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Research Article
Assessment of the Intimacy Levels of the Online Social Interactions in Saudi Arabia

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Abstract

Background and Objective: The emergence of online social interaction platforms has aided communication and interactions amongst people across the globe. Individuals are forming online friendships and relationships following the offline pattern without the need to physically meet the other party. However, it is noteworthy that the offline patterns on the formation of friendships and relationships vary amongst different communities, which is dependent on the perceptions towards the interactions across genders. Saudi Arabia is characterized with conservatism, with strained interactions between the males and females. This formed the basis of the study as it sought to examine the levels of intimacy in online social interactions amongst the Saudis. **Methodology:** To achieve the objective, the study integrated social penetration theory (SPT), social information processing (SIP) which is known as *Onion theory* and the planned behavior (TPB) theories to elucidate the factors that influence online social intimacy and the level of intimacy levels forthwith. The focus of the assessment was on the online identity presentation of users as portrayed by their online behavior and online communication factors and how the factors influence their levels of online social intimacy. The data used in the study was collected using questionnaires from 450 participants aged 18-50 years, who were Facebook users in Saudi Arabia from 18th May-20th August, 2017. The questionnaires used a five-point Likert scale. The study used the structural equation modelling (SEM) to examine the factors. **Results:** The findings of the model indicated that both behavior and communication factors have a significant positive influence on the online friendships and little influence on the online relationships. The attitude in the behavioral factors and textual in the communication factors were the greatest factors that influenced online friendship. **Conclusion:** Therefore, the study revealed the existence of both online friendships and relationships amongst the Saudi Arabians, but with only a small number of online relationships due to the Saudi's conservative culture. Further, it contributed to the development of a more differentiated model in measuring the intimacy in online social interactions.

INTRODUCTION

Since online social sites were introduced, the interaction between people has changed. As a result, a new form of interacting has been revealed called 'online social interaction'. The online social interaction refers to both friendship and relationships[1,2]. Online friends are defined as virtual friends who meet via social sites such Facebook and websites that support people meeting friends[3]. According to researchers, an online friendship is a friendship created exclusively via the Internet through social media sites such as Facebook[3,4]. On the other hand, online relationships arise when two social network users interact based on common interests. The online relationships begin with online friendship when the social network users add other users as friends on their profiles and then progresses and transforms into a meaningful online relationship[5,6]. Early studies focused on the influence of online identity presentation (non-verbal cues) on online interaction[1,5,7].

This paper provides an inclusive framework that gives a better measurement of online interaction intimacy by combining three approaches. The first one was social penetration theory (SPT), which provides two important factors, depth and breadth in measuring intimacy, the more people relieve details about themselves, the more intimate they become[5,8,9]. The second approach was the social information processing (SIP), which provides one-factor 'duration', the more people spend time together the more they reveal and know information about each other[1,2,10-12]. The last approach was the planned behaviour (TPB) with three factors, perceived behaviour, attitude and subjective norms, which was used to examine and predict the Saudis' behaviour in online social interaction.

Both online friendship and relationship are well documented in the Western and Asian countries where equally, males and females are free to interact with each other. In Saudi Arabia, however, gender segregation is an important factor that has shaped the social interaction amongst the Saudi Arabians. This means that females are not allowed to mingle or to freely interact with males they are not directly related to, especially when they are not accompanied by a Mahram (Mahram is a male that a female cannot marry, for example, a father, a brother or an uncle)[13-16]. Thus, the social interactions across gender are restricted and limited to necessary needs such as a doctor's consultation or institutional requirements. Any other form of social interaction besides that is rejected by families and society.

In Saudi, many studies have been conducted about the offline social interaction[13-19]. Nevertheless, they are silent about the online social interaction across gender in Saudi Arabia, which is a new trend to the society and needs to be examined. The new trend has been seen to cause problems in the Saudi society. This is as indicated by a recent academic study by Luppicini and Saleh[20] which highlighted that divorce rates in the Arab countries have risen dramatically in the recent years (from 25% in past years to 60% by 2016) and it is partly attributable to the new social media culture. Researchers explain that some marriage relationships end because of the perceived ease of finding alternate partners online[3]. Moreover, earlier studies highlighted the need to conduct and examine the online social interaction in different cultures as there are limited studies conducted in collectivism cultures[3,5,21]. Saudi Arabia is one of the collectivism cultures that has not conducted the sort of study and has not examined it exhaustively yet according to a meta-analysis by Liu and Yang[22] all the above prompting the need for this study. This study aims to fill this gap by examining the levels of intimacy in online social interaction across genders in Saudi.

Online identity presentation and intimacy: Online identity presentation refers to how people present themselves in the online world and that sometimes would be opposed to how or who they are in reality[23-25]. It is considered as the first step in communication in the establishment of an online presence. In the virtual world, presence is achieved through online identity presentation, which involves non-verbal cues, such as visual and textual[7]. A lot of studies emphasize the importance of visual elements as it helps to improve and develop online social interaction[5,7,21]. In addition, there are studies examining the role of textual elements in providing a clear insight and making impression on others[1,5].

