

FACTORS AFFECTING THE INVESTMENT DECISION FOR BUILDING APARTMENT HOUSES IN HO CHI MINH CITY, VIET NAM

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Abstract: This study determines and measure the impact of factors that affect the investment decision for building apartment houses in Ho Chi Minh City (HCMC). According to the analysis of the HCMC real estate market, especially the apartment house market, the author used exploratory factor analysis (EFA) to test the reliability of the scale, EFA, and regression analysis. The results show that there are seven influencing factors, in which the technical infrastructure, legal, and social infrastructure factors are the most important factors that determine the investment decision for building apartment houses. From the research results, the author makes some recommendations to improve the marketing activities for apartment house developers.

Keywords: Decision, investment, building, apartment houses, Ