1032

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Towards Industry Revolution 4.0 Practice: Millennial's Intention to Use Online Property Websites by Applying the Stimulus-Organism-Response (S-O-R) Model

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Abstract— **Minimal research was explored on consumer behavior towards online property websites in developing countries. Hence, this study aims to inspect factors that affect millennial's intention to use the online property website by utilizing the Stimulus-Organism-Response (S-O-R) model as the guiding principle. The proposed research framework encompasses 3 aspects of atmospheric cues from the website (ARQW) such as ubiquity (UB), ease of use (EOU) and information exchange (IE) to establish the research hypotheses. PLS-SEM results revealed that the atmospheric cues from web sites (ARQW) such as ubiquity (U), ease of use (EOU) and information exchange (IE) are key determinants of millennial's intention to use the online property website in Malaysia. This discovery provides important findings on the factors that have strong impact on consumers' intention regarding online property websites. Suggestions for further research are also provided.**

Keywords— *Millennial Intention; Ubiquity; Ease of Use; Information Exchange; Stimulus-Organism-Response (SOR) Model.*

1.   Introduction

The diffusion of property information in the Internet has a significant impact on consumer behavior in the real estate market. Hence, industry players need to utilize this platform to get closer to all of their existing and potential customers [1], [2]. In 2017, there are nearly four billion dynamic Internet users, and almost three billion web-based clients [3]. This marks a growth of an encouraging seven percent for social media websites in 2016 [3]. As a result, online property websites are becoming increasingly frequented in the property industry. Despite this, first-time home buyers using the platform has depreciated by one per cent, from 35 percent last year to 34 percent this year. This statistic implies that real estate websites minimally enhance home buyers search efficiency [4].

In the field of marketing, management, and tourism, social media advertising via classified ads-websites have received sufficient attention from researchers. On the contrary, little investigation has accomplished on the application of online property websites for the property industry, especially that of developing countries.

For that reason, this research aims to inspect factors that have an impact on a millennial's intention to use the online property websites by utilizing the Stimulus-Organism-Response (S-O-R) model as the guiding principle. The research findings advanced understanding in terms of the millennial's intention to use the online property website, particularly customer behavior, stimulus criteria, interjecting factors and behavioral responses [6].

2. Literature Review

3. Stimulus-Organism-Response

The S-O-R model which introduced by Mehrabian and Russell [5] "incorporates three aspects: the atmosphere or stimulus (S) that initiates customer reactions, the organism (O) that responds, and the bona fide reaction (R)". The framework aims to align consumers' reactions to make clear individual perceptions and emotions in relation to the outer stimuli, and the good or poor practices which are formed in this way. Using the S-O-R model in investigating the actions of customers help define ecological enhancement and buyers' outward and inward responses using online website behaviors.

The S-O-R framework was utilized to illustrate that the outline of e-commerce web sites has impact on the buyers' feelings and triggers specific actions, which plays an effect on the number of items bought and the amount consumed at the store [7]. S-O-R has been vastly applied in relation to factors like purchase intention, impulse buying behavior, flow experience and mobile purchasing [8], [9]. For the current study, S-O-R is employed to develop one's intention to make use of an online property website for commercials or to find details about the property in terms of ubiquity, ease of use, and information exchange.

2.2 Flow Experience

Flow experience needs a regulated quality in providing situations (service counter) in order to execute certain behaviors (Internet search through websites) [22]. Past research emphasizes on the Internet that the flow experience can trigger transaction intention behavioral consequences [23], [24]. Thus, the intention to use the website is affected by the purchase behavior [25], [26]. Moreover, the flow experience affects behavioral intention, such as creating a higher tendency to purchase from the website [27]. Consumers who are underflow experience have strong tendency to perform unplanned online purchases and have extended Internet usage [28]. Likewise, Hsu and Lu [29] asserted that flow experience positively influence one's intention to play online computer games. Accordingly, it is postulated that:

H1: Flow experience has a positive influence on millennial intention to use online property websites.

2.3 Ubiquity

Ubiquity is referred to "ease and dismantles the limitations on mobility, but also improves user understanding and skill by instant appliance services in mobile manufacturing". Ubiquity affect consumers' cognitive satisfaction during their time on social media. The ubiquity of e-commerce affects customers who are engaged in the act of sending, getting information, and conducting online links on shopping platforms whenever, and wherever instantly [10]. Besides, past studies noted that ubiquity has a strong impact in students' personal lives in regards to the students' acceptance of ICT technology in an educational setting [11], [12], [13], [14], [15]. Female students are more strongly affected than their male counterparts in Chinese business schools. They feel that using elaborate business application software does not require effort and that the technology could improve their educational output. Therefore, it is hypothesized that:

H2: Ubiquity has good influence on the millennial's intention to use online property websites.