Online identity plays a vital role in developing and maintaining online friendship and romantic relationships[1,3,5,6,23,26]. The most important basis of intimacy in online social interaction is online identity presentation. Several studies have observed high levels of online identity presentation in online relationships and established a positive association between people and developing friendships[3,6,19,16,27,28].

There is a direct link between online identity presentation and liking in online social interaction. The more information that one reveals or shares and the more intimate the information is, the more 'likes' they get and develop the online interaction[8,10]. In addition to that, when one reveals information to another person then they tend to develop a liking towards the receiver. When people share intimate information, such as how they feel about a certain topic and spending more time in the communication, they increase the chances of liking and attracting the receiver[28]. This is consistent with both the social penetration theory (SPT)[29] and

the social information processing theory (SIP)[30]. This is because as people spend more time and interact continually, information gradually moves from shallow sharing into a more intimate sharing[28]. Previous studies conducted about online social interaction imply that social networking sites users are motivated to create and maintain online identity presentation for the purposes of effective online social interaction and sustaining friendships[23,31]. From the above, the first three factors in the suggested framework were visual, textual and duration as they are considered the critical factors in online identity presentation and have a major influence in online social interaction.

The Planned Behaviour (TPB): Ajzen[10] proposed the Theory of Planned Behaviour (TPB) in 1985 in the attempt to solve the limitation of the theory of reasoned action. The TPB addresses the behaviours that occur without an individual's volitional control. The first variable is perceived behaviour that accounts for the situations where a person has less control over certain behaviour. According to Ajzen[10] this component influences the attitude that one has towards behaviour and thus, it impacts the outcome of behaviour. The second component is the subjective norms that are comprised of the beliefs about the normative expectation of others[10]. The third component is attitude, which presents the extent to which a person has a positive or negative evaluation towards a specific behaviour[32]. A lot of studies have used the TPB to examine specific behaviours. Al-Debei *et al.*[33] used it to examine 'why people keep on coming back to Facebook'. Heirman *et al.*[32] used it to assist adolescents' acceptance of friendship requests by online strangers and Al-Ghaith[34] used TPB to test the participation behaviour on social networking sites (SNS) in Saudi. The TPB in this study helped to explain and predict how Saudi Facebook users behave online in relation to social interaction and whether or not the societal expectations influence their online behaviour. Based on TPB, the researcher developed the following hypotheses for the study:

H1: There is a significant influence of attitude on friendship in online social interaction

H2: There is a significant influence of attitude on relationship in online social interaction

H3: There is a significant influence of perceived behaviour on friendship in online social interaction

H4: There is a significant influence of perceived behaviour on relationship in online social interaction

H5: There is a significant influence of subjective norms on friendship in online social interaction

H6: There is a significant influence of subjective norms on relationship in online social interaction

Social Penetration Theory (SPT): Social Penetration Theory by Altman and Taylor[29] (sometimes referred to as *Onion theory*), is applied in explaining the differences in communication relating to the depth and breadth of interpersonal relationships. The theory suggests that people are more likely to reveal personal information if they think that an interaction they are about to engage in is pleasant, rewarding, safe and useful. Conversely, in situations where social interactions are considered risky and less rewarding, an individual evaluates the relationship based on its benefits and the costs. Both breadth and depth are major dimensions of identity presentation and are thus influenced by an individual's evaluation[27,29]. There are four stages of intimacy[31] beginning from the *Orientation stage* where communication adheres to main norms. The second stage is the exploratory affective stage and it involves the establishment of casual friendship. This stage may be followed by an effective stage where through the communication of personal and private matters, there is development of the romantic relationship, which is revealed among individuals. The fourth stage is the stabilization level, which according to this theory is characterized by openness and comfortable communication. In these stages, normally, individuals evaluate the cost and the benefits of the relationship and decide whether to deepen the relationship or to mark its end due to the communicators withdrawing from the presentation of the identity.

There are many studies that used SPT to examine the intimacy of online interaction by examining the depth and breadth of online identity[11,31]. Social penetration theory was applied to the online identity presentation factors (visual and textual highlighted above) in this study in the same way as past studies. Thus the researcher developed the following hypotheses:

H7: There is a significant influence of visual on friendship in online social interaction

H8: There is a significant influence of visual on relationship in online social interaction

H9: There is a significant influence of textual on friendship in online social interaction

H10: There is a significant influence of textual on relationship in online social interaction.

