“Predicting consumers’ apartment purchase intention in Vietnam using an extended theory of planned behavior”

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PREDICTING CONSUMERS' APARTMENT PURCHASE INTENTION IN VIETNAM USING AN EXTENDED THEORY OF PLANNED BEHAVIOR

Abstract

Finding the factors associated with the intention to buy apartments is essential for real estate enterprises. This study applies an extended theory of planned behavior (TPB) to explore Vietnamese consumers' intentions to purchase flats. Besides the structure of the TPB, other determinants relevant to the research context were identified by reviewing the literature. The convenience sampling technique was used to collect 512 responses using the questionnaire. The covariance-based structural equation modeling was applied to test the measurement and structural models. The results revealed that perceived behavioral control was the most critical determinant of purchase intention, followed by financial factors, attitude toward a behavior, apartment features, and subjective norms. In addition, project facilities, perceived risk, financial factors, and apartment features indirectly affect purchase intention through attitude toward a behavior. Meanwhile, the relationship between project facilities and perceived risk with purchase intention is not statistically significant. Thus, attitude toward a behavior is essential in enhancing the consumers' apartment purchase intention at this stage. The study implements a suitable model to analyze the intention to purchase apartments in a developing country by extending TPB.

Keywords purchase intention, attitude toward a behavior, real estate market, perceived risk, Vietnam

JEL Classification M31, M16

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INTRODUCTION

In Vietnam, housing is considered as a basic need of the people, as owning a house is the start of a stable life. Ho Chi Minh City, which has more than 9 million people, is the largest in Vietnam, and the population growth rate is about 2.28 % per year. Therefore, the housing demand of residents will increase in the future. The apartments will meet the housing needs of thousands of people every year because they can be built quickly and adapted to the scarcity and limitation of land in urban areas. However, the apartment market is facing many difficulties due to rising costs and an imbalance of supply and demand. This will lead to fierce competition among enterprises, and it is possible that the real estate market only exists for those whose enterprises can provide apartments to acquire the actual demand of customers.

Several research studies used the theory of planned behavior (TPB) to analyze consumer purchasing behavior (Al-Nahdi, 2015; Al-Nahdi et al., 2015a, 2015b; Islam et al., 2022; Judge et al., 2019; Kamal & Pramanik, 2015a; Le-Hoang et al., 2020). Other studies have extended TPB to study consumer buying intentions in the real estate context, such as Al-Nahdi (2015) in Saudi Arabia and Islam et al. (2022) and Kamal and Pramanik (2015) in Bangladesh. Therefore, there has

been much discussion about whether the TPB model is sufficient (Conner & Armitage, 1998; Eagly & Chaiken, 1993). The researchers concluded that the prediction of several independent factors might improve the prediction of intentions for a particular commodity with great value; thus, consumers' buying intention is very complicated. In addition to the main factors of TPB and apartment attributes, the perceived risk factor must be studied to suit developing countries like Vietnam's real estate market context.

Predicting purchase intention is the initial step toward forecasting customers' purchasing behavior (Howard & Sheth, 1969). In order to determine the needs of customers, it is necessary to understand the variables that affect the apartment-buying behavior of customers. Analyzing customers' attitudes and buying behavior is the premise to improve the ability to attract customers and sustainably develop the real estate market. Therefore, by expanding TPB, this study focuses on the factors affecting consumers' attitudes toward behavior and intention to buy apartments. In addition to contributing to the literature, the study might help real estate enterprises improve their competitiveness by comprehending the importance of factors influencing consumers' intention to buy apartments.

1. LITERATURE REVIEW AND HYPOTHESES

Many theories or conceptual models have been proposed to analyze the factors affecting consumers' decision-making or predicting consumers' purchase intention. The literature review helps to choose the appropriate fundamental theory for this study and aims to explore the relationship between purchase intention and its affecting factors.

1.1. Theoretical review and definitions of purchase intention

The theory of planned behavior (TPB) was first proposed by Ajzen (1991). He believes that the intention to accomplish the behavior will be determined by three factors: attitude toward behavior, subjective norms, and perceived behavioral control. TPB is the extension of the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), created due to the previous theory's limitation on the assumption that human behavior is purely due to cognitive control. Similar to TRA, the intention of individuals to particular behavior is the critical factor in the TPB. There are three fundamental determinants in TPB: (1) The individual's attitude toward behavior regarding the pros and cons of executing such behavior; (2) Subjective norms, which are related to personal intention to distinguish social pressure; and (3) Cognitive behavioral control, which is a factor in self-efficacy or the capacity to act. Hence, attitude toward behavior, subjective norms, and cognitive behavioral control construct behavioral intention. Ajzen (1991) also suggests that the TPB can be modified by changing or adding factors. Many empirical studies in the real estate field have applied TPB by adding new factors to the research model. Thus, it is suggested that TPB expansion is appropriate (Al-Nahdi, 2015; Al-Nahdi et al., 2015a, 2015b; Islam et al., 2022; Kamal & Pramanik, 2015a; Le-Hoang et al., 2020; Zhang et al., 2018; Zhang et al., 2020).

