

Modeling the Factors Influencing Real Estate Purchase Intention and Decision in Vietnam: A PLS-SEM Approach in the Context of COVID-19

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Abstract. This study investigates the factors influencing residents' decision to purchase real estate in Vietnam, with a particular focus on the mediating role of purchase intention in the post-COVID-19 context. Drawing on the Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB), the authors propose a conceptual model linking attitude, COVID-19, perceived behavioral control, financial capacity, geographical location, and government policies to purchase intention and purchase decision. Data were collected through a cross-sectional survey of 300 residents in Vietnam and analyzed using partial least squares structural equation modeling (PLS-SEM). The results indicate that all six factors significantly positively affect purchase intention, positively influencing purchase decisions. The findings highlight the importance of considering individual and contextual factors in understanding real estate purchase behavior and the mediating role of purchase intention in translating these factors into actual purchase decisions. The study contributes to the literature by providing empirical evidence for the impact of COVID-19 on real estate purchase behavior and the applicability of TRA and TPB in the Vietnamese context. The findings have practical implications for real estate developers, marketers, and policymakers in designing effective strategies to stimulate real estate demand and support the sector's post-pandemic recovery.

Keywords: Apartment, purchase intention, purchase decision, resident, SmartPLS, Vietnam.

1. Introduction

Real property possesses distinct physical and economic attributes that distinguish it from other tradable goods. The terms real estate, real property, and land are frequently interchanged to refer to the amalgamation of land, enhancements, and associated rights and privileges (Garay, 2016).

Real estate has long been esteemed as a significant source of wealth, often due to its five primary attributes: the potential for delivering absolute returns, its role as a hedge against unexpected inflation, its capacity to diversify investment portfolios away from stocks and bonds, its ability to generate steady cash inflows, and the provision of income tax advantages. Consequently, it is widely regarded as a store of value for investors.

However, the volatility of economic conditions has led to considerable fluctuations in real estate's value. In particular, the rise of COVID-19 towards the end of 2019 and its subsequent rapid transmission across the globe led to notable changes in the global real estate market after the peak of the pandemic. Practically, the Asian real estate market will face concerns among investors and developers in 2024. These concerns include sharp increases in interest rates in 2023, declining housing affordability, China's housing crisis, and the looming threat of multiple geopolitical and economic shocks, all expected to persist in the coming year.

Several cities in Australia and India experienced rapid quarterly house price growth in the third quarter of 2023. According to CoreLogic data, the Australian housing market witnessed a remarkable rebound, with house prices in capital region cities not only recovering to an 8.1% increase in 2023 after a nearly 5% decline in 2022 but also reaching an all-time high in some cities where prices barely fell.

The growth in retail real estate and logistics in India has also been robust, with domestic capital playing an increasingly pivotal role in the investment market, supported by policy reforms. This positive trend indicates promising developments in the Indian market.

While, in the commercial real estate sector, transaction volumes in Japan, which maintains a highly accommodative monetary policy, increased by 3% year-on-year in the third quarter of 2023. This growth was driven by strong demand for hotels, real estate, and rental apartments.

Nevertheless, experts predict that in 2024, there will still be challenges and opportunities for the Asian real estate market to recover. While potential issues may arise similar to those faced by the Australian housing market, the recovery outlook presents significant transformative opportunities for stakeholders.

In Vietnam, the real estate industry's capitalization value in 2022 is estimated to be between 1.7-1.8 million billion VND. Foreign direct investment (FDI) in the real estate sector is projected to reach 4.45 billion USD in 2022, marking a significant increase of 1.85 billion USD (70%) compared to 2021. The sector maintains its second position in attracting FDI capital, with a notable focus on the industrial real estate segment and several large-scale projects (Luu, 2023).

Ministry of Planning and Investment indicates that as of July 12, 2023, the country has attracted 67.161 billion USD in FDI capital into the real estate sector. Ho Chi Minh City leads among localities with 16.3 billion USD, followed by some city of Vietnam, such as Hanoi, Binh Duong, and Ba Ria-Vung Tau. Singapore is at the forefront among countries and territories investing in Vietnam's real estate sector, with a total registered capital of 19.1 billion USD, followed by Korea, British Virginia, and Japan (Luu, 2023). These figures underscore the strong appeal of Vietnam's real estate market to international investors.

The COVID-19 pandemic has served as a significant obstacle for the real estate market from 2020 to 2022. Lockdown measures implemented by governments worldwide led to a decline in the demand for services provided by these establishments, consequently restraining the real estate market. This observation is supported by research conducted by (Research and Markets, 2022).