Social Information Proses (SIP): Walther[30] established the SIP theory in 1992. The theory is based on the Computer-Mediated Communication (CMC), which can be through the chats and posts, or any other form of non-verbal communication. The theory emphasizes that even though the users never get to interact face-to-face, given time to
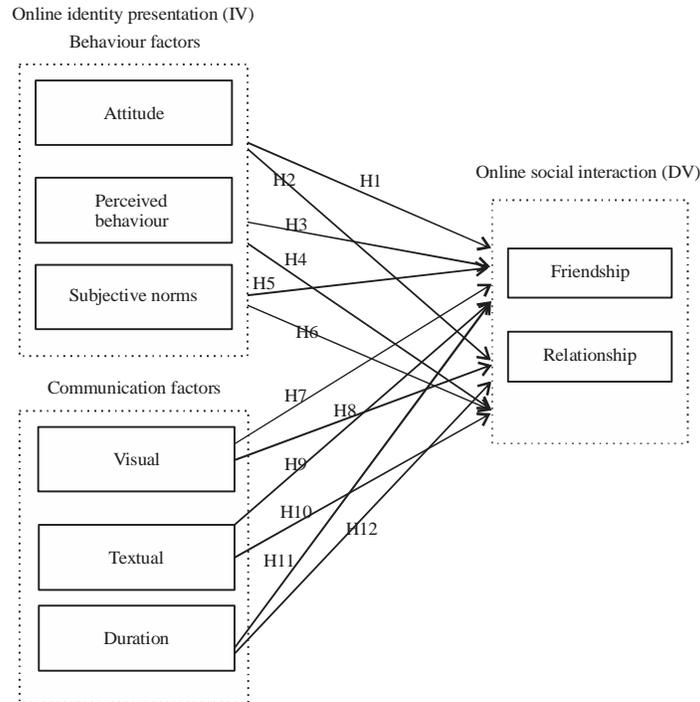
Fig. 1: Hypothesis of The study (Research Model)

H: Hypothesis as the study contains 12 Hypothesis mentioned above under each theories, H1: There is a significant influence of attitude on friendship in online social interaction, H2: There is a significant influence of attitude on relationship in online social interaction, H3: There is a significant influence of perceived behaviour on friendship in online social interaction, H4: There is a significant influence of perceived behaviour on relationship in online social interaction, H5: There is a significant influence of subjective norms on friendship in online social interaction, H6: There is a significant influence of subjective norms on relationship in online social interaction, H7: There is a significant influence of visual on friendship in online social interaction, H8: There is a significant influence of visual on relationship in online social interaction, H9: There is a significant influence of textual on friendship in online social interaction, H10: There is a significant influence of textual on relationship in online social interaction, H11: There is a significant influence of duration on friendship in online social interaction, H12: There is a significant influence of duration on relationship in online social interaction, IV: independent variables, DV: dependent variables

communicate effectively, they can develop a relationship with the similar level of strength as to that of verbal communication. It is important to note that SIP theory was designed to explain the formulation and subsequent development of relationships initiated via text-based CMC. Many studies conducted about online interaction found that time plays an important role in online relationships and friendships[2,12,35]. The following hypotheses were formulated based on SIP:

H11: There is a significant influence of duration on friendship in online social interaction

H12: There is a significant influence of duration on relationship in online social interaction

The research model that was used to test the twelve hypotheses that were formulated from the theoretical framework in relation to the six factors that influence online social interactions was as shown in Fig. 1.

MATERIALS AND METHODS

The measurement items in this study are 86 questionnaires were adopted and some were adapted from the existing literature to suit the current study (Table 1 in Appendix A). First, the items for measuring behaviour factors contained three constructs: Perceived Behaviour, Attitude and Subjective Norms and were measured with 30 items. The TPB scales adopted from Heirman et al.[32] and Al-Debei et al.[33]. The researcher, thus, created five items in Attitude, three items in Perceived Behaviour and finally eight items in Subjective Norms (Appendix A). Second, the communication factors contained three constructs: Visual, Textual and Duration. The researcher adapted eight items from Bailey[36] as well as Elmasry et al.[37] five-items. The researcher generated twelve items in these three factors (Table 1 in Appendix A). Third, the measurement for online social interaction contained two constructs: Online Friendships and Online Relationships, which were measured with 17-items using Facebook Relational Maintenance Measurement (FRMM) adopted from

Appendix A Table 1: Adapted/adopted questionnaire items

Factors	Authors
Attitude	
I have positive opinion on Facebook	7,9 and 11 Heirman *et al.*[32]
I have positive opinion about Facebook friendship	1-4 Al-Debei *et al.*[33]
I have positive opinion about Facebook friendship with opposite gender	2-3-5-6-10 created by the researcher of the current study
I think continuance usage of Facebook is good for me	
I think making friendship on Facebook is good for me	
I think making romantic relationship on Facebook is good for me	
It is stupid to accept friendship request from people you have never met offline	
It is stupid to accept friendship request from opposite gender	
It is harmful to accept friendship request from people you have never met offline	
It is harmful to accept friendship from opposite gender	
It is dangerous to accept friendship request from people you have never met offline	
It is dangerous to accept friendship request from opposite gender	
Perceived behaviour	
I am capable of accepting friendship request from people I have never met offline	5 Al-Debei *et al.*[33]
I am capable of accepting friendship request from opposite gender	1 and 3 Heirman *et al.*[32]
It is easy for me to accept friendship request from people I have never met offline	2-4-6 created by the researcher of the current study
It is easy for me to accept friendship request from opposite gender	
Using Facebook is entirely within my control?	
Accepting Facebook friendship request from opposite gender is completely up to me	
Subjective norms	
People who influence my behaviour think I should continue using Facebook	1 and 3 Al-Debei *et al.*[33]
People who influence my behaviour think that I should make friendship with opposite gender on Facebook	9 and 11 Heirman *et al.*[32]
People who are important to me would think that I should continue using Facebook	2-4-5-6-7-8-10-12 created by the researcher of the current study
My family doesn't know about my Facebook account	
People who are important to me think that I should tell true information about myself to my Facebook friends	
People who are important to me would think that I should interact with opposite gender on Facebook	
People who are important to me think that I should communicate with opposite gender on Facebook for necessary need only	
People who are important to me think that I should keep my friendship formal	
Significant others in my life would approve of me accepting friendship request from people I have never met	
Significant others in my life would approve of me accepting friendship request from opposite gender	
Significant others in my life accept friendship request from people I have never met	
Significant others in my life accept friendship request from opposite gender	
Visual	
My self-disclosure was an accurate reflection of who I really am	1 and 2 Bailey[36]
The photos I post on my Facebook wall are reflecting who I really am	3 till 7 Elmasry *et al.*[37]
My real photo appears in my profile picture	
Parts of my body appear in the profile picture	
A fake photo appears in my profile picture	
Avatar appears in my profile picture	
Other things appear in my profile picture	
Textual	
I have my real name on my profile	1 till 4 created by the researcher of the current study
I have posted my date of birth on my profile	