1.2. Relationships among attitude toward a behavior, project facilities, apartment features, financial factor, perceived risk, subjective norms, perceived behavioral control, and purchase intention

Attitude toward a behavior can be understood as an individual's assessment of the results obtained from a particular behavior; it refers to the degree of preference or dislike for a particular object (Ajzen, 1991). When consumers do not feel confident in their attitudes, they seek more information before deciding (Gibler & Nelson, 2003). A preference toward buying a flat is a powerful predictor of intention (Judge et al., 2019). According to Wibawa and Hartoyo (2017) and Kamal and Pramanik (2015a, 2015b), attitude has a significant and positive impact on the intention to buy a flat. Consumers may choose an apartment by evaluating the same product attributes; however, they might have different beliefs about the specifics of the property and the ability to meet the demand. Various studies have shown that attitude toward

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behavior (ATB) strongly influences consumers' intention to buy houses/apartments (Khoo et al., 2020; Numraktrakul et al., 2012; Sangkakoon et al., 2014; Yoke et al., 2018; Zhang et al., 2018).

Project facilities are those within the premises of the apartment project to help residents' lives become more convenient, meeting a more modern and livable life. Depending on each project and area, enterprises can provide appropriate public utilities. Thereby, they position their products and create a difference from the products of other enterprises. An apartment complex with good facilities and infrastructure will ensure safety and comfort for its residents. That shows the importance of acquiring what type of utility consumers prefer (Khaled et al., 2012). Thus, project facilities are an attribute of apartments, which positively affects ATB (Kamal & Pramanik, 2015a, 2015b). Buyers prefer apartments with different amenities, such as security, car parking, a community hall room, and a swimming pool (Khaled et al., 2012; Zadkarim & Emari, 2011).

The building quality, which plays a significant role in determining a household's choice of dwelling, can be considered one of the vital features. In addition, the "feature" of a house refers to the design, house size, and quality of the building, which are factors that might be related to personal decision-making to buy a house (John, 2009; Opoku & Abdul-Muhmin, 2010; Özkan et al., 2010). The quality of the residential property is influenced by customers' purchasing decisions (Rachmawati et al., 2019; Wonggotwarin & Kim, 2017). Apartment features (AF) are not only critical customers' considerations in evaluating and purchasing an apartment, but also significant predictors of ATB (Kamal & Pramanik, 2015a, 2015b). AF has been proven to positively impact purchase intention (Pin) (El-Nachar, 2011; Kamal & Pramanik, 2015a, 2015b; Khoo et al., 2020; Le-Hoang et al., 2020; Maoludyo & Aprianingsih, 2015; Syukor et al., 2021).

Financial factors (FF) include price, interest rate, maximum mortgage, maximum monthly payment, and length of time payment (Adair et al., 1996; Le-Hoang et al., 2020; Opoku & Abdul-Muhmin, 2010). FF of real estate related to access to credit and relatively large loan interest (Xiao & Tan, 2007). FF influences consumers' housing PIn (Chia et al., 2016; Haddad et al., 2011; Le-Hoang et al., 2020; Rachmawati et al., 2019; Renganathan et al., 2015; Singh et al., 2018), and it is one of the apartment attributes hence it can predict ATB (Kamal & Pramanik, 2015a, 2015b).

Consumers' perceptions of uncertainty and unfavorable effects of participating in a specific activity are referred to as perceived risk (PR) (Dowling & Staelin, 1994). Risk perception negatively influences the behavioral intention of real estate projects developed in the industry (Zhang et al., 2020). Conversely, the perceived risk influences the perceived benefits positively (Koklič, 2011). Therefore, it is essential to address consumer fears about the risks of selecting and using a particular product (Conchar et al., 2004). Thus, with its immutability, uniqueness, durability, and cost of money, buying an apartment is always quite different from everyday purchases. For most consumers, buying an apartment represents the most significant investment of their life. For this reason, they should seriously consider the risk factor of buying the most suitable condominium for them.

Subjective norms (SN) refer to the impact of a significant person or group of people on a person when that person exhibits particular behaviors, and significant people or groups of people can be considered as a reference group (Ajzen, 1991; Han & Kim, 2010). The intention to buy a home/apartment is heavily influenced by subjective norms (Judge et al., 2019; Le-Hoang et al., 2020; Tonglet et al., 2004; Wibawa & Hartoyo, 2017). SN has the most potential positive effect on consumers' intention to buy real estate (Al-Nahdi, 2015; Al-Nahdi et al., 2015a, 2015b). Therefore, SN positively affects consumers' intention to buy real estate (Le-Hoang et al., 2020; Numraktrakul et al., 2012; Yoke et al., 2018; Zhang et al., 2018).