In 2023, the global real estate market achieved a size of US\$ 7,239 Billion. IMARC Group anticipates further expansion, projecting the market to reach US\$ 8,654 Billion by 2032, reflecting a growth rate of 1.9% from 2024 to 2032. The year 2024 is expected to witness a surge in demand for housing and infrastructure due to the increasing global population. The ongoing population growth is driving the need for various forms of infrastructure, including residential properties, offices, and commercial spaces, thereby propelling the real estate market. This trend presents a significant opportunity for real estate developers and investors.

The paper addresses a critical gap by examining the impact of COVID-19 on real estate purchase decisions, particularly considering the mediating role of purchase intention post the pandemic's peak period. The research question that necessitates clarification is: "To what extent does COVID-19 influence the decision to purchase real estate, with purchase intention playing a mediating role after the peak period of the pandemic?"

2. Literature Review and Hypothesis Development

2.1. Literature review

Understanding and meeting consumer demands is crucial for marketers, as it involves addressing consumer behavior, their patterns of demands, and the factors that drive their purchasing decisions (Oh, 2003). Kotler & Armstrong (2018) utilized the stimulus-response model to investigate consumer behavior, revealing how consumers respond to various stimuli and make decisions when purchasing goods. Additionally, consumer behavior is defined as "the behavior exhibited by consumers in the process of searching for, acquiring, using, evaluating, and disposing of products and services they believe will fulfill their needs" (Schiffman et al., 2012). This model recognizes that cultural, social, personal, and psychological factors significantly influence consumer purchases (Philip et al., 1999).

Fishbein & Ajzen (1975) provide a more detailed analysis of intentions, comprising four distinct components: the behavior itself, the goal or target of the behavior, the context or situation in which the behavior occurs, and the ongoing time frame during which the behavior persists. Ajzen (1991) characterizes intention as a motivating factor that drives an individual's willingness to engage in a particular behavior. A robust intention to perform a specific behavior increases the likelihood of its occurrence.

Ajzen (2002) later articulates that attitude, subjective norms, and awareness of behavior control directly influence intention. The strength of these beliefs directly correlates to engaging in a particular behavior. In this context, attitude is defined as "an individual's evaluation of the outcomes of an action. As a result, according to (Assael, 2001), purchase intention refers to a customer's inclination to buy or take action in connection with a product, assessed by the extent to which the customer is willing to make a purchase. Additionally, as described by (Kotler & Keller, 2021), purchase intention is the method customers employ before actually making a purchase.

The theory of reasoned action-TRA (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) operates on the foundation that individuals are rational and employ systematic information processing. It aims to elucidate the connections between attitude and behavior, incorporating variables such as beliefs, attitudes, behavioral intentions, and actual behavior (Belleau et al., 2007; Lau et al., 2022). According to TRA, individuals are more inclined to have higher intentions and are more likely to engage in suggested behaviors if they hold favorable attitudes towards the behavior and perceive that others want them to perform it (subjective norms). Research, such as that by (Sheppard et al., 1988), has consistently shown a strong relationship between attitudes, subjective norms, behavioral intentions, and behavior. In TRA, intention is considered a product of two primary determinants: attitude toward the behavior and subjective norm (Fishbein & Ajzen, 1975).

The Theory of Planned Behavior (TPB), proposed by Ajzen in 1991, extends upon TRA, suggested that an individual's inclination to partake in a behavior is shaped by their attitudes toward the behavior,

subjective norms, and perceived behavioral control, as emphasized by Kan & Fabrigar (2017). This theory has been effectively utilized to predict and elucidate various consumer behaviors, including shopping behavior. In the context of consumer behavior, the planned behavior of purchasing a product is termed as purchase intention, as defined by (Ajzen, 2002; T. H. Nguyen & Gizaw, 2014). Purchase intention refers to the likelihood or willingness of a consumer to buy a product or service. A positive purchase intention occurs when the consumer proceeds with the actual purchase, whereas a negative purchase intention occurs when the intended purchase does not materialize, as explained by (Arslan & Zaman, 2015).

2.2. Empirical studies

Behavior is influenced by physiological motivations that prompt individuals to respond, leading them to visit retail stores to satisfy their needs (Kim and Jin, 2001). Put differently, attitude reflects our preferences and aversions. An attitude constitutes a persistent overall assessment of something based on one's knowledge, encompassing feelings of liking or disliking and the intensity of those sentiments (Ticoalu, 2016).

Al-Nahdi et al. (2015) identified the effect of attitude, location, living space, public service, reference groups on the intention to purchase real estate. discovered that attitude significantly influences the intention to purchase real estate. However, factors such as location, living space, public service, and reference groups showed no correlation with customers' intention to purchase real estate among Saudis.

