Influence of Normative Beliefs on Behavioral Intention of Malaysian Digital Gamers to Continue Playing Digital Games

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Abstract

Malaysia intends to become a hub of digital games entertainment industries in the future. Malaysian digital games designers are at the moment focusing on digital games which exploit one source multi use platforms for the cloud playable on PC, mobile systems and consoles. These types of digital games rely on social network, family participation and group game play. This section reports on the analysis of normative beliefs influenced by important referent individuals or groups such as family, friends and social game community. Normative beliefs have been referred to as subjective norm (SN). In this study, subjective norm has three antecedents: Family, Friend, and Social game community. From analysis, it was found that these antecedents have 26% influence on subjective norm (SN) judging from the value $R^2 = 0.26$. These three antecedents are significant since p-value < 0.001. The behavioral intention to continue playing digital games is affected by normative beliefs by 15% since the measured value of $R^2 = 0.15$. Social game community which has 57% influences on subjective norm plays an important role in the adoption of digital games. From the analysis, it was also found that family has 29% influences and friend has 14% influences on digital game adoption.

Keywords: *Digital Games, Normative Beliefs, Technology Adoption, Behavioral Intention, Structural Equation Modeling*

I. INTRODUCTION

Over the past decade, the manner and the exuberance in which gamers play digital games have changed a great deal. No longer are gamers restricted to the use of consoles and dedicated handheld systems. Gamers can now enjoy gaming experiences on mobile phones and tablet devices using online media and sites such as Facebook [1].

Digital games sector which is a constituent component of the creative industry is contributing significantly to the growth of today's world economies. This has been reported by IDATE, one of Europe's foremost market analysis and consulting firm. In its recent World Video Games market report, IDATE stipulated that the digital games sector could be the panacea for economic recovery [2].The game sector is becoming a global phenomenon [3].

II. LITERATURE REVIEW

Digital games genre is a vague categorization based on the criteria of art form utilized in game design. The art form criteria used in deciding the genre of digital games include platform (that is use of hardware for example video console games, PC games, arcade games), number of players (such as single player or multiplayer), location (for instance, whether stationary, mobile or pervasive), distribution (whether the game is online or otherwise), comprehensive goal (whether the game is for past time gaming, educational gaming or serious gaming), and gameplay (player experience)[4][5][6].

Subjective norm refers to the individual's perceptions of social pressures to accept or not to accept an innovation. Family is used to describe two or more people who share similar goals or values, who have long term commitments to one another and who live in a close relationship. The influence of family in the form of a favorable opinion towards a technology (eg. digital games) is considered positive influence [7][8][9][10][11][12].

A friend is a person whom individual know, like and trust. From a friend a person is able to get support, to get sympathy, and to get help in a cause or movement. Positive influence from friends takes the form of words of encouragement or supportive evaluation [7][8][9][10][11] [12].

Social game community in this study refers to a networked group of digital gamers who are actively engaged in digital games. Social game communities have lifted digital games at par with culture (especially among the youths). They have also stimulated the emergence of practices and networks characterized by specific patterns of interaction, communication, and shared meanings, like clans, guilds, fan communities, machinima, or modding. The emergence of these microcultures (or subcultures) with their contingency and unpredictability, stresses the importance of including social game community as an attribute for the construct subjective norms [13].

For this reason, social games community is included as one of the attributes for the construct subjective norm for digital games.

A. Research Gap

The direction of the study is conceived from the query posed by Meister et al. [14] who believed that with the rapid changes in technology and digital entertainment media, organized social community network could play a significant role in influencing subjective norm towards the acceptance of digital games.

Although many researchers considered friend and family as antecedent variables which influence subjective norm [11][15][12] [14], Meister et al. were of the opinion that with current technological and media changes, the influence of social community on subjective norm would increase while the influence of friend and family would decrease [14].

It is therefore important, in this study, to measure and verify the influence of the factors such as family, friend and digital games social community on subjective norm towards the intention to play digital games.

B. Proposed Model

In the research model shown in Fig.1, normative beliefs or subjective norm was decomposed to the attributes family(S_Fam), friend (S_Frie) and social game community(S_SGC) [7][15][16].

Based on previous studies, the opinion of family and friends have been found to have an impact on the subjective norms which result in a strong behavioral intention to adopt any technological innovation [7][8][9][10][11][12]. Social game community catalyzes activities and involvements of digital gamers because of the need for interpersonal relationships in a community of gamers. Therefore the judgment from social game community will influence a gamers' perception on digital games [17] [18][19][20][21][22]][7][11].
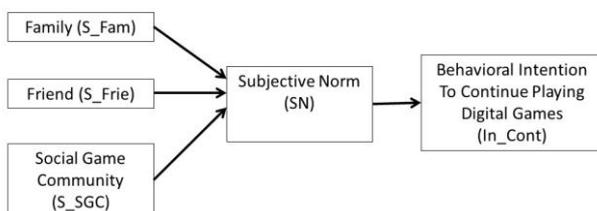

Figure 1. Proposed model.

III. METHODOLOGY

Quantitative analysis was carried out on responses obtained from surveys. A simple relationship model of Fig.1 was used. Systematic development and proper validation of questionnaires were performed as they form the basis for the research instrument. For the quantitative analysis, Structural equation modeling (SEM) with the aid of SmartPLS was used to measure structural model relationships.