2.4 Ease of Use

Perceived ease of use refers to "the level to which one finds that utilizing a certain system would be effortless" [16]. In this study, perceived ease of use is defined as the customers' acknowledgment that minor effort is involved to use online property websites. Chandio et al. [17] asserted that property operators or customers feel that information system should be accessed to expose property data linked with the property via online platform. Doing this allows them to minimize decision-making process and help them buying or selling their property effectively. Interesting, the platform demands less effort to support their decision-making process [18]. The acknowledgment by consumers concerning the ease of use has an impact on people's perception regarding the use or their intentions to use the information systems [19], [20]. The above statements produce the next hypothesis:

H3: Ease of use has a good influence on millennials' intent to use online property websites.

2.5 Information Exchange

The switch of information is a necessary link or connection between buyers and sellers, specifically in the e-commerce sector. Berbegal-

1034

Int. J Sup. Chain. Mgt   Vol. 8, No. 4, August 2019

Mirabent et al. [21] noted that communication and sharing help enhance interaction about products between the consumers, sellers, and users, and knowledge about the effects of prompts and impulse buying behavior. The aspects of sharing information are seen as an essential component in providing for consumers "shopping pursuits, purchase process, improving consumers" shopping experience and their feelings when they are in the auction platforms [7]. Hense, the subsequent hypothesis is put forth:

H4: Information exchange positively influences the millennial's intention to use online property websites.

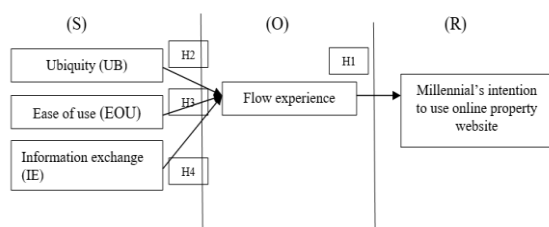The proposed theoretical framework is illustrated in Figure 1.

Figure 1: Proposed Theoretical Framework

4.   Methodology

The samples for this study were millennials in Malaysia aged 21-25 and was approached via the non-probability purposive sampling method, which guaranteed that the collected data were from legitimate sources. The sample size was estimated by using G*power 3.0 software, with the effect size of f square 0.15, α error pro 0.05, power Gf 0.95 with 3 tested predictors. Therefore, 119 respondents were the minimum sampling required for this study. Of the 400 online questionnaires emailed to the respondents, 354 were deemed suitable for data analysis as the balance had incomplete responses. Data collection using an online survey was conducted from February 30 to March 30, 2019.

The ability of online consumers to quickly respond, and the minimization of costs had encouraged researchers to research topics of interest using online surveys [33]. The respondents scored the items in the 3-section online questionnaire by using a five-point Likert scale from 1 = totally disagree to 5 = totally agree. The measurement of items for ubiquity was adapted from Kim et al. [1], while the items for information exchange was based on studies by Adjei et al. [30] and Wang and Chiang [31].

Partial Least Squares-Structural Equation Modeling (PLS-SEM) approach was employed for analysis of data [32], [34], [35].

5.   Data Analysis

Out of the 354 respondents, more than half of them are female (58.8%) with the rest being male (41.2%). The majority of the respondents are between 18 to 38 years old in this study. In addition, the majority of the respondents (62.7%) are single followed by married respondents and individuals who are divorced made up 35 percent and 2.3 percent of the total number of respondents respectively. Overall, the higher percentage in this study consists of students (25.4%), professional work (24.3%), housewife (13.6%), managers (12.4%), clerical (12.4%), retired (6.5%) and front liner (5.4%). The respondents' profiles are summarized in Table 1.

Table 1: Respondents' Demographic Profile

Variable		Frequency	Percent
Gender	Male	146	41.2
	Female	208	58.8
Marital	Single	222	62.7
	Married	124	35
	Divorced	8	2.3
Ethnicity	Front liners	19	5.4
	Clerical	44	12.4
	Managerial	44	12.4
	Professional	86	24.3
	Student	90	25.4
	Housewife	48	13.6
	Retired	23	6.5

4.1   Measurement Model Assessment

In the measurement model assessment, the convergent and discriminatory validity of 21 indicators are analyzed. Both the convergent and discriminatory validity are validated and satisfactory as each factor loading is beyond 0.50 and none of the items of any construct share significant degrees of residual variance with others constructs. Table 2 demonstrates the results of reliability and validity testing. The findings confirm that the variables have high internal consistency and adequate average variance extracted (AVE) to confirm the convergent validity [36].

Table 2: Measurement Model Assessment

Construct	Item	Loadings	CA	CR	AVE	CV (Ave > 0.5)
EU	EU1	0.681				
	EU2	0.859	0.879	0.918	0.737	Yes
	EU3	0.809				
FE	FE1	0.676				
	FE2	0.723				
	FE3	0.722	0.847	0.886	0.566	Yes
	FE4	0.774				
	FE5	0.774				
	FE6	0.834				
IE	IE1	0.835				
	IE2	0.817	0.831	0.887	0.664	Yes
	IE3	0.821				
	IE4	0.785				
IU	IU1	0.912				
	IU2	0.929	0.941	0.958	0.850	Yes
	IU3	0.941				
	IU4	0.907				
U	U1	0.831				
	U2	0.820	0.862	0.906	0.708	Yes
	U3	0.862				
	U4	0.852				

*No item was deleted as loading Composite Reliability > .708 (Hair et al., 2010, & Hair et al., 2014)

Table 3 displays the HTMT criterion to evaluate discriminant validity [32]. The result specifies that the discriminant validity is strongly established at HTMT 0.85 [36]. This the findings indicate that it is appropriate to proceed for structural model assessment to assess the research hypotheses as no concerns of multi-collinearity emerged between the items loaded on separate constructs in the outer model.