Appendix A Table 1: Continued

Factors	Authors
I have posted my phone number on my profile	
I have posted my home address on my profile	
I have posted my school name on my profile	
I intimately disclosed who I really am openly in my disclosure	5 till 9 Elmasry *et al.*[37]
I was not confident that my expression of my own feeling was true reflections of myself	
My statements of my feelings were brief	
I was not honest in my self-disclosure	
Duration	
I have known my Facebook friend for more than two years	Number one only is created by the researcher of the current study
I spend a long time on my Facebook	
Once I got started, my self-disclosure lasted a long time	
Only infrequently I do express my personal opinions	2 till 6 Elmasry *et al.*[37]
I have short interaction time with my Facebook friends	
The conversation lasted the least time when I discussed myself	
Online friendship and online relationship	
I respond in a timely manner when my friend sends me a message.?	
I send to my friend private messages	
I coordinate future interactions with this person	
I post on my friend's wall	
I send my friend cheerful messages	
I tag my friend's status	
I like my friend's status update	
I browse my friend profile	1 till 17 McEwan *et al.*[38]
I share my thoughts with my friend	
I try to like my friend's status update when they post something important	
I update my status to inform my friend about my everyday life	
I post a status update to connect to this person	
I post photos so my friend can share the experience even though s/he was not present	
I talk about our relationship	
I tell my friend how I feel about our relationship	
I show my friend how much s/he means to me	
I talk about our plans for the future	

McEwan *et al.*[38]. The FRMM was valid and reliable for this study because many researchers in the field used it in their study to measure different aspects of friendship and relationship, either online and offline[39-41]. The FRMM was been marked by Walther[30] as a great task and function of social media. The researchers McEwan *et al.*[38] developed the FRMM scale to suit the changes that occur in social media in order to measure the interpersonal relationship with high validity, as it includes all the new and recent technics, posts, private messages, likes, tags, status and profile.

The research was conducted through a self-administered survey with a total of 86 questions. A five-point Likert scale was used as the measure for the participants' responses on the questionnaire. The questionnaire was validated through a pre-test and a pilot test. For the pre-test, a questionnaire was given to three (3) experts in the field, who verified its logical consistency, ease of understanding, wording and the appropriateness of the instruments. The pilot test was conducted using 30 Saudi Facebook users (Table 2, 3 in Appendix A).

Survey administration: The research model was tested using data collected from Facebook users in Saudi Arabia (18th May-20th August, 2017). Facebook was chosen, as it is the second most popular site in the world. In addition, the usage of Facebook amongst the Saudi population is increasing yearly. This conforms to a report released in 2014, which revealed that the number of Facebook users in Saudi Arabia had risen from six million in 2012 to 7.8 million in 2013. In 2015, this number had grown to 12 million active users[42].

Data was collected via a self-administered survey using a stratified random sampling method. The sample was composed of 500 participants (450 after data screening) with the study targeting all Saudi Facebook users. The questionnaire had a cover page that presented the purpose of the study, the freedom to withdraw at any time and an assurance of privacy. The participants were instructed to answer all the questions based on their experience using Facebook. After they finished the data-collection process, small rewards were given to all the participants in the submission. The demographic information of the respondents was listed in Table 1.

Data analysis: The study used SPSS and AMOS software by applying the Structural Equation Model (SEM) like many recent and close earlier studies in the field[10,31,34,39,43]. The first step was CFA, followed by a measurement model and the last step tested the hypothesis through structural modelling (hypothesis model). Both the CFA and the measurement models tested the reliability and validity of the measures before assessing the structural model. The CFA, measurement and hypothesis models were also tested for the goodness-of-fit and met the cut-point as shown in Table 4-6 in Appendix A.

