USING THE THEORY OF PLANNED BEHAVIOR TO DETERMINE THE SOCIAL NETWORK USAGE BEHAVIOR IN SAUDI ARABIA

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Abstract: *This study examines the participation intention(s) and behavior of individuals on Social Networking Sites (SNSs), utilizing the theory of planned behavior. The data collected from a survey of 1100 participants, is distilled to 657 usable sets and further analyzed to assess the predictive power of TPB model via structural equation modelling. The results show that the attitude and subjective norm have a significant effect on the participation intention of adopters. Further, the results depict that participation intention have a significant effect on participation behavior. On the other hand, the study reveals that perceived behavioral control has no significant effect on participation intention or behavior of adopters. The model adopted in this study explains 52% of the variance in "Participation Intentions" and 38% of the variance in "Participation Behavior". Participation of behavioral intention in the model's explanatory power was the highest amongst the constructs (able to explain 20% of usage behavior). On the other hand, attitude was able to explain around 12% of the usage behavior on SNSs.*

Keywords: *adoption, saudi arabia, social networking sites, theory of planned behavior, usage.*

I. INTRODUCTION

In recent years, we have witnessed rapid growth in new form of web technologies, commonly known as online social networking services (SNSs), which support interpersonal communication and collaboration using Internet-based platforms. Among the best known of SNSs are sites such as Facebook, LinkedIn, and Twitter, each of which has seen dramatic proliferation in popularity. Due to their popularity and its impact on individuals' daily lives, these SNSs have captured the attention of researchers [26].

Scholars have studied SNSs using diverse methodologies, examining topics such as industry competition dynamics [14] and the formation and maintenance of social relationships on SNS [13]. Our study contributes to the literature by focusing on the determinants of SNS usage. One well-validated decision-making model that may provide an appropriate framework to understanding and predicting people's use of SNSs is the theory of planned behavior (TPB). So, in this study, we used the theory of planned behavior (TPB) to understand the Social Network usage behavior in Saudi Arabia. Data collected from a survey of 1100 participants is distilled to 657 usable sets and has been analyzed to assess the predictive power of TPB model via structural equation modelling.

The paper proceeds with the following structure. In section 2, we review the theoretical model; TPB and present the proposed hypotheses along with study of the model. In section 3, the methods of our analysis are presented and results of the study are then presented in Section 4. Thereafter, an equation has been formulated and used to calculate the participation of every model's construct in the model's explanatory power is presented along with a discussion of the results in Section 5. Section 6 is devoted to highlight the implications of current study into theory and practice. Section 7 present the limitations of our study and links it with future research avenues.

II. RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

A. Theory of Planned Behavior (TPB)

TPB is widely used in social psychology and marketing research to predict and understand human behavioral intention and then behavior [22]. It's an extension of TRA [2]. TPB proposes that actual usage behavior is determined by behavioral intention and perceived behavioral control. Behavioral intention is determined by three factors: attitude, subjective norms and perceived behavioral control. Each factor is in turn generated by a number of beliefs and evaluations [16], [18] (see Fig.1).

In the context of SNSs, attitude refers to general user feelings towards the use of SNS based on the positive or negative outcome evaluation of performing that behavior. Moreover, subjective norms refer to user perceptions regarding the use of SNS by the opinions of referent group (such as friends or colleagues). Perceived behavioral control reflects beliefs regarding their access to the resources needed for using SNS which, in other words, describes user perceptions of the availability of knowledge, resources, and opportunities necessary for using SNS.

TPB has been successfully used in a range of situations for predicting and understanding the SNS usage behavior and behavioral intention such as: predict young adults' intentions to engage in and subsequent engagement in high-level SNS use [23], investigation of the intention to share media files over peer-to-peer networks [6], understand partner-monitoring behavior on Facebook [8] and intentions to fake in online psychological testing [15]. Thus, the following study hypotheses were developed based on the TPB model.

Hypothesis 1.   User Attitude will positively influence user behavioral intention.

Hypothesis 2.   Subjective norms will positively influence user behavioral intention.

Hypothesis 3.   Perceived behavioral control will positively influence user behavioral intention.

Hypothesis 4.   User behavioral intention will positively influence user behavior.

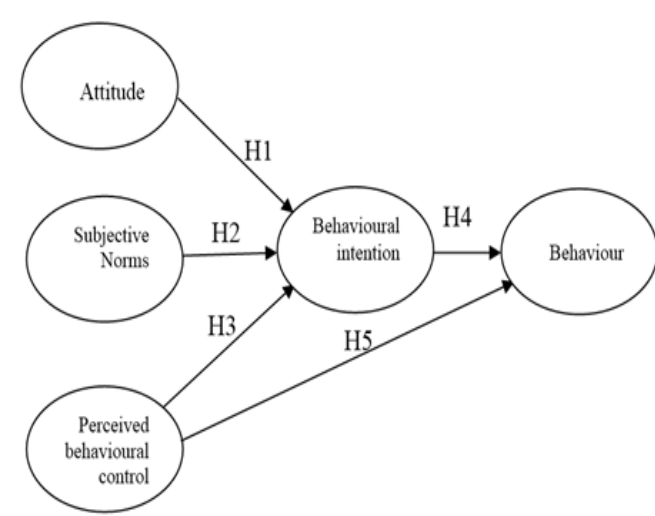Hypothesis 5.   Perceived behavioral control will positively influence user behavior.

Figure 1: The Study Model (TPB).

III. METHODOLOGY

A. Measurement

Identifying the concepts or constructs that a researcher intents to measure, and then choose appropriate measuring systems to measure those constructs is essential and has a significant impact on the accuracy of findings [28]. The items used in the survey to measure the constructs were identified and adopted from prior research; particularly from Information Systems research, in order to ensure the face (content) validity of the scale used. The items were widely used in the majority of prior studies indicating potential subjective agreement among researchers that these measuring instruments logically appear to reflect accurate measure of the constructs of interest. Table 1 lists the items developed for each construct in this study as well as set of prior studies where these items have been adopted from.

B. Data Collection Procedures

Data for this study were collected in two stages (6 months apart), from samples stratified into gender groups, by means of a survey conducted in Saudi Arabia in 2014. This type of sampling technique has been chosen due to the difficulty of drawing an actual representative sample in Saudi Arabia. Most Saudi people do not have their own mail boxes and mail services are not provided for every house. Moreover, it is hard to approach women in Saudi Arabia because of cultural constraints and values. Therefore, stratified samples were drawn from several areas in the country and female relatives were engaged to distribute questionnaires to the female strata besides using electronic means to guarantee reaching females as well as males. The survey questionnaires were distributed to 1100 participants (550 male and 550 female). A total of 421 responses were received from male participants and 367 from female participants. After checking the data for validity, 657 were deemed fit for use in the analysis.

IV. DATA ANALYSIS AND RESULTS

A. Reliability and validity

A reliability and internal consistency test was performed using data obtained from the pilot study of each construct in the instrument. The alpha values from the data obtained ranged from .889 to .974 with an overall alpha value of .974. Table 2, shows the Cronbach's alpha reliability of constructs in the study. The results indicate that all constructs of the model were reliable. Therefore, the internal consistency of the instrument was acceptable.

Table 1: List of items by construct

Construct	Items	Adapted from
Behavioral intention (BI)	BI1. I intend to use SNS website in next three months. BI2. I expect my use of the SNS website to continue in the future.	[24], [21], [3].
Subjective Norm (SN)	SN1. My friends would think that I should use SNS website. SN2. My colleagues/classmates would think that I should use SNS website. SN3. People who are important to me would think that I should use SNS website.	[24], [12], [3].
Attitude (AT)	AT1. I have positive opinion in SNS website. AT2. I think usage of SNS website is good for me AT3. I think usage of SNS website is appropriate for me	[9], [1], [3].
Perceived behavioral control (BC)	BC1. Using SNS is entirely within my control BC2. Whether or not I use SNS is entirely up to me	[24], [3].
SNS Usage (US)	US1. On average, each week I use my SNS website often US2. For each log session, I use my SNS web site long US3. On my SNS, I often post something US4. On my SNS, I often view something US5. On my SNS, I often share something US6. On my SNS, I often reply to others	[4], [25].

Table 2: Cronbach's Alpha Reliability of Constructs in the Study

Construct	Number of Items	Cronbach's Alpha
Attitude	3	.912
Subjective Norm	3	.940
Perceived behavioral control	2	.941
Intention	2	.889
Usage	5	.938
Overall alpha value	36	.974

The Kaiser–Meyer–Olkin (KMO) and principal component factor analysis were conducted to examine the adequacy of the study sample and the validity of the study instrument, respectively. As the value of KMO was 0.841 as in Table3, the study sample was considered adequate and the appropriateness of using principal component factor analysis on the collected data was assured.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.841
Bartlett's Test of Sphericity	Approx. Chi-Square	12372.184
	Df	105
	Sig.	.000

B. Hypotheses testing

In this study, the TPB model has been applied to understand the Social Network use behavior in Saudi Arabia. This model can be constituted through the test of 5 hypotheses. These hypotheses identify the relationship among factors as independent variables that impact adoption behavior. Each accepted hypothesis represents an explanation of usage behavior as dependent variables. Explanations are nomothetic and advance via deductive reasoning. The study hypotheses were tested using multiple regression analysis.