Individuals need to assess the difficulty of performing a behavior before making a decision/action, and perceived behavioral control (PBCo) is the measurement for this assessment. The availability of resources and chances to undertake a behavior affects how easy or difficult a person perceives the behavior (Ajzen, 1991). Perceived behavior control is strongly related to personal perceptions about the impact of both contextual and

dispositional factors on the ability to achieve behavioral control (Tan et al., 2017). PBCo positively affects the intention to buy a house (Al-Nahdi et al., 2015a; Judge et al., 2019; Numraktrakul et al., 2012; Sangkakoon et al., 2014; Wibawa & Hartoyo, 2017; Yoke et al., 2018; Zhang et al., 2018). In the context of the apartment market in Ho Chi Minh City, PBCo is one of the problematic aspects for consumers when buying an apartment. PBCo motivates consumers to fulfill their intentions to buy an apartment even though their ATB or SN sometimes is not the motivation.

This study presents a purchasing intention model describing consumers' intentions toward an apartment as a special product. The model expanded on the TPB model by incorporating additional latent variables: project facilities, apartment features, financial factors, and perceived risk. These can directly influence purchase intention and indirectly purchase intention through ATB. Figure 1 depicts the entire model, including the eleven hypotheses.

The hypotheses to be tested are:

H1: Attitude toward a behavior is positively related to purchase intention.

H2a: Project facilities are positively related to attitude toward a behavior.

H2b: Project facilities are positively related to purchase intention.

H3a: Apartment features are positively related to attitude toward a behavior.

H3b: Apartment features are positively related to purchase intention.

H4a: Financial factors are positively related to attitude toward behavior.

H4b: Financial factors are positively related to purchase intention.

H5a: Perceived risk is negatively related to attitude toward a behavior.

H5b: Perceived risk is negatively related to purchase intention.

H6: Subjective norms are positively related to purchase intention.

H7: Perceived behavioral control is positively related to purchase intention.

2. METHODOLOGY

The study subjects are all customers who visited different real estate developers during the data-gathering phase (March 1 to May 30, 2022). The participants were included in the survey satisfying the following conditions: 1) Vietnamese citizens above 18 years old; 2) Have the ability and willing-

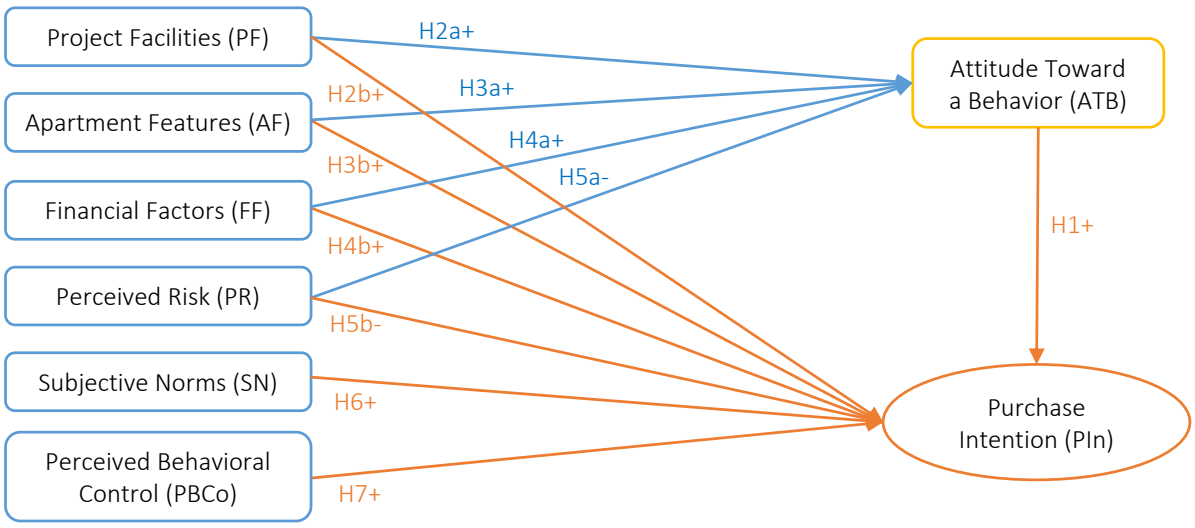

Figure 1. Theoretical framework

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ness to buy an apartment in Ho Chi Minh City; and 3) Communicate in Vietnamese. The interviews were processed in a private room to ensure confidentiality. The interviewees are experts in real estate, including two managers and five brokers in real estate companies. These questionnaires were collected immediately after the interview.

A convenience sampling technique is applied to collect data. It means that the questionnaire is randomly distributed to consumers who contact real estate developers to buy a commercial apartment in Ho Chi Minh City. Before the survey officially took place, convenience sampling was conducted to collect 30 consumers contacting Mizuki Park and ThaoDien Green Towers for a pretest to confirm that the respondents well comprehended all the dimensions in the questionnaire. Furthermore, the pretest ensured that the reliability analysis achieved the required value of Cronbach's alpha ($\alpha > 0.7$) for each construct. Initially, 600 printed questionnaires were disseminated to agreed participants, and 557 questionnaires were sent back. However, 45 responses were not fully answered, so a total of 512 questionnaires (91.92%) were used for data analysis. Table 1 shows the demographics of the data sample.