The study by Hassan et al. (2021) has demonstrated that the factors influencing housing purchase decision for individuals in Malaysia. Secondary information are sources to obtain the data for these authors to determine factors that affect housing purchase decisions. The findings real that demographic background, finance, location, dwelling features, neighbourhood, infrastructure facilities, environment, developer service quality, and superstitious belief are statistically significant factor impact housing purchase decision of individuals in Malaysia.

Islam et al. (2022) identified relevant factors affecting purchase behaviour in real estate in Bangladesh by conducting exploratory factor analysis (EFA). The findings show three additional factors in addition to the TPB's criteria: perceived physical quality, financial accessibility, and supportive government policy. The study adds to a collection of literature by providing an extended TPB model appropriate for researching apartment buying behavior in developing countries.

In Vietnam, the study conducted by M. H. Nguyen et al. (2023) estimate the factors affecting purchase decisions of private customer for apartments in Ho Chi Minh City by using structural equation modeling (SEM). The findings explore attitude, subjective norms, perceived behavioral control, perceived quality, financial capacity, and government policies affect purchase decisions of apartments under the mediating role of purchase intention. The study does not mention the effect of COVID-19 and government policites on purchase decision to consider whether they are the significant factors influence on purchase decision directly or indirectly. Hence, this study fills out the gap by considering the direct and indirect relationship between COVID-19, government policies and purchase decision for real estate in Vietnam.

2.3. Hypothesis development

COVID-19 affects purchase intention and purchase decision

Purchase intention is also influenced by unexpected situationalfactors. The consumer may form a purchase intention based on factors such as expected family income, expected price and expected benefits from the product. When the consumer is about to act, unexpected situation;)! factors may arise to change the purchase intention. Anna may lose her job, some other purchase may become more urgent or a friend may report being disappointed in her preferred camera. Thus preferences and even purchase intentions do not always result in actual purchase choice. They may direct purchase behaviour, but may not fully determine the outcome (Kotler et al., 2015). A consumer's decision to change, postpone or

avoid a purchase decision is influenced heavily by perceived risk. Many purchases involve some risk taking (Bauer, 2001).

According to Megahed & Ghoneim (2020), customers' behavior has changed because of the COVID-19 pandemic. (Addo et al., 2020; Chauhan et al., 2023; Soares et al., 2022) has established the model to access customer purchase behaviour during COVID-19. For instance, online shopping, work and distance learning, and entertainment increased during the pandemic as people preferred to stay home to protect their health. Consequently, having a home office and a suitable and quiet space setting become desirable physical qualities (Alati, 2020; Megahed & Ghoneim, 2020). Similar to the case that was studied for residents in Tehran during the pandemic, consumers place a higher value on physical features that promote mental health, like gardens and large windows, to improve their health (Akbari et al., 2021; Zarrabi et al., 2021). These authors have explored COVID-19 positive effect on the purchase intention of private consumers. In contrast, others point out that the pandemic has reduced people's interest in their behavior and purchase intention because of the lockdown policy caused by the emergence of COVID-19 (Sakapurnama & Safitri, 2023; Sheth, 2020).

According to Bas (2022), the real estate market is experiencing impacts from the COVID-19 pandemic, with demand and supply being affected. Reduced bank activity in mortgage lending contributes to constraints on demand, while investors delay property purchase decisions due to heightened economic uncertainty about future conditions.

As the above discussions, the proposed hypothesis are proposed:

H1: COVID-19 affects purchase intention for the real estate in Vietnam.

H2: COVID-19 affects purchase decision for the real estate in Vietnam.

Attitude affects purchase intention

The TRA proposes that consumer behaviour is determined by subjective norm and attitude towards the behaviour in question and behavioural intention (Hansen et al., 2012). As mentioned above, the intention of action defined by (Ajzen, 2002) is "human action directly affected by attitude, subjective norms, and behavior control awareness". There exists a direct relationship between these beliefs and the intention of a specific action. Attitude refers to an individual's evaluation of the outcomes stemming from an action (Ajzen, 2002).

Attitude pertains to the degree to which an individual holds favorable or unfavorable opinions regarding an object, person, or event. Essentially, attitude reflects our preferences and dislikes. It constitutes a persistent overall assessment of something, incorporating knowledge about it, liking or disliking it, and the intensity of those sentiments, as elucidated by (Ok Kim & Jin, 2001). Studies conducted by Adis & Kim (2013); Jung & Seock (2016); Shastry (2021) examine the positive impact of customer attitudes on the intention to purchase products or services. Therefore, the hypothesis is proposed:

H3: Attitude positively affects purchase intention for the real estate in Vietnam.