First, the three independent variables (i.e. "Attitude", "Subjective Norm", and "Perceived

behavioral control" were regressed on "Behavioral Intention". As in Fig. 2, it was found that "Attitude" (β = 0.606, Standardized path coefficient, p < 0.001) and "Subjective Norm" (β = 0.157, Standardized path coefficient, p < 0.001) are significantly and positively related to "Behavioral Intention" (adjusted R²=0.52) (see Table 8, Table 9 and Fig. 2). Thus, H1 and H2 are supported. However, results show that "Perceived behavioral control" (β = 0.073, Standardized path coefficient, p < 0.001) is not significant at p<0.001 level. Hence, H3 is not supported.

Thereafter, "Behavioral Intention" and "Perceived behavioral control" were regressed on "Usage Behavior". Results, as in Fig. 2, indicate that "Behavioral Intention" is significantly and positively related to "Usage Behavior" (adjusted R²=0.380): "Behavioral Intention" (β = 0.619, Standardized path coefficient, p < 0.001). Thus, H4 is supported. However, results show that "Perceived behavioral control" (β = 0.73, Standardized path coefficient, p < 0.001) is not significant at p<0.001 level (see Table 4, Table 5 and Fig. 2). Thus, H5 is not supported.

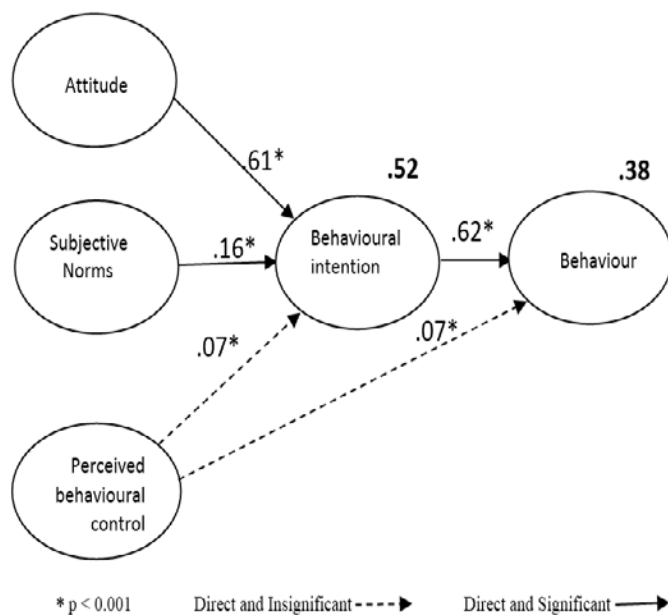*Figure 2: The study results (TPB).*

V. DISCUSSION

The aim of this study is to understand the Social Network use behavior in Saudi Arabia. This study emphasizes the importance of the social aspects and characteristics in forming individuals' intentions and their SNSs usage behavior. Moreover, this study comes to help in covering the gap of research in the Middle East area more specifically in Saudi Arabia on how users of SNSs based on their behavioral influences intend to participating on SNS or not. For this purpose, the theory of planned behavior is utilized.

The study findings asserts that participation behavior on SNSs determined by "participation intention" which in turn is determined by individuals' "attitude" and "subjective norms". The results support all formulated hypotheses, except the 3rd and the 5th hypotheses which states that "perceived behavioral control" of users in relation to participation on SNSs positively affects "Participation Intentions" and "participation behavior". The model adopted in this study explains 52% of the variance in "Participation Intentions" and 38% of the variance in "Participation Behavior".

The results show that "participation intention" is significantly and positively related to "participation behaviour" in the SNS context. Indeed, such a strong relation between the two constructs (i.e. Intention–Behaviour) concurs with many prior studies such as Taylor and Todd [24] study, according to their research, "behavioural intention plays an important substantive role, but is also important pragmatically in predicting behaviour" [24]. Likewise, De Guinea and Markus [11] indicate that IT use behaviour is the result of conscious, cognitive behavioural intention. The importance of behavioural intention towards usage behaviour is also reported in other study to understand online community user participation by Zhou [27].