This study uses a multi-item scale to measure structures. It applies a seven-point Likert scale for the survey (from strongly disagree – 1 to strongly agree – 7) and demographic data for gender, age, education, occupation, and income. The PF, AF, FF, PR, ATB, SN, PBCo, and PIn scales were built based on previous studies, as presented in Appendix A, Table A1.

Preparing data for analysis by structural equation modeling (SEM) requires that the measures are refined to include only the most relevant, valid, and trustworthy items. This ensures a well-fitting model. Therefore, all measures were tested for their unidimensionality and reliability using the reliability test, the exploratory factor analysis (Boccaletti & Nardella, 2000), and confirmatory factor analysis (CFA). When the final CFA was approved, the AMOS 20 software was applied to check the SEM model.

Cronbach's alpha was used to assess the data's reliability. According to Sekaran and Bougie (2016), the tool is reliable and highly reliable if the coefficient alpha value is in the range of 0.6 and 0.8, and higher than 0.8, respectively. The SPSS 20 was used to perform the reliability test.

After the reliability test, EFA refers to statistical techniques representing a set of factors as a smaller number of theoretical factors (Kim & Mueller, 1978). A principal component analysis is used for extraction, and only factors with eigenvalues greater than one are exempted. Meanwhile, varimax rotation was applied to achieve a structure based on the columns of the factor loadings matrix. The SPSS 20 was applied to perform the factor analysis.

According to DeCoster (1998), improving the model's overall fit is vital during confirmatory factor analysis (CFA). This procedure involves excluding unneeded items and relating similar items. All variables in the model are covariates in CFA, despite the lack of exceptional connection between them. As a result, CFA included all factors in the conceptual scheme. CFA was applied to investigate the connection between the items and the corresponding using AMOS 20. The recommended value of indicators used to assess model fit in this study include CMIN/df ≤ 5; CFI ≥ 0.9, GFI ≥ 0.8, RMEA ≤ 0.08 (Hair et al., 2010); AGFI ≥ 0.8 (Etezadi-Amoli & Farhoomand, 1996); TLI ≥ 0.9 (Bollen, 1989).

Regarding convergent validity, Anderson and Gerbing (1988) proposed to use the individual item confidence, the composite confidence (CR), and the average variance extracted (AVE) to evaluate the measurement model. First, the factor loadings of the measured items for each significant latent variable for a convergence value greater than 0.5 would indicate a high degree of confidence (Hair et al., 2010). Second, CR was used to examine each latent variable's internal consistency. CR, with a value higher than 0.6, indicates internal solid consistency (Fornell & Larcker, 1981; Hair et al., 2010). Finally, the AVE was applied to quantify the extent of explained variance attributable to these factors' measurement items. These AVE estimates were higher than the suggested threshold of 0.5 (Fornell & Larcker, 1981).

When CFA analysis results demonstrate that each research modeling approach has high reliability, convergent validity, and discriminant validity.

Thus, the study using a structural model is appropriate to test the proposed hypotheses. In addition, the indicators considered to evaluate SEM fit are similar to CFA.

3. RESULTS

As shown in Table 1, the proportion of females participating in the survey is 58.6%, slightly higher than 41.4% of males. The age group with the highest proportion is 36-45 years old, with 29.1%. Among them, those who achieved a bachelor's degree occupy the highest rate with 38.3%, following the group with high school is the highest learning level, 35.6%. The participants' monthly incomes range from $1,300 to $1,750 (40.6%).

Table 1. Demographic characteristics of participants

Particulars	Items	Frequency (n = 512)	Percentage
Gender	Male	212	41.4
	Female	300	58.6
Age	18-24	113	22.1
	25-35	118	23.0
	36-45	149	29.1
	Over 45	132	25.8
Highest educational level achieved	High school	183	35.6
	College degree	75	14.7
	Bachelor degree	196	38.3
	Master and Ph.D./ Dr.	68	13.3
Occupation	Blue-collar	81	15.8
	White-collar	128	25.0
	Businessman	117	22.9
	State employee	70	13.7
	Other	116	22.7
Average personal income in recent 12 months (USD/month)	Under $850	59	11.5
	From $850 to $1,300	93	18.2
	From $1,300 to $1,750	208	40.6
	From $1,750 to $2,150	118	23.0
	Higher than $2,150	34	6.6

Table 2 indicates the results of all tests applied to calculate the value of Cronbach's alpha and the index of EFA (Boccaletti & Nardella, 2000) and CFA. All scales in the model have high reliability, with the value of Cronbach's alpha greater than 0.70. The KMO test in this study is 0.922 (higher than 0.50) with P-value less than 0.05 (Kaiser, 1974). Besides, the factor loadings of the eight factors are higher than 0.50. Eight factors extracted were 58.98% (> 50%) of the variability (Field, 2005). The factor analysis shows that the data is reliable and suitable for further evaluation. For each latent variable, combined confidence value CR (composite reliability) ranges from 0.813 to 0.900. CR is greater than 0.6, which is considered to be indicative of solid internal consistency. The extracted mean-variance (AVE) more significant than the output of 0.50 (ranges from 0.521 to 0.651) is acceptable (Fornell & Larcker, 1981). The results conclude that latent variables PF, AF, FF, PR, ATB, SN, PBCo, and PIn have high reliability and convergent values.