Appendix A Table 2: Reliability for pilot test (N = 30)

Variable name	Numbers of items	Cronbach's alpha
Attitude	12	0.82
Perceived behaviour	6	0.93
Subjective norms	12	0.83
Visual	7	0.86
Textual	9	0.81
Duration	6	0.84
Friendship	17	0.86
Relationship	17	0.82
Total items	86	

Cronbach's alpha: Measured the correlation of two items that measure the same construct

Appendix A Table 3: Number of indicators in each construct

Variable name	Number of questions	Scales	Scale of measurement
Behaviour			
Attitude	12	5 likert scales	Interval
Perceived behaviour	6	5 likert scales	Interval
Subjective norms	12	5 likert scales	Interval
Communication			
Visual	7	5 likert scales	Interval
Textual	9	5 likert scales	Interval
Duration	6	5 likert scales	Interval
Online social interaction			
Friendship	17	5 likert scales	Interval
Relationship	17	5 likert scales	Interval
Total items	86		

Interval: Type of measurement that used numbers in order to gives result of hypothesis

Appendix A Table 4: CFA Goodness of fit index (n = 450)

Variables	Original items	Items after CFA	CMIN	DF	CMIN/DF	p-value	GFI	CFI	TLI	RMSEA
Attitude	12	7	44.95	14	3.21	0.000	0.96	0.96	0.95	0.07
Perceived behaviour	6	3	1.97	1	1.97	0.000	0.99	0.99	0.98	0.04
Subjective norms	12	7	83.13	14	5.94	0.000	0.94	0.97	0.65	0.10
Visual	7	4	43.39	2	21.69	0.000	0.951	0.96	0.90	0.21
Textual	9	5	93.03	5	18.61	0.000	0.926	0.935	0.870	0.198
Duration	6	3	14.03	1	14.03	0.000	0.980	0.975	0.926	0.170
Friendship	17	6	36.15	9	4.02	0.000	0.973	0.989	0.981	0.082
Relationship	17	6	82.50	9	9.17	0.000	0.940	0.976	0.959	0.135

Appendix A Table 5: Fit of measurement model

Measures	Fit indices	Threshold values
Absolute fit level		
RMSEA	0.017	Less than 0.08
GFI	0.949	0.90 and above
p-value	0.062	p-value$\geq$0.05
Incremental fit level		
AGFI	0.935	0.90 and above
CFI	0.995	0.90 and above
TLI	0.994	0.90 and above
NFI	0.955	0.90 and above
Parsimonious fit level		
CMIN/DF	1.130	Less than 2.0

Appendix A Table 6: Fit of hypothesized model (structural model)

Measures	Fit indices	Threshold values
Absolute fit level		
RMSEA	0.017	Less than 0.08
GFI	0.949	0.90 and above
p-value	0.058	p-value$\geq$0.05
Incremental fit level		
AGFI	0.935	0.90 and above
CFI	0.995	0.90 and above
TLI	0.994	0.90 and above
NFI	0.958	0.90 and above
Parsimonious fit level		
CMIN/DF	1.132	Less than 2.0
SMC (R^2)		Bigger better
Friendship	0.154	
Relationship	0.015	

Table 1: Information about the participants of the study (n = 450)

Items	Characteristics	Frequencies	Percentage
Gender	Male	233	51.8
	Female	217	48.2
Age (years)	18-20	10	2.2
	21-30	242	53.8
	31-40	160	35.6
	41-50	35	7.8
	Above 50	3	0.7
Marital status	Married	237	52.7
	Single	203	45.1
	Others	10	2.2
Education	High school	12	2.7
	Bachelor	307	68.2
	Master	120	26.7
	PhD	11	2.4
Year user Facebook	1-3	4	0.9
	4-6	162	36.0
	More than 6	284	63.1
Account number	One	100	100.0

Therefore, the first step involved evaluating the CFA and the measurement model on the criteria of reliability, convergent validity and discriminant validity. The purpose was to test the relationship between the variables in the structural model[31,44]. The, structural model was applied to test the twelve hypothesis.

RESULTS AND DISCUSSION

Tests for reliability and validity: In regards to composite reliability (CR) values, all of the CR values were well above the 0.9 thresholds and all of the AVE values ranged from 0.92-0.99 as shown in Table 2. A threshold of above 0.70 was used to establish convergent validity. Table 3 showed that all the indicators' loadings on their corresponding constructs exceeded 0.70. For the evaluation of convergent validity, the threshold used was 0.5 or greater for the average variance extracted (AVE) for each construct. The cross-loadings and the square root of the AVEs were used to establish the discriminant validity. The square roots of the AVE on the diagonal of the correlation matrix were greater than the corresponding off-diagonal inter-construct correlations as was presented in Table 4. The results indicated that the first and the second steps fulfilled the criteria of composite reliability, convergent validity and discriminant validity.

Structural-path analysis was the third and last step in SEM. The results of the model were as presented in Table 5. Six of the hypotheses displayed a p-value of less than 0.05 and therefore, they were accepted. The other six that had a p-value of above 0.5 were rejected. Overall, the base model as presented in (Fig. 2) explained 0.154 of the variance in the online friendships and 0.015 of the variance in the online relationship. This was supported by the results of the descriptive statistics (Table 7, 8 in Appendix A) that showed that the 450 participants of the study had online friendships while only a small number, 11.6%, had online relationships. This explained the rejection of all online relationship hypotheses as well as the lower number of R^2 on the hypothesis.