In this study, however, "perceived behavioral control" did not predict "participation behavior", a finding that is not inconsistent with some studies such as Baker and White [5]. However this finding also concurs with other many studies (see [3]). This is consistent with the argument of Ajzen [1] which indicates that the strength of "perceived behavioral control" in predicting behavior is dependent on perceptions of control being reflective of actual control. However in Internet use studies it seems unlikely that "perceived behavioral control" will reflect actual control accurately [19]. Thus, Inability of "perceived behavioral control" to predict "participation behavior" refers to incapability "perceived behavioral control" to reflect actual control accurately.

Moreover, the constructs "attitude", "subjective norms", and "perceived behavioral control" were regressed on "participation intention", the results show that that "Attitude" and "Subjective Norm" are significantly and positively related to "Behavioral Intention" (adjusted R²=0.52) (see Table 4, Table 5 and Fig. 2). However, results show that "Perceived behavioral control" (β = 0.073, Standardized path coefficient, p < 0.001) is not significant at p<0.001 level. The results using the standard TPB show that all relationships are supported at (p<0.001), with only two exceptions concerning the relationship between "perceived behavioral control" and each of "participation behavior" and "participation Intention" which were found to be significant only at (p<0.05).

Table 4: Coefficients for Adopted Model

Dependent variable	Path direction	Independent variables (predictors)	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
Intention	←	Attitude	.611	.043	.606	18.191	.000
Intention	←	Subjective Norm	.130	.028	.157	4.702	.000
Intention	←	Perceived behavioral control	.046	.017	.073	2.659	.008
Usage	←	Intention	.534	.026	.619	20.207	.000
Usage	←	Perceived behavioral control	.048	.017	.073	2.779	.006

P values less than 0.001 were considered statistically significant

Table 5: Standardized Regression Weights

Criterion variable	Path direction	Criterion variable predictors	Estimate	(Significance)
Intention	←	Attitude	.606	Significant
Intention	←	Subjective Norm	.157	Significant
Intention	←	Perceived behavioral control	.073	Insignificant
Usage	←	Intention	.619	Significant
Usage	←	Perceived behavioral control	.073	Insignificant

A. Understanding Behavior

The adopted model was able to explain 38% of SNSs usage behavior. This ability relates to the diversity of the model's constructs and the diversity of relations among their constructs. In the model, behavioral intention is the primary, direct determinant of behavior on the premise that "a person who intends to take a certain action is likely to carry out that behavior" [17]. However, the additional explanatory power is afforded by other relative factors. An equation has been formulated and used to calculate the participation of every model's construct in the model's explanatory power. The formula was applied to the model using the total (direct and indirect) effects of each model's construct on the SNSs usage behavior (see Table6, Table7 and Table 8) as follow:

$$A_x = \frac{\beta_x^2}{\sum_{k=1}^{n} \beta_k^2 * R_B^2}$$ Where:

A_x = Participation of variable A_x in a model' explanatory power

$(B_x)^2$ = Square of beta coefficients or standardized coefficients of variable

$R_{(B)}^2$ = Model' explanatory power (*behavior*)

Table 6: Decomposition of total causal effects for the model's constructs

	PBC	SN	AT	BI
BI	.073	.156	.606	.000
Usage	.073	.097	.376	.619

Table 7: Standardized Direct Effects

	PBC	SN	AT	BI
BI	.073	.156	.606	.000
Usage	.073	.000	.000	.619

Table 8: Standardized Indirect Effects

	PBC	SN	AT	BI
BI	.000	.000	.000	.000
Usage	.000	.097	.376	.000

Table 9 shows variables of the participating model and their explanatory power. In the adopted model, behavioral intention is the primary, direct determinant of behavior and its participation in the model' explanatory power was the highest amongst the constructs. Behavioral intention was able to explain 20% of usage behavior. This shows that behavior is largely driven by behavioral intention and that has a notable impact on the model's explanatory power.

Table 9: Participation of model's variables in the models' explanatory power

Constructs	The TPB model
Intention	20.14%
Attitude	11.78%
Subjective Norm	3.04%
Perceived behavioral control	2.28%
Total	38%

This impact can be obviously seen when behavioral intention is excluded from the model, since the prediction of behavior decreases substantially (from $R^2(B) = 0.38$ to $R^2(B) = 0.178$. The drop in predictive

power when behavioral intention was omitted concurs also with the Taylor and Todd [24] study, according to their research, "behavioral intention plays an important substantive role, but is also important pragmatically in predicting behavior" [24]. Likewise, De Guinea and Markus [11] indicate that IT use behavior is the result of conscious, cognitive behavioral intention.