Perceived behavioral control affects purchase intention

Perceived behavioral control refers to individuals' perceptions of their capability to perform a specific behavior or exert control over it, encompassing both internal and external factors that may facilitate or hinder behavior execution, as defined by Ajzen (1991); Fishbein & Ajzen (2011); Han & Kim (2010). Numerous studies across various research domains have demonstrated a positive relationship between perceived behavioral control, perception, and purchase intention, as evidenced by research conducted by (Omar et al., 2012; Rachbini, 2018b; Teo & Beng Lee, 2010).

Based on the supported empirical evidence, the proposed hypothesis is as follows.

H4: Perceived behavioral control positively affects purchase intention for the real estate in Vietnam.

Financial capability affects purchase intention

House purchase intention is the possibility of a plan or the willingness of consumers to purchase a house

(Wu et al., 2011). It is influenced by some factors, which include financial capability (Chia et al., 2016; Hoxha & Zeqiraj, 2019; Njo & Sugeng, 2022).

Financial capability, which includes economic limitations on their behavior and restrict desired consumption (Tully et al., 2015). Based on the study by (Mullainathan & Shafir, 2013), the financial constraints shift the consumer's attention and change the way they use this resource to make their decisions (Shah et al., 2012). Furthermore, Muna (2023) posits that financial empowerment refers to an individual's capacity to navigate financial challenges and overcome associated costs, influencing their intention to engage in specific activities. Muna's research explores the affirmative impact of financial capability on purchase intention. Additionally, Muna (2023) delves into financial capability literature through the lens of talent theory, as outlined by (Ahmetoğullari, 2022).

H5: Financial capability positively affects purchase intention for the real estate in Vietnam.

Geographical location affects purchase intention

Geographical location mentions to the location of house where the person resides. A home's strategic location is often of interest to buyers because they often ask for the home's location near a shopping mall or retailer, public transport, schools, hospitals, or a workplace because it is not only convenient to work and send children to school, but also brings many efficiencies. Crane (1996) determined that convenient commuting distances will limit risks, save travel costs, and give people more time for daily activities. An apartment project with an attractive location is a project with convenient traffic and easy connections to surrounding areas. (Adair et al., 1996; Clark et al., 2006; Le-Hoang et al., 2020; Opoku & Abdul-Muhmin, 2010) also agree with the above arguments. They conclude that geographical location is the important influential factor when consumers intend to buy houses. Moreover, according to (Le-Hoang et al., 2020) location in Ho Chi Minh City context is the most factor affect purchase intention of house.

H6: Geographical location positively affects purchase intention for the real estate in Vietnam.

Government policies affect purchase intention

The study by Kouki (2018) mentions the linkages between the real estate sector and the overall economy, and it is assumed that the government policies aimed to affect the overall market will have a direct effect on the real estate sector. Besides, the relationship between government policies and residents' purchase behaviors has confirmed by Yadava & Itoriab (2019); Islam et al. (2022). They also mention that the regulatory framework which involves the government policies can make the real estate industry more transparent.

(Kenn et al., 2021) found that governmental regulations and subjective norms exert a negative impact on the choice to purchase residential properties, highlighting the significant influence of government-imposed regulations on purchasers' decisions. Similarly, (Chen et al., 2023) illustrated the role of government in providing financial support to both large real estate enterprises and consumers amid the COVID-19 pandemic.

Governments policies can also have an positive impact on the construction industry (Matisoff et al., 2016). Because government can create the convenient policies, such as financial incentives, loans, tax benefits, and subsidies can all help to attract more potential home buyers (Ghodrati et al., 2012; Islam et al., 2022). The direct relationship between government policies and purchase intention for the apartments are demonstrated by (Ghodrati et al., 2012; Islam et al., 2022; Yadava & Itoriab, 2019). As the above discussions, the proposed hypothesis is:

H7: Government policies positively affect purchase intention for the real estate in Vietnam.

H8: Government policies affect purchase decision for the real estate in Vietnam.

Purchase intention affects purchase decision

Kim et al. (2008); Puspitasari et al. (2018); Solinger et al. (2008) provide evidence demonstrating that intention positively impacts customer behaviors, especially concerning purchase decisions. Furthermore, studies conducted by Jonsson et al. (2019); Kim et al. (2008); Komalasari et al. (2021);

Rachbini (2018a); Truong (2018) also reinforce the importance of purchase intention in influencing purchase decisions. As a result, the proposed hypothesis is as follows.

H9: Purchase intention positively affects residents' purchase decision for the apartment in Ho Chi Minh City.