Table 2: Reliability and average variance extracted of the constructs

Observed variables	Items	Mean	Construct reliability	Average variance extracted
Attitude	7	3.70	0.97	0.65
Perceived behaviour	3	3.20	0.92	0.67
Subjective norms	7	3.50	0.99	0.74
Visual	4	2.80	0.98	0.85
Textual	5	3.40	0.98	0.77
Duration	3	3.80	0.96	0.79
Friendship	6	3.24	0.98	0.85
Relationship	6	3.56	0.99	0.86

Table 3: Convergent validity for constructs

Variable name	Factor loading[2]	Variable name	Factor loading[2]
Attitude	0.62	Textual	0.80
	0.52		0.50
	0.55		0.87
	0.61		0.88
	0.77		0.81
	0.74		3.86
	0.72		
	4.35		
Perceived behaviour	0.73	Duration	0.90
	0.65		0.69
	0.65		0.79
	2.03		2.38
Subjective norms	0.54	Friendship	0.75
	0.74		0.84
	0.60		0.87
	0.97		0.85
	0.58		0.95
	0.79		0.86
	0.98		5.12
Visual	5.20	Relationship	
			0.96
			0.55
	0.74		0.90
	0.91		0.89
	0.85		0.95
	0.89		0.91
	3.40		5.16

Factor loading[2]: Factor loading is basically the correlation coefficient for the variable and factor. Factor loading shows the variance explained by the variable on that particular factor

Table 4: Discriminant validity (the square roots of the average variance extracted)

	BEA	BEB	BEN	COMV	COMT	COMD	SIF	SIR
BEA	1.00							
BEB	0.17**	1.00						
BEN	0.42**	0.09	1.00					
COMV	0.31**	0.02	0.26**	1.00				
COMT	0.47**	0.06	0.27**	0.35**	1.00			
COMD	0.20*	0.26*	0.16**	0.03	0.22**	1.00		
SIF	0.28**	0.13**	0.27**	0.24**	0.12**	0.31**	1.00	
SIR	0.03	0.04	0.01	0.07	0.04	0.02	0.04	1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level, BEA: Attitude, BEB: Perceived Behavior, BEN: Subjective norms, COMV: Visual, COMT: Textual, COMD: Duration, SIF: Friendship, SIR: Relationship

Appendix A Table 7: Percentage of online friendship

Online gender	Friendship across	Frequency	Percent	Valid percent	Cumulative percent
Valid	Male to male	67	14.9	14.9	14.9
	Male to female	166	36.9	36.9	51.8
	Female to male	128	28.4	28.4	80.2
	Female to female	89	19.8	19.8	100.0
	Total	450	100.0	100.0	

Appendix A Table 8: Percentage of online relationship

Online gender	Friendship across	Frequency	Percent	Valid percent	Cumulative percent
Valid	Male to female	30	6.7	57.7	57.7
	Female to male	22	4.9	42.3	100.0
	Total	52	11.6	100.0	
Missing	System	398	88.4		
Total		450	100.0		
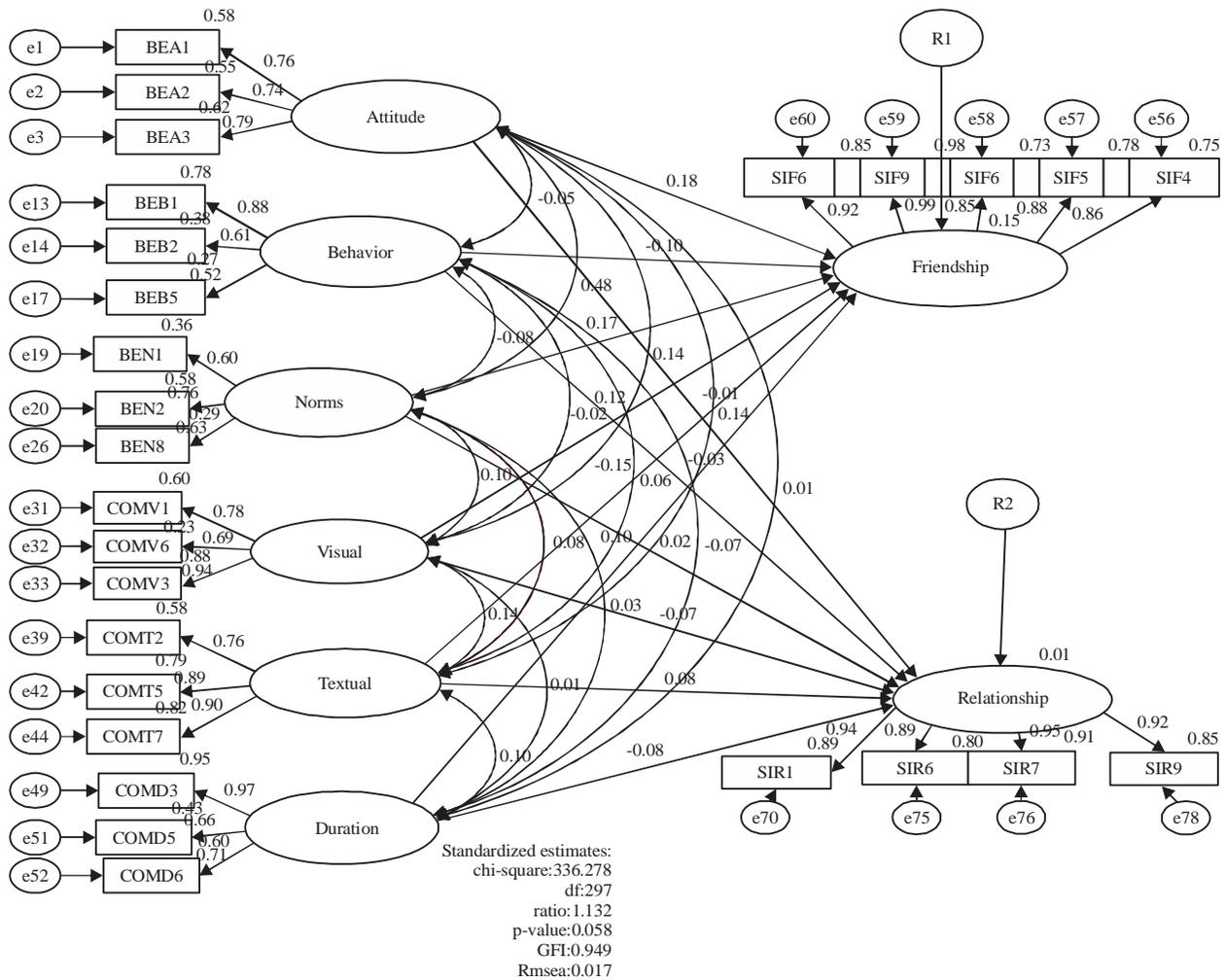
Fig. 2: Structural model