Fornell and Larcker (1981) proposed that each construct's square root of AVE was more significant than its correlations with other constructs, which may indicate sufficient discriminant validity. The theoretical model shows sufficient validity and reliability overall (Table 3).

Table 4 illustrates the results of the fit indices for CFA and SEM. It shows that every research model construct has high levels of reliability, convergent validity, and discriminant validity. Furthermore, this result shows that the SEM is well adapted to the study.

Table 5 and Figure 2 show the results of the structural model. Moreover, the standardized path coefficient represented positive effects among defined constructs. Nine of the eleven hypotheses were supported. The variables of TPB, PBCo ($\beta = 0.339$, $P = 0.000$), ATB ($\beta = 0.237$, $P = 0.000$), and SN ($\beta = 0.124$, $P = 0.002$) significantly influence consumers' PIn. Therefore, H1, H6 and H7 are supported.

The different constructs incorporated into the TPB, namely, PF ($\beta_{PF\text{-}ATB} = 0.369$, $P = 0.000$), are significantly related to ATB in purchasing an apartment. Thus, H2a is supported. Although PF had no direct impact on purchasing apartment intention, it still illustrated indirect effects on PI through mediating factor of ATB. AF confirms a positive influence on ATB ($\beta_{AF\text{-}ATB} = 0.249$, $P = 0.000$) and a significant positive effect on PIn ($\beta_{AF\text{-}PIn} = 0.136$, $P = 0.001$). Thus, H3a and H3b are supported. Moreover, FF reports a valid positive effect on ATB ($\beta_{FF\text{-}ATB} = 0.266$, $P = 0.000$) and a direct and

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Table 2. EFA and CFA index

Variables	Item	Factor loading	Cronbach's alpha	CR	AVE
Project Facilities (Davidson et al., 1984)	PF1	0.747	0.856	0.856	0.544
	PF2	0.672			
	PF3	0.687			
	PF4	0.765			
	PF5	0.783			
Apartment Features (AF)	AF1	0.708	0.81	0.813	0.521
	AF2	0.723			
	AF3	0.683			
	AF4	0.767			
Financial Factors (FF)	FF1	0.775	0.874	0.874	0.634
	FF2	0.818			
	FF3	0.804			
	FF4	0.782			
Perceived Risk (PR)	PR1	0.747	0.848	0.849	0.584
	PR2	0.812			
	PR3	0.772			
	PR4	0.702			
Attitude Toward a Behavior (ATB)	ATB1	0.712	0.881	0.882	0.651
	ATB2	0.795			
	ATB3	0.76			
	ATB4	0.813			
Subjective Norms (SN)	SN1	0.771	0.867	0.876	0.543
	SN2	0.649			
	SN3	0.625			
	SN4	0.814			
	SN5	0.774			
	SN6	0.731			
Perceived Behavioral Control (PBCo)	PBCo1	0.829	0.899	0.9	0.642
	PBCo2	0.802			
	PBCo3	0.85			
	PBCo4	0.788			
	PBCo5	0.73			
Purchase Intention (PIn)	PIn1	0.605	0.856	0.858	0.547
	PIn2	0.721			
	PIn3	0.561			
	PIn4	0.676			
	PIn5	0.749			
KMO			0.922		
Bartlett's Sig.			0.000		
Eigenvalues			1.012		
Cumulative %			58.98		

Table 3. Correlation between the constructs

Variables	AF	SN	PBCo	PF	FF	PR	ATB	PIn
AF	0.722							
SN	0.29	0.737						
PBCo	0.285	0.239	0.801					
PF	0.279	0.491	0.199	0.738				
FF	0.31	0.221	0.358	0.214	0.796			
PR	–0.205	–0.1	–0.239	–0.111	–0.255	0.764		
ATB	0.487	0.426	0.324	0.518	0.49	–0.432	0.807	
PIn	0.507	0.447	0.618	0.421	0.635	–0.372	0.671	0.74

Table 4. Fit indices for measurement and structural models

Index	Recommended value	Measurement model	Structural model	Result	Reference
χ2/df	≤ 5	1.274	1.282	Good	Hair et al. (2010)
GI	≥ 0.9	0.925	0.925	Good	Hair et al. (2010)
AGFI	≥ 0.8	0.912	0.912	Good	Etezadi-Amoli and Farhoomand (1996)
NFI	≥ 0.9	0.926	0.925	Good	Hair et al. (2010)
TLI	≥ 0.9	0.981	0.98	Very good	Bollen (1989)
CFI	≥ 0.9	0.983	0.982	Very good	Hair et al. (2010)
RMSEA	≤ 0,08	0.023	0.024	Very good	Hair et al. (2010)

Note: GFI: Goodness of Fit Index, AGFI: Adjusted Goodness of Fit Index, NFI: Normed Fit Index, TLI: Tucker-Lewis index; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error Approximation.