3. Research Model and Methodology

3.1. Sample

The study was taken from the concerned private consumers who intend to buy real estate in Ho Chi Minh City. The authors randomly surveyed private customers who demand on purchasing real estate in some big districts, malls, and other shopping centers from October 2023 to March 2024 under the convenience sampling method.

On the basis of the cross-sectional design, 300 questionnaires were distributed among the responders who intend to buy the apartments in Ho Chi Minh City, via simple random sampling. Participants were asked to express their agreement level for each item using a Likert scale spanning from 1 (strongly disagree) to 5 (strongly agree). Hair et al. (2017) propose using the "10-times rule" method to establish the minimum sample size for PLS-SEM. This approach deems small samples (n=20 or fewer) inadequate for PLS analysis. To adhere to this rule of thumb, 300 questionnaires were distributed to responders, resulting in a valid sample of 278, which account for 93%. After collecting the survey forms, the author eliminates incomplete responses and those that only select a single option for all questions.

3.2. Methodology

The authors employ both qualitative and quantitative research methods, encompassing two stages. The qualitative approach involves conducting interviews and discussions with experts to develop measurement scales. Following the creation of these scales, a pretest is conducted with a discussion group comprising 50 customers deciding to purchase real estate. This pretest aims to ensure that respondents comprehend the proposed survey questionnaire and can effectively complete it. The objective is to refine and enhance the questionnaire's validity. The factors utilized in the study consist of items as presented in Table 1. The questions/items are rated on a five-point Likert scale ranging from 1 to 5, corresponding to "strongly disagree" to "strongly agree." While all scale items are drawn from previous studies, they have been slightly modified to suit the context of Ho Chi Minh City.

In the subsequent stage, the research model is subjected to regression analysis using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, facilitated by SmartPLS 4.0. Given that this study is oriented towards prediction, aiming to forecast the intention to buy an apartment and its impact on the decision to buy an apartment, PLS-SEM is deemed appropriate for analysis. This approach allows for examining the research model and hypothesis testing, mainly focusing on the positive influence of constructs.

3.3. Research model

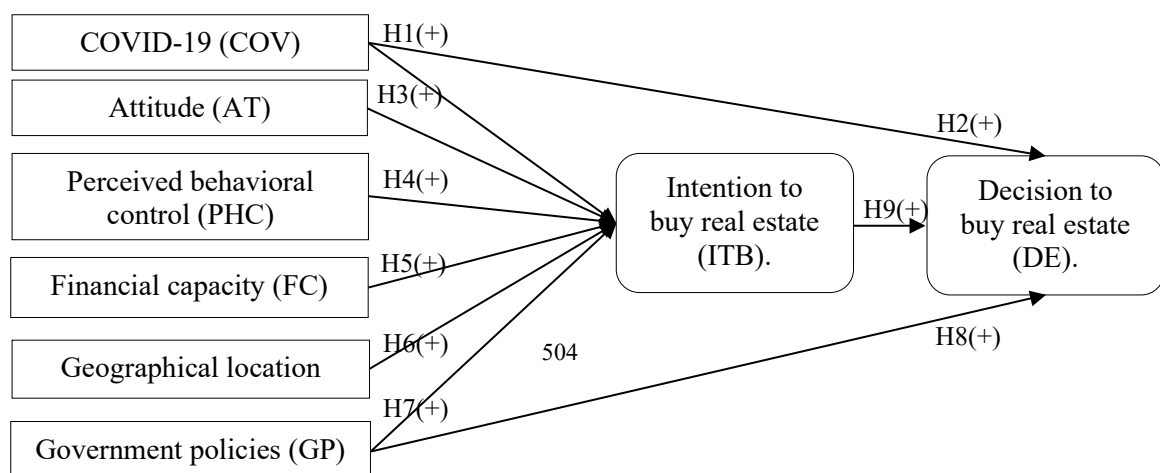


Fig.1: Research model

4. Reseach Results and Discussions

4.1. Descriptive statistics

According to Table 1, out of a total of 278 surveyed customers, 157 customers are male (accounting for 56.5%), the rest are female. In which, the number of customers aged 35 – 44 accounted for the highest proportion with 39.2%, followed by the group of customers aged 45 – 60 years old accounted for 29.5%. The group of customers with age over 60 accounts for 14.4%, and the lowest percent is the group of customers have the age from 18 – 24 years old.