A. Sampling

This study was based on a sample size of 422 giving respondents to variables ratio (RVR) of 84.4. With this value of RVR, SmartPLS theory based model would yield a reliability of more than 0.95 [23][24][25][26].

Participation in the survey was voluntary. Samples for this study were digital gamers among Malaysian, ages between 15 to 55 years old. This age group was chosen because ESA (2014) had confirmed that in 2014, over 90% of digital gamers worldwide were in the age group of 15 to 55 years old with an average age of 35. Digital gamers within this age group had the maturity to express their opinion and perception freely without due influence from parents or guardians [27].

B. Method of Analysis

- Data analysis was carried out using the two-step SEM PLS path model assessment shown in Figure 4.3. The first step assessed the measurement model using PLS algorithm while the second step assessed the structural model using PLS Bootstrapping.

- Measurement model assessment used (a) Cronbach' alpha and composite reliability tests to check for reliability (b) Item factor loading, composite reliability and AVE tests to check for convergent validity and (c) Cross factor loading, square root of AVE and bivariate correlation tests to check for discriminant validity.

- While structural model assessment used (a) Coefficient of determinant R^2 test to indicate what proportion of the variance of dependent variable that can be explained by the independent variables, (b) Path coefficients β test to check the relationship strength between the latent variables of the research model and (c) Effect size f^2 test to check how substantial is the influence of independent variable on dependent variable.

IV. RESULTS AND DISCUSSIONS

A total of 450 questionnaires were distributed in this study. Four hundred and thirty two (432) questionnaires were returned, indicating a 96 percent rate of return. All the respondents were current gamers of digital games. SEM statistical technique is a versatile tool to specify whether or not the measurement model as well as the structural model satisfy the quality criteria for empirical study. It was found that 422 respondents returned responses which satisfied these quality criteria.

A. Mesurement Model Results

Quality criteria stipulates that the required and acceptable accuracy for tests must be based on (a) Cronbach's alpha; (b) the reliability of composite individual measures, known as composite reliability, CR (c) the convergent validity of the measures, AVE and (d) discriminant validity.

In this study, the result of Cronbach Alpha Coefficients for all constructs ranged from 0.858 to 0.942 which are well above the acceptable value of 0.7 for confirmatory analysis. All variables exhibit the value of composite reliability, ranging from 0.904 to 0.946, all of which are greater than the acceptable level of 0.7. The results

indicated that all items were loaded above the acceptable threshold of 0.70, an indication of convergent validity[28].

B. Structural Model Results

The structural model was tested by estimating the paths between the constructs in the model to determine the significance as well as the predictive ability of the model. The essential criteria for the assessment of the structural model were (a) the coefficient of determination, R^2, (b) path coefficients and (c) effect size [29][30].

When analyzing the antecedent factors, the intention behavior to continue (Int_Cont) yielded $R^2 = 0.26$ and the four variables were found to be significantly related with a significant value of less than 0.001.

TABLE 1. PATH COEFFICIENT RESULTS

Path Indicator	Path Coefficient	t-Value	P-Value
S_Fam →SN	0.254	5.081	p>0.001, Significant
S_Frie→SN	0.185	2.927	p>0.001, Significant
S_SGC →SN	0.220	3.448	p>0.001 Significant
SN → In_Cont	0.133	3.120	p>0.001, Significant

The effect size (f^2) criterion by Cohen (1988) is another important criterion for evaluating the PLS structural equation. These criteria are (a) $0.02 < f^2 \leq 0.15$ for a small effect size, (b) $0.15 < f^2 \leq 0.35$ for medium effect size and (c) $f^2 > 0.35$ for a large effect size. It is important to review the effect sizes of predictors for exhibiting further information regarding the individual contribution of each construct.

From the comparative statistical analysis Fig.2, Family (S_Fam) contributed 29% while Friends (S_Frie) contributed 14% towards Subjective norm (SN). The other indicator, Social game community(S_SGC) contributed 57% effect size towards subjective norm influencing intention to continue playing digital games.
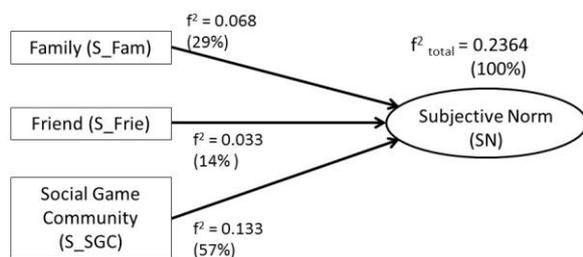

Figure 2. Effect size results

C. Conclusion and Future Research

From a practical point of view, the findings suggest that Social game community and family are important factors in the adoption of digital games. This study suggests that the influence of Social game community and family members should be an important consideration for game designers and game distrisbutors to increase the adoption of digital games in the future.

Friend is the next important influence on the subjective norm. Hence, it makes business sense for game distributors to offer incentives to current gamers to persuade their family and friends to play and continue playing digital games.

In any social digital game community, the activities which include helping other gamers, being part of a team, becoming friends, chatting with other gamers and getting to know one another during gameplay suggests that social game community is an important antecedent variable to subjective norm towards continuing playing digital games.

For future research, the study should consider the variable which can induce addiction in digital games. It will be important to investigate any additional motivating factors which can induce addiction among digital gamers.

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