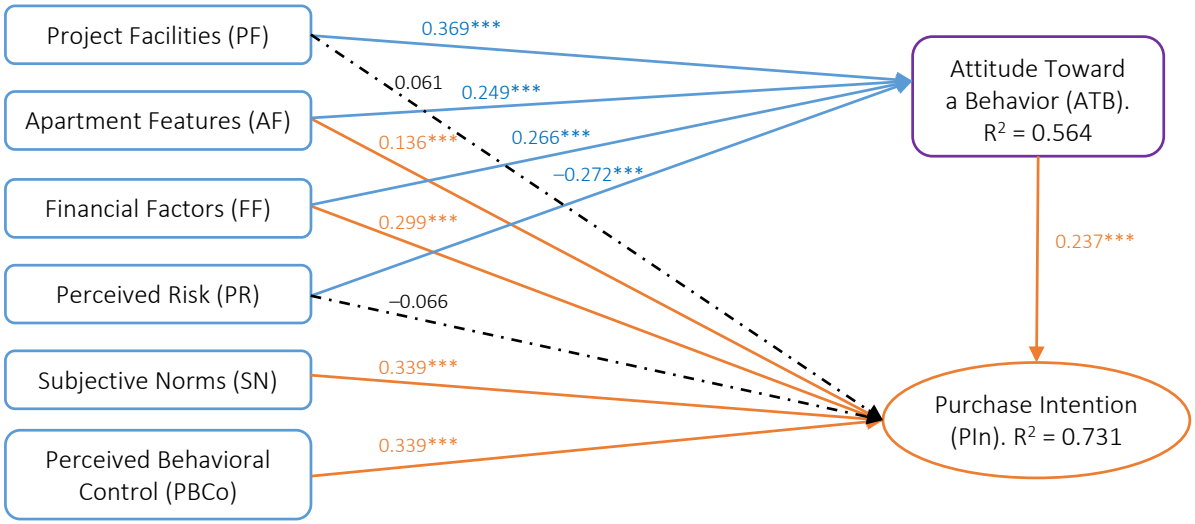
Table 5. Path analysis of SEM model

Hypothesis	Structural path	SWR	S.E.	C.R.	P-value	Decision
H1	PIn ← ATB	0.237	0.035	4.202	***	Accepted
H2a	ATB ← PF	0.369	0.046	8.396	***	Accepted
H2b	PIn ← PF	0.061	0.031	1.315	0.189	Rejected
H3a	ATB ← AF	0.249	0.056	5.484	***	Accepted
H3b	PIn ← AF	0.136	0.033	3.217	0.001	Accepted
H4a	ATB ← FF	0.266	0.053	6.188	***	Accepted
H4b	PIn ← FF	0.299	0.033	6.967	***	Accepted
H5a	ATB ← PR	−0.272	0.04	−6.508	***	Accepted
H5b	PIn ← PR	−0.066	−0.023	1.696	−0.09	Rejected
H6	PIn ← SN	0.124	0.03	3.058	0.002	Accepted
H7	PIn ← PBCo	0.339	0.032	8.512	***	Accepted

Note: SWR: Standardized Regression Weights, S.E.: Standard Error, C.R.: Critical Ratio.

significant positive effect on PIn ($\beta_{FF\text{-}PIn}$ = 0.299, P = 0.000). Thus, both H4a and H4b are supported. In addition, PR confirmed a significant negative influence on ATB ($\beta_{PR\text{-}ATB}$ = −0.272, P = 0.000), whereas the PR did not indicate significant domination on PIn ($\beta_{PR\text{-}PIn}$ = −0.066, P = −0.09). Thus, H5a is supported; conversely, H5b is rejected.

Furthermore, the R-squared of ATB and PIn are 0.564 and 0.731, respectively, which explains 56.4% of the variance in ATB and 73.1% of the variance in PIn in purchasing an apartment in Ho Chi Minh City. Figure 2 shows the proposed theoretical model, together with its corresponding values.



Note: *** p < 0.01; ** p < 0.05; * p < 0.1; R^2 = Squared Multiple Correlations.

Figure 2. Standardized SEM model

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Table 6. Standardized indirect effects: Two-tailed significance (BC)

Variables	PF	AF	FF	PR	SN	PBCo	ATB	PIn
ATB	...	...	...	...	...	...	...	...
PIn	0.002	0.002	0.002	0.003	...	...	...	...