Table 8 and 9 also show that "attitude" construct has a notable impact on usage behavior, this impact came indirectly through its direct effect on behavioral intention. Participation of "attitude" in the models' explanatory power was the second highest amongst the constructs. "Attitude", alone explains about 12% of SNSs usage behavior.

Prior studies have shown that attitude positively influences behavioral intentions [2]. Attitude is defined as an individual's feelings towards performing a specific behavior, which is his positive or negative evaluation of performing the behavior [10], [1]. In other words, this construct refers to the general evaluations of an individual regarding the examined behavior. In the context of this study, attitude is defined as the overall appraisals of individuals concerning participation on SNS.

The study findings also show that subjective norm has positive significant (.157) direct effects on intention to use SNSs. The result is consistent with the findings of Montesarchio [20]' study which found that subjective norm was positive explanatory variables of intent. Moreover, the result also is perfectly consistent with a study by Cheung and Lee which found that a stronger subjective norm leads to a higher level of intention to participate in an online social networking site [7]. This finding has been also confirmed by study of Al-Debei, et al., [3].

VI. IMPLICATIONS FOR THEORY AND PRACTICE

A. Implications for theory and research

In the field of information systems, scholars have conducted many studies focusing on the adoption of different information technologies and widely cover aspects related to adoption intentions and behavior. Several IS models have been developed and applied to understand determinants of behavioral intention and usage behavior. In particular, this study addresses the behavioral intention and usage behavior of SNSs users. This research contributes to the body of knowledge by exploring the behavioral and social factors affecting users' decisions to adopt SNSs as a new Information and Communication Technology (ICT) or not; aiming to extend our understanding and knowledge in this domain. The present study also contributes to the theory of planned behavior by providing a support for

its efficacy in understanding and predicting people's use of SNSs. Overall, this study provided some support for the application of the TPB model in the context of high-level SNS use with attitude and subjective norm significantly predicting intention, which, in turn, significantly predicted behavior.

B. Implications for practice

The present study's found that attitude construct indirectly influence usage behavior through its direct effect on behavioral intention. This indicates that SNSs users, who have positive feeling or evaluation towards using the Internet and SNS' sites are more likely to adopt such services. This suggests that SNSs owners should develop effective strategies that take into account the individuals' attitude by re-building policies and regulations which promote a positive feeling of individuals towards using SNSs.

In addition to importance of individuals' attitude, our findings also confirm that subjective norm has positive significant (.157) direct effects on intention to use SNSs, which suggests that perceived social pressure plays a critical role in SNS use. In other words, SNS users believe they are expected to use SNS by one or more important referents. Thus, individuals may choose to adopt SNSs if they believe one or more important referents think they should, even if they do not favor the SNSs or its consequences. This give us a thought that using SNS is inherently related to other people. For those who use SNS, managing social networks with SNS will be considered a universal trend; thus, the popularity of SNS is expected to encourage the users to participate in the same activity. Hence, SNSs' service providers, and developers should take this into their account.

VII. LIMITATIONS AND FURTHER RESEARCH

A careful and systematic effort has been presented in this study to examine theory of planned behavior in understanding and predicting people's use of SNSs. In order to strengthen the study a number of features such as a large sample size, actual measures of behavior collected over time and a realistic setting were included. However, the present study has limits, it only considered intention and behavior in the context of SNSs usage, and it is unclear whether the analytical results can be generalized to other areas of context in IS. The sample was collected in Saudi Arabia and generalization of the study findings to other countries might be limited due to cultural differences in online user behaviors. Hence, the adopted model should be tested further using samples from other countries, thus future research is needed for a number of reasons in order to test the model further in SNS context.

VIII. CONCLUSIONS

In this study, intentions of the individuals and their behavior on Social Networking Sites (SNSs) have been examined from a social and behavioral perspective. To achieve the aim of this study, theory of planned behavior is utilized. The results depict that attitude and subjective norm have significant effect on the participation intention of adopters and participation intention has a significant effect on participation behavior. However, the study findings also show that perceived behavioral control has no significant effect on participation intention or behavior of adopters. The model adopted in this study explains 52% of the variance in "Participation Intentions" and 38% of the variance in "Participation Behavior". Participation of behavioral intention in the model's explanatory power was the highest amongst the constructs, explaining 20% of the usage behavior. On the other hand, attitude was able to explain around 12% of the usage behavior on SNSs.

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