Table 3: HTMT Criterion

	EU	FE	IE	IU	U
EU	0.859				
FE	0.316	0.752			
IE	0.716	0.353	0.815		
IU	0.564	0.580	0.490	0.822	
U	0.797	0.254	0.694	0.506	0.841

Criteria: Discriminant validity is established at HTMT 0.90

Table 4 details the formative construct of ARQW yield path coefficients of 0.800, which surpassed cut-off value of 0.70, signifying convergent validity is satisfactory [36]. What's more, the VIF values are below the threshold value of 5.0.

Table 4: Formative Measurement Model Assessment

Construct	Items	Convergent Validity	Weight	VIF	t-value weights	sig
ARQW	EU1	0.800	0.118	1.702	14.476	0.000 **
	EU2		0.155	3.143	21.609	0.000 **
	EU3		0.148	2.591	23.105	0.000 **
	IE1		0.119	2.436	21.066	0.000 **
	IE2		0.082	1.999	11.110	0.000 **
	IE3		0.092	2.005	12.322	0.000 **
	IE4		0.106	1.843	16.506	0.000 **
	U1		0.119	2.158	19.438	0.000 **
	U2		0.110	2.195	18.920	0.000 **
	U3		0.137	2.651	21.633	0.000 **
	U4		0.125	2.570	20.839	0.000 **

Lateral Collinearity: VIF 3.3 or higher (Diamantopoulos & Sigouw 2006)
Note: > 1.96**

4.2 Structural Model Assessment

Table 5 demonstrates the assessment of the path coefficient by using 5000 bootstrap re-sampling. All posited hypotheses were supported, except H2. The predictive relevance values for the dependent variable is greater than 0, showing that the independent variables have the ability to predict the millennial's intention to use the property websites as anticipated by Q^2 using blindfolding procedure [36].

Table IV: Path Coefficients and Model Quality Assessment

Direct Effects	Beta	S.E.	t-value	p-value	5.00%	95.00%	Decision	f^2	R^2	VIF	Q^2
H1: Flow -> INT	0.580	0.038	15.112	0.000	0.504	0.652	Supported	0.508	0.337	1.000	0.266
Mediating Effects	Beta	S.E.	t-value	p-value	5.00%	95.00%	Decision				
H2: Ubiquity -> Flow -> INT	-0.058	0.042	1.394	0.164	-0.137	0.025	Not Supported				
H3: Ease -> Flow -> INT	0.132	0.046	2.865	0.004	0.039	0.225	Supported				
H4: InfoEx -> Flow -> INT	0.154	0.049	3.118	0.002	0.050	0.246	Supported				

5. Discussion and Conclusion

This study inspected factors that affect millennial's intention to use the online property website by utilizing the Stimulus-Organism-Response (S-O-R) model as the guiding principle. The PLS-SEM revealed that millennials' intention to use online property website is influenced by ubiquity, ease of use, and information exchange as predicted by the S-O-R model. Specifically, ubiquity has a significant negative effect on the millennials' intention to use online property website. The linkages are predominantly explained by its ability to address the problem of connectivity between potential trading partners and consumer. This proves the fact that the Internet can attract the attention of the global population and has impacted the way business is being conducted today, which is gradually moving from conventional methods of advertising (such as to let/ for sale boards, property bulletins, or magazines) to the use of the online property website such as Property Guru, Propwall, Durian Property and Property Circles.

Ease of use is also able to influence the intention to use the online property website because millennials today are significantly influenced by the simplicity with which the Internet can offer to ease to operate and purchase online [19], [20]. Moreover, millennials believe that by using the Internet, website would be free of effort and enables them to save time when making important decisions. The Internet allows millennials to search at their pace and convenience, learning a great deal about the property and related issues before they begin any actual negotiations.

Lastly, information exchange affects the millennial's intention to use the online property website in retrieving related information via the Internet [37]. Furthermore, it allows millennials to attain information about the targeted property and surrounding neighborhood online. It is recommended for further study to perform a multigroup analysis to examine differences

among groups of different generation [38]. Future studies should also be examined based on their demographic attributes such as gender, races and education level to understand future property hunters. Further exploration regarding green buying behavior [39] in the property industry, and utilization of social networking services with up-to-date interactivity features are deemed necessary [40], [41].

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1037

Int. J Sup. Chain. Mgt   Vol. 8, No. 4, August 2019

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