Table 5: Direct hypotheses testing result

H	From	To	Estimate	Beta	CR	p-value	Hypothesis
H1	BEA	SIF	0.263	0.180	2.88	0.004	Supported
H2	BEA	SIR	0.000	-0.011	-0.167	0.867	Not supported
H3	BEB	SIF	0.143	0.101	2.22	0.049	Supported
H4	BEB	SIR	-0.021	-0.033	-0.624	0.533	Not supported
H5	BEN	SIF	0.284	0.172	2.60	0.009	Supported
H6	BEN	SIR	0.004	0.021	0.306	0.760	Not supported
H7	COMV	SIF	0.155	0.121	2.45	0.014	Supported
H8	COMV	SIR	-0.053	-0.066	-1.27	0.205	Not supported
H9	COMT	SIF	0.097	0.148	2.02	0.003	Supported
H10	COMT	SIR	0.062	0.081	1.56	0.119	Not supported
H11	COMD	SIF	0.101	0.101	2.15	0.032	Supported
H12	COMD	SIR	-0.071	-0.080	-1.62	0.106	Not supported

BEA: Attitude, BEB: Perceived behavior, BEN: Subjective norms, COMV: Visual, COMT: Textual, COMD: Duration, SIF: Friendship, SIR: Relationship

Structural model also called (Hypothesis model) which gives the result of the 12 Hypothesis (the relation between the independent and dependent variables) which mentioned above in Fig. 1.

This Hypothesis model gives the result (Estimate, Beta, C.R. and P) which presented in Table 5.

DISCUSSION

Behaviourial factors: As TPB theory explains, Facebook users react to and act on specific behaviour. In this study, the behaviour factors represented how Saudi Arabian Facebook users respond to online friendships and relationships and

were tested using H_1-H_6. The results from the hypothesis model revealed that behaviour factors had a significant influence on online friendships and a very limited impact on online relationships. H_1 and H_2 examined the influence of attitude on online friendships and relationships. Attitude presents the extent to which a person has a positive or negative evaluation towards a specific behaviour[9]. H_1 was accepted indicating that the attitude factor had a positive influence on online friendships for the Saudis. Therefore, the study revealed that Saudi Facebook users have a positive opinion about using Facebook and about Facebook friendships. On the contrary, H_2 was rejected indicating that attitude did not impact online relationships for the Saudis. This was attributed to the fact that the positive perception of online relationships was rejected and found unexciting in the Saudi culture and religion[17,19]. In fact, most of the Saudis recognise that to be a harmful and dangerous behaviour that could yield detrimental outcomes in form of divorces, honour killings or extortions[20].

H_3 and H_4 tested the impact of perceived behaviour on online friendships and relationships. According to TPB, the perceived behaviour is considered as the reason for the situation where a person has less control over a certain behaviour. According to Ajzen[10] this component influences the attitude that one has towards a behaviour[45]. The H_3 was accepted indicating that perceived behaviour influences online friendships, while H_4 was rejected indicating that perceived behaviour has no significant influence on online relationships.

H_5 and $H6$ tested the impact of subjective norms on the online friendships and relationships. According to Ajzen[10] subjective norm is comprised of the beliefs about the normative expectation of others. H_5 was accepted indicating that subjective norms have a significant impact on online friendships, while $H6$ was rejected indicating that subjective norms have a limited impact on online relationships. The participants exhibited a high inclination towards meeting the expectations of the society and of the people around them. They also drew influence from the imperative and influential people, who displayed a similar behaviour such as accepting friendship requests from people that they had never met and accepting friendship requests from people of the opposite gender.

The study showed attitude to be the highest behavioural factor ($\beta = 0.180$) in influencing online friendships, followed by subjective norms ($\beta = 0.172$) and the least was perceived behaviour ($\beta = 0.101$). The study took a different and unique approach in examining TPB in the online social interaction across both genders, which cannot be compared with the past

studies as they assessed online friendships and relationships on different perspectives and in different cultures[32,34]. In entirety, the results of the current study were consistent with the TPB theory, as it explained the behaviour of Saudi Facebook users with respect to online social interaction.

