2a and H2b indicates that the intrinsic motivation variables of perceived ease of use and perceived enjoyment are positively related to both frequency and daily Internet usage. This can easily be attributed to the ever increasing availability of easy to use Internet browsers which is rapidly undergoing upgrades after upgrades to make it easier and easier for anyone to be able to use them. As for perceived enjoyment, the web has been lately seeing a deluge of websites offering entertainment and information from games, movies to downloadable music which makes the Internet enjoyable to use. These findings are in line with those of Adams, Nelson & Todd (1992), Davis (1989), Ndubisi et al. (2001), Jantan et al. (2001) and Ramayah et al. (2002).

The support for H3a and H3b that perceived usefulness is more influential in determining technology use confirms previous research, which have highlighted that perceived usefulness is more significant in explaining computer usage. A closer look at the beta values indicates that perceived usefulness is consistently higher than perceived enjoyment. This is consistent with the findings of Igarria et al. (1994, 1995), Teo (2001), Ndubisi et al. (2001), Jantan et al. (2002) and Ramayah et al. (2002).

H1c and H1d which posits an indirect effect (mediation) is also supported where it has been shown that perceived usefulness and perceived enjoyment fully mediates the relationship between perceived ease of use and frequency of usage and daily internet usage. Although perceived ease of use is an important driver of Internet usage, its effect diminishes when the mediator variables are added. This findings support the findings of Davis (1986, 1989), Igarria et al. (1995), Teo et al. (1999), Ndubisi et al. (2001) and Ramayah et al. (2002).

Limitations

There are however several limitations to this research. First, the usage measurements are self-reports and this could lead to biasness in reporting. Although this method is not as accurate as actual usage, Blair and Burton (1987) suggest that self-report is appropriate as a relative measure. The second limitation is that although the variables that we have forwarded may explain the variation in usage, there are other variables that may also influence usage that have been left out such as self efficacy (Bandura, 1977, 1986; Gist, 1987; Gist & Mitchell, 1992) and external variables such as computer skills, organizational support and social pressure (Chang & Cheung, 2001)

Conclusion

Perceived ease of use, perceived enjoyment and perceived usefulness are very important in influencing technology usage. The findings that perceived usefulness is more important than perceived ease of use further confirms previous findings of the same magnitude. This indicates that the initial euphoria of using Internet will die out and if the user does not find Internet to be useful than they would most likely discontinue using the Internet. So it is very important that web page designers continue to update their web pages and provide information that is perceived to be useful by users for their continued survival. Furthermore, the findings that perceived enjoyment is also positively related to Internet usage goes to show the impact of design of web pages and other features such as multimedia and graphics increases the enjoyment of users thus leads to continued usage. So it is important to policy makers and internet service providers to take this into consideration as one of the goal is to encourage more users to use Internet. They can highlight the usefulness of the information

available in the Internet and also that the Internet is also a very enjoyable experience in addition to be useful.

The results of this study has contributes to the existing literature by highlighting the impact of intrinsic and extrinsic motivation on technology usage. This is especially true in the context of a developing country like Malaysia where research of such nature is still very lacking. The findings also confirms previous research carried out in America and Singapore that perceived usefulness is the main driver of technology usage.

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