Table 1. Demographic characteristics

Characteristics	Frequency	Percentage (%)
1. Gender		
Female	121	43.5%
Male	157	56.5%
Total	278	100.0%
2. Age		
18 - 24	11	4.0%
25 - 34	36	12.9%
35 - 44	109	39.2%
45 - 60	82	29.5%
>60	40	14.4%
Total	278	100.0%
3. Jobs		
Business	107	38.5%
Officers and employees	73	26.3%
Retired employees	52	18.7%
Students	2	0.7%
Others	44	15.8%
Total	278	100.0%

Regarding demographic characteristics by job, the number of customers belonging to the business group accounts for the highest proportion with 38.5% of the total number of surveyed customers, while the students group take the lowest proportion with 0.7%.

The next section presents the results of Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE). As clarified by Hair et al. (2017); Wong (2019), all criteria are satisfied, hence the value of the reliability statistics is acceptable. Furthermore, the average variance extracted (AVE) values for all constructs above the minimum required level of 0.5 (Fornell & Larcker, 1981). The data provided in Table 2 has met the reliability test. Therefore, all indicators of construct reliability within the proposed model are deemed acceptable.

Table 2. Contruct reliability and validity

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Attitude	0.985	0.989	0.958
COVID-19	0.981	0.988	0.964
Financial capacity	0.999	0.999	0.997
Geographical location	0.862	0.915	0.783
Government policies	0.957	0.972	0.92
Perceived behavioral control	0.942	0.958	0.851
Purchase Decision	0.998	0.998	0.995
Purchase Intention	0.909	0.936	0.786

Besides, according to (Fornell & Larcker, 1981) AVE should be more than the correlation squared of the two constructs to support discriminant validity. Based on the table 2, each AVE value is more than correlation squared, thus multicollinearity is absent (Kamariah & Sentosa, 2008). The next criteria mentions about Discriminant Validity (Table 3).

Table 3. Discriminant Validity

	AT	COV	DE	FC	GL	GP	ITB	PHC
AT								
COV	0.383							
DE	0.503	0.361						
FC	0.519	0.171	0.621					
GL	0.516	0.233	0.576	0.556				
GP	0.292	0.321	0.545	0.33	0.38			
ITB	0.691	0.38	0.868	0.687	0.623	0.463		
PHC	0.481	0.301	0.447	0.336	0.45	0.333	0.516	

The assessment of Discriminant Validity can be based on one of four indicators: (1) HTMT ratio; (2) HTMT value; (3) Fornell – Larcker; Cross Loading value. In this paper, to examine the discriminant validity using the PLS approach, values of Heterotrait–Monotrait correlations are less than 0.900 will be acceptable (Henseler et al., 2015). Because the rule of thumb is satisfied, discriminant validity has been established between two reflectively measured constructs.

Figure 2 represents that the R-square value for the estimated equation is 0.630, which is significant at a 1 percent level of probability. It means that 63% of the variation in Purchase Intention is described by attitude, COVID-19, perceived behavioral control, financial capability, geographical location, and government policies. Besides, Purchase Intention explains 23.9% Purchase Decision.