Table 7. Standardized direct effects: Two-tailed significance (BC)

Variables	PF	AF	FF	PR	SN	PBCo	ATB	PIn
ATB	0.003	0.002	0.002	0.003	...	...	...	...
PIn	0.002	0.084	0.003	0.277	0.002	0.001	0.004	...

The bootstrapping results (the 95% confidence interval values direct effect and indirect effect) are shown in Tables 6 and 7. The mediation test results after bootstrapping are consistent with the results presented in Table 5. Besides, the construct ATB is full mediator in the relationship between PF and PR with PIn. The construct ATB is partial mediator in the relationship between AF and FF with PIn, since the direct effect of AF, FF on PIn is significant.

4. DISCUSSION

The study applied an extended TPB to investigate the determinants to purchase intention in Ho Chi Minh City, Vietnam. Aside from TPB, the findings show that financial factors and apartment features are directly related to purchasing intention. In addition, PF, FF, AF, and PR through ATB indirectly influence consumers' purchasing intention. Therefore, it can be concluded that applying an extended TPB to study consumers' purchasing apartments intention is appropriate (Islam et al., 2022).

The results indicate that PBCo has the most potent positive effect on PIn, which is consistent with Yoke et al. (2018). However, it is contrary to Al-Nahdi (2015) and Al-Nahdi et al. (2015a, 2016b), which suggests that the relationship of PBCo with PIn is not significantly statistical. The study by Zhang et al. (2018) on young Chinese consumers' intentions to purchase green housing also shows that PBCo has no influence on Pin. It is explained that it is related to current social norms about housing consumerism among youth in China. Most of the parents provided financial support to buy a house. PBCo substantially affects the formation of an intention to buy an apartment; this is an opportunity for strategies to support consumers' awareness and self-determination ability. PBCo will be high if consumers have positive experiences, enough time to experience, and can afford apartments. Consumers do not have many resources such as time, information, and money will lead to PBCo when buying low-priced apartments. It is necessary to provide information through various channels so that consumers can be updated on time. Marketing not only eases the consumers' efforts but also assists the consumers in confidently making the right decision.

ATB and SN have a significant direct positive effect on PIn. These results are consistent with Al-Nahdi (2015), Al-Nahdi et al. (2015a, 2016b), Islam et al. (2022), Judge et al. (2019), Yoke et al. (2018), and Zhang et al. (2018). Moreover, ATB plays an intermediary role in the relationship of factors PF, AF, FF, PR with PIn. Previous research also shows that PF and AF affect PIn via ATB (Kamal & Pramanik, 2015a). Besides, Kamal and Pramanik (2015b) show that PF, AF, and price positively affect ATB. Moreover, attitudes play a mediating role in the relationship between product knowledge and purchase intention (Juharsah & Hartini, 2014), between consumers' knowledge of with purchase intention of green products (Wulandari et al., 2015), between perceived risk, price, and attributes of products and services with online apparel purchase intention (Vijayan & Oo, 2022). Marketers should change awareness factors and develop market segmentation and product strategies. Building an image of brand reputation and good product quality is always an advantage of subjective standards. Therefore, it is crucial to include groups of subjective standards to effectively reach the audiences, such as the opinion of experts or experienced consultants. Concentrating marketing activities in amusement parks and shopping malls might be implemented regularly.

Setting up events that attract many participants to enhance exchanges with loyal customers and share good experiences with apartments might also be considered.

The results also show that AF and FF have a significant positive effect on PIn, which is consistent with Le-Hoang et al. (2020), Rachmawati et al. (2019), and Zadkarim and Emari (2011). The variability of consumers' income could explain this unpredicted result. Consumers have a very high buying attitude toward apartments with many public facilities. However, these apartments are expensive and beyond their ability to pay, while their urgent need is to own a shared apartment with affordable price and good quality. Apartment prices in Ho Chi Minh City have increased rapidly over the past few years. As such, the government needs to implement debt-to-income restrictions and tax tools to prevent speculation and will reduce apartment prices. Enterprises should diversify payment policies, incorporate with banks so consumers can access low-interest rates, and support a grace period on principal to increase their confidence to own an apartment. In addition, enterprises focus on promoting apartment development, such as providing better, more beautiful apartments, various sizes and prices suitable for each type of apartment so that consumers can see the apartment's benefits compared with other types of housing.

However, the study rejected H2b and H5b, which was unexpected. The relationship between PF and PI is not statistically significant, in contrast with Khaled et al. (2012) and Zadkarim and Emari (2011). This phenomenon might be explained due to the relation to consumer affordability. When the apartment has a better PF, the price is higher. In addition, more than 70% of respondents have a household income of less than $1,750/month, so they prefer apartments with a suitable price. Therefore, PIn has little influence on purchase intention. In addition, PR tends to reduce ATB. Although PR had no direct influence on PIn, it indirectly influenced PIn through ATB as a mediator. When consumers perceive a risk, they need to enhance their knowledge by looking for information before buying an apartment. Therefore, marketers should endeavor to provide necessary information to potential customers in order to expand their prior subjective knowledge. Collecting information about consumers' perceptions of different risk aspects (such as financial and psychological risks) helps enterprises tailor product communications.

CONCLUSION

Understanding the factors that influence apartment purchase intention is vital to the success of real estate enterprises. The objective of the study is to explore the factors that predict the intention to buy apartments in Vietnam. The theoretical basis used for the study is TPB. The study proposes a theoretical framework based on extended TPB by adding latent variables: project facilities, apartment features, financial factors, and perceived risk to improve the explanatory level of TPB in the Vietnamese context. Research results show that perceived behavioral control, attitude toward behavior, subject norms, apartment features, and financial factors have a direct positive effect on purchase intention, in which perceived behavioral control has the most substantial influence. In addition, the relationship between project facilities, apartment features, financial factors, perceived risk, and attitude toward a behavior is statistically significant, so the mediating role of attitude toward a behavior is confirmed. However, project facilities and perceived risk do not affect the intention to buy apartments. Therefore, apartment purchase intention can be studied using the extended TPB model in developing countries.

Several limitations should also be considered in future research. First, the sample size is insufficient; it only meets the imposed requirement. Therefore, additional respondents from across Vietnam could be included in future studies. Second, the study's respondents are only city dwellers who might have substantial financial resources. The questionnaire survey can therefore be used in additional medium-sized and small regions for future research. Finally, the real estate market in Vietnam has identical characteristics, and the findings of this study could apply to nations with similar operating systems only.

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APPENDIX A

Table A1. Measuring scales and references for the proposed constructs

Constructs	Items of the questionnaire	Indicators	References
Project Facilities (Davidson et al., 1984)	Model town/mini town under the projects	PF1	Zadkarim and Emari (2011), Kamal and Pramanik (2015)
	Car parking facilities	PF2	
	Lift facilities and generator	PF3	
	Community hall room	PF4	
	Playground for the children	PF5	
Apartment Features (AF)	Size of apartment	AF1	Zadkarim and Emari (2011), Le-Hoang et al. (2020)
	Interior and exterior design	AF2	
	Raw build quality of the apartment	AF3	
	Water facilities of the apartment (drainage, plumbing facilities, water quality and water pressure)	AF4	
	Lighting (electronic lighting and window to outside)	AF5	
Financial Factors (FF)	Reasonable prices	FF1	Adair et al. (1996), Zadkarim and Emari (2011)
	Availability of bank loans	FF2	
	Reasonable loan interest rate	FF3	
	Loan term and monthly repayment	FF4	
Perceived Risk (PR)	Overall, the thought of buying an apartment caused me to be concerned about experiencing some kind of loss	PR1	Macintosh (2002), Koklič (2011)
	Buying a new apartment involved a great deal of uncertainty	PR2	
	Considering the investment involved, buying an apartment was quite risky	PR3	
	The thought of buying an apartment gave me a feeling of fear and anxiety	PR4	
Attitude Toward a Behavior (ATB)	Buying an apartment is a beneficial decision	ATB1	Ajzen (2002), Al-Nahdi et al. (2015a, 2016b), Yoke et al. (2018)
	Buying an apartment is a good idea	ATB2	
	Buying an apartment is a wise decision	ATB3	
	Buying an apartment is an admired decision	ATB4	
Subjective Norms (SN)	My family thinks that I should buy an apartment	SN1	Ajzen (2002), Al-Nahdi et al. (2015a, 2016b), Snellman et al. (2001), Yoke et al. (2018)
	My family would want me to buy an apartment	SN2	
	My family agrees with me to buy an apartment	SN3	
	My family thinks that buying an apartment is a wise decision	SN4	
	I bought an apartment because I saw my friends did the same	SN5	
	My friends recommend buying an apartment	SN6	
Perceived Behavioral Control (PBCo)	I have enough opportunity (I have easy access to the market) to decide to buy an apartment	PBCo1	Ajzen (2002), Al-Nahdi et al. (2015a, 2016b), Yoke et al. (2018)
	I have enough time to decide to buy an apartment	PBCo2	
	I have enough money to buy an apartment	PBCo3	
	I have enough skills and knowledge about apartments to make my own decision if I would like to buy an apartment	PBCo4	
	I have complete control over buying an apartment	PBCo5	
Purchase Intention (PIn)	I want to buy an apartment in the future	PIn1	Ajzen (2002), Bagozzi (1992), Al-Nahdi et al. (2015a, 2016b), Yoke et al. (2018)
	I intend to buy an apartment frequently in the future	PIn2	
	I plan to buy an apartment	PIn3	
	I will try to buy an apartment	PIn4	
	I want to buy an apartment	PIn5	

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