A study by Al-Saggaf and Begg[13] found that gender segregation influenced Saudi Arabian's attitude towards their online identity presentation. The study also revealed that Saudi females found difficulties in making Facebook friendships and relationships because they were expected to minimize communications with the opposite sex as expected from them. On the other hand, Saudi males had more freedom regarding Facebook friendship and relationship. This present study was conducted seven years later and found some changes in the Saudis' attitude as well as norms due to the introduction of new technology. The current study found that Saudi Arabians represent a good level of online friendships across genders as the males to females was 36.9% while 28% was from females to males. This was higher than the same-sex online friendships where males to males was 14.9% and females to females was 19.8% (Table 7 and 8 in Appendix A). The findings of the study were also in line with past study by Wang *et al.*[46] which indicated that both male and female subjects were more willing to initiate friendships with opposite-sex as the cross-gender relationships controlled online friendships.

Communication factors: In regards to the communication factors, the model showed that all the three communication factors have significant positive influence on online friendship and no great impact on online relationships. The factors were tested using H_7-H_{12}. H_7 and H_8 tested the impact of the visual factor on the online friendships and relationships. H_7 was accepted indicating that visual factors had a significant impact on online friendships, while H_8 was rejected indicating that the visual factors did not have a significant impact on the online relationships. The findings were consistent with past studies that highlighted the importance of the visual factors in online interactions[1,5,8,10,25,28,46-48].

H_9 and H_{10} tested the impact of the textual factors on the online friendships and relationships. H_9 was accepted indicating that textual factors had a significant impact on online friendships, while H_{10} was rejected indicating that the textual factors did not have a significant impact on the online relationships. The findings were consistent with past researches that mention that the online users reveal personal and sensitive information with the other user with whom they are exchanging personal information[3,11,21,27,31].

H_{11} and H_{12} assessed the impact of the duration factors on the online friendships and relationships. H_9 was accepted indicating that duration factors had a significant impact on online friendships, while H_{10} was rejected indicating that the duration factors did not have a significant impact on the online relationships. The results were also consistent with previous studies that highlighted that time is considered as an important factor in the development of online relations[12,31]. Also, previous scholars asserted that when people spend more time interacting online, the chances of developing close ties increased. Besides, they also showed that when people frequently communicate online, they tend to become at ease with each other and develop close ties[49].

The study revealed the textual factors to be the most influential communication factor ($\beta = 0.148$) in influencing online friendships, followed by the visual factors ($\beta = 0.121$) and the least was duration ($\beta = 0.101$). The study revealed that the Saudis were honest in the texts more than the visual aspects due to the cultural restrictions. The Saudi Arabian Facebook users dealt more with the textual aspects (breadth of information-brief statement, honesty and confidence in self-presentation) than the visual (breadth of information-avatar, fake images, other image and part of the body image). This was consistent with a past study by Guta and Karolak[50] which revealed that Saudi females behave more carefully when they present themselves online because they understand what their society expects from them. Thus, they had a greater reluctance in posting and presenting their photos online. Elmasry *et al.*[37] also indicated that the Saudis had a great inclination to use fake, avatar and part of their body (selective self) photos instead of a real photos, which further supported the research findings on the supremacy of the textual over the visual factors in influencing the Saudis online interactions.

The order of influence was inconsistent with the previous studies in the Western and far Asia that argued that the visual factors had the greatest impact on the online interactions. The researcher referred the difference in the order of importance due to the variances in the cultural orientations, whereby the Saudi culture is more limited in the interactions between both the genders. The current study was consistent with past studies on the positive and significant influence of the communication factors on online friendship. However, the study was inconsistent with the findings from previous studies that indicated that communication factors influence online relationships. This was also attributed to the conservative nature of the Saudis' culture.

Strengths and limitations: The study engaged a high number of female participants, 48.2%, surpassing the challenge of low female participation due to gender segregation and females' identity in Saudi. Nevertheless, there were some limitations to the study. The Saudi's culture was identified as a limiting factor to the freedom of interaction among the individuals, particularly the females. Also, the model was only assessed on Facebook whereas there are other social platforms like Snapshot, Twitter and Instagram that influence online social interactions. The study also limited its assessment on posts, private messages, likes, tags, status and profile and did not assess all the elements on Facebook.

SIGNIFICANCE AND STATEMENT

The present study evaluated the influence of both behaviour and communication factors on online social interaction in Saudi. The study findings also provide the Saudi government and the Al-Ma'arouf Commission with a better understanding of the online behaviour of the Saudi Arabian. The study also provides insights to future researchers because they will build on the theory derived from the study for further explorations on online social interactions.

CONCLUSION

The study revealed the existence of both online friendships and relationships amongst the Saudi Arabians, but with only a small number of online relationships due to the Saudi's conservative culture. The results indicated that both behavioural factors and communication factors significantly influence online friendship across gender in Saudi and explains 0.154 of the online friendship. Dissimilarly, both behavioural factors and communication factors explained only 0.015 of the online relationships.

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