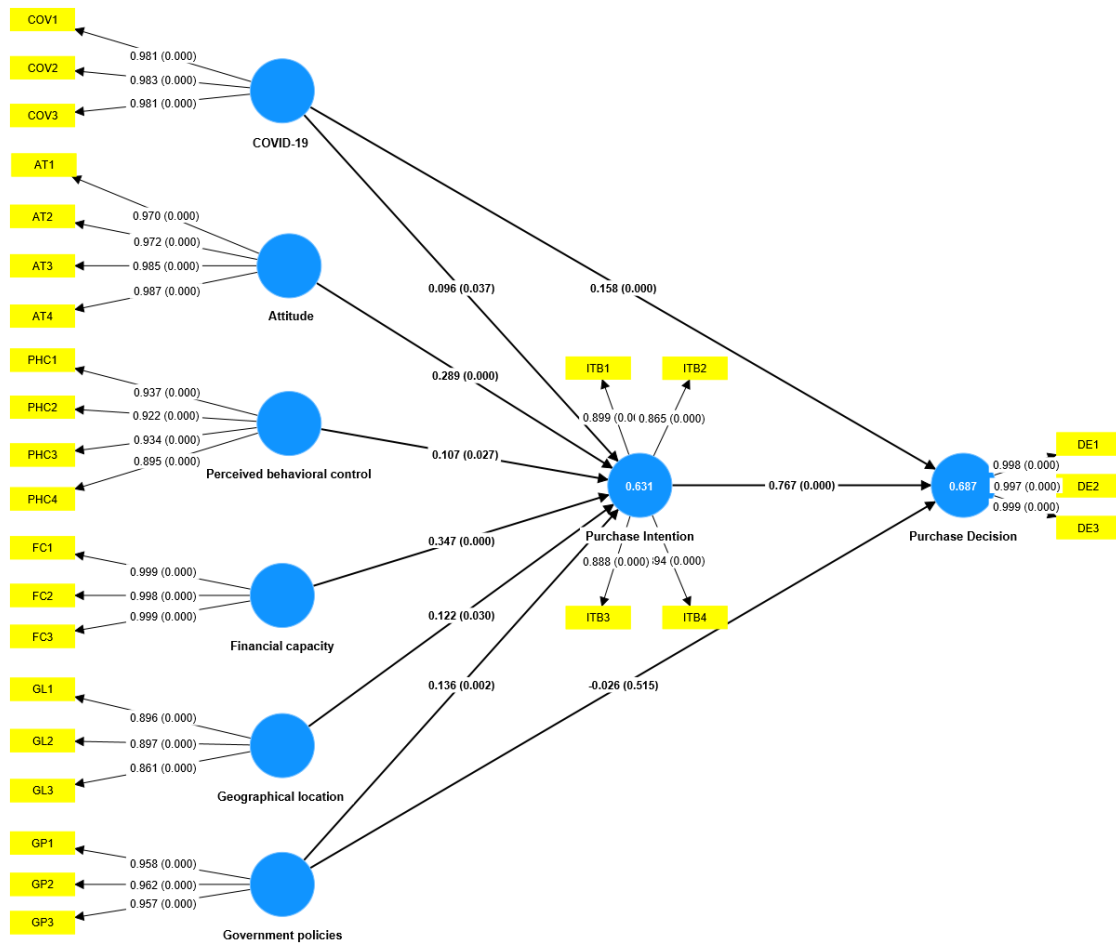


Fig.2: Structural equation modeling

The following section presents the details of bootstrapping for testing the hypothesis by using the analytical bootstrapping technique. The technique describes the level of significance of the path between the variables, 5000 re-sampling bootstrapping procedure utilized by SmartPLS.

Table 4. Hypothesis testing

Hypothesis	Path	β	P Values	Decision
H1	Attitude -> Purchase Intention	0.293	0.000	Accepted
H2	COVID-19 -> Purchase Intention	0.090	0.046	Accepted
H3	Perceived behavioral control -> Purchase Intention	0.112	0.018	Accepted
H4	Financial capacity -> Purchase Intention	0.345	0.000	Accepted
H5	Geographical location -> Purchase Intention	0.123	0.028	Accepted
H6	Government policies -> Purchase Intention	0.135	0.003	Accepted
H7	Purchase Intention -> Purchase Decision	0.489	0.000	Accepted

The findings in Table 4 explore that Attitude, COVID-19, Perceived behavioral control, Financial capacity, Geographical location, Government policies, and Purchase Intention have a positively and significantly effect on Purchase Decision on the apartments of private customers in Ho Chi Minh City, because their p-values are less than 5%.

Table 5. VIF (Inner model)

	Purchase Decision	Purchase Intention
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Attitude		1.788
COVID-19	1.203	1.301
Financial capacity		1.615
Geographical location		1.6
Government policies	1.264	1.26
Perceived behavioral control		1.43
Purchase Decision		
Purchase Intention	1.349	

Table 5 shows the results of Inner VIF values to testing multicollinearity. The VIF values exceed 4.0 means that multicollinearity exists in the model (Hair et al., 2013). As can be seen, all VIF values in Table 5 are lower than 4, so multicollinearity does not exist.

4.2. Discussions

The findings show that Attitude positively affect Purchase Intention the apartment of private customers in Ho Chi Minh City. The findings are consistent with the studies by (Islam et al., 2022; Yadav et al., 2018). The direct relationship between attitude and purchase Intention refers to the extent to which a person is favorable toward the benefits, value, and satisfaction when they intend to purchase the apartments.

COVID-19 positively affect Purchase Intention the apartment of private customers in Ho Chi Minh City. The results are supported by (Akbari et al., 2021; Sakapurnama & Safitri, 2023; Sheth, 2020; Zarrabi et al., 2021). These authors have explored COVID-19 positive effect on the purchase intention of private consumers. In contrast, others point out that the pandemic has reduced people's interest in their behavior and purchase intention because of the lockdown policy caused by the emergence of COVID-19 (Sakapurnama & Safitri, 2023; Sheth, 2020). The COVID-19 pandemic has altered consumer behavior, asserted by Megahed & Ghoneim (2020). Consumers place a higher value on physical attributes that support mental health, like gardens and big windows, to improve their health, like the case that was researched for Tehran residents during the pandemic (Akbari et al., 2021; Zarrabi et al., 2021). In fact, during the pandemic, people preferred to stay at home to protect their health, which led to the adjustment of customers' behavior, including working, learning, and shopping. Thus, they require having a home office with a suitable, peaceful environment are desired physical traits (Alati, 2020; Megahed & Ghoneim, 2020).

Perceived behavioral control positively affect Purchase Intention the apartment of private customers in Ho Chi Minh City. The findings are consistent with the studies by (Islam et al., 2022; Judge et al., 2019; Khoo et al., 2020). They pointed out that perceived behavioral control is expressed through the extent to which consumers control internal and external factors, which facilitate or prevent consumers' intention to buy a home. Perceived behavioral control involves customers are increasingly aware of the ease of accessing and buying apartments, and they have complete control over their apartment purchases. In addition, customers have enough skills and knowledge to make a decision to buy an apartment.

Financial capacity positively affects Purchase Intention the apartment of private customers in Ho Chi Minh City. The current study's findings are demonstrated by (Chia et al., 2016; Islam et al., 2022; Khoo et al., 2020; Kumar & Khandelwal, 2018; Rachmawati et al., 2019; Satriawan & Setiawan, 2020; Sonia, 2020). The financial aspect of purchasers often demands a significant capital investment and may entail interest expenses (Xiao & Randolph Tan, 2007). Moreover, a comprehensive assessment of the financial situation should incorporate factors such as housing prices, mortgage lending, income, and maturity (Opoku & Abdul-Muhmin, 2010). Apartment prices play a significant role in the affordability of residents. Their existing financial capacity is sufficient to meet the needs of buying an apartment. They are entitled to some preferential policies when buying an apartment. Payment policies when buying an apartment must be considered based on the customers' financial capacity, such as their maximum mortgage capacity and monthly debt payment capacity.

Geographical location positively affects Purchase Intention the apartment of private customers in Ho Chi Minh City. The current study is supported by (Adair et al., 1996; Clark et al., 2006; Le-Hoang et al., 2020, 2020; Opoku & Abdul-Muhmin, 2010). These authors mention that the price of land and housing depends on the good locations. Residents tend to choose the apartment of the projects near schools, shopping, and highways. (Daly et al., 2003) concludes that location is a major influencing factor in real estate shopping preferences in Australia, UK and Ireland, distance being shown as a factor influencing homebuyers in the region. In this study, distance to workplaces, schools, shopping malls and commercial centers, distance from home to work is a major consideration when choosing real estate for living because they don't want to spend too much time commuting from home to work (Karsten, 2007).

Government policies positively affect Purchase Intention the apartment of private customers in Ho Chi Minh City. The following studies have confirmed the direct impact of government policies on residents' purchase intention for the apartments in Ho Chi Minh City, such as Ghodrati et al. (2012); Glaeser et al. (2017); Islam et al. (2022); Yadava & Itoriab (2019). They demonstrate that regulatory bodies and policies issued by the government can make the real estate industry more transparent, which has a positive impact on the construction industry. Besides, the government can create convenient policies, such as financial incentives, loans, tax benefits, and subsidies, that can all help attract more potential home buyers.

Purchase Intention positively affect Purchase Decision for the apartment of private customers in Ho Chi Minh City. The results of this study are consistent with the findings by (Jonsson et al., 2019; Kim et al., 2008; Komalasari et al., 2021; Rachbini, 2018a; Satriawan & Setiawan, 2020; Truong, 2018). They demonstrate that the direct relationship between purchase intention and purchase decision for the apartments because the well-known brand and reputation of the investors. Besides, residents decide to buy an apartment because the quality of the apartment's construction is guaranteed. Customers decide to buy apartments because they are suitable for their needs.

5. Conclusions and Limitations

TRA and TPB models are used as an underlying theoretical framework in the current paper for building the research model. The study aims to explain the determinants of purchase intention apartments of private customers in Ho Chi Minh City. There are six factors that are statistically significant and positive influence on purchase intentions for apartments, such as attitude, COVID-19, perceived behavioral control, financial capacity, geographical location, and government policies. It is valuable for real estate companies to understand the elements that influence buyers' purchase intentions. Besides, the study explores the role of purchase intention and its effect on purchase decisions.

Several limitations are mentioned in this study. First, this study investigated the relevant factors as applied on the model by using SmartPLS without considering the moderator. Therefore, future research is proposed to include a moderator. Second, the study is conducted in Ho Chi Minh City, thus the research sample is limited which makes the results are reliable at the specific level. In future, a research sample could be extended in Vietnam to increase the sample size. Finally, this study should take into account the effects of other factors on consumers' purchase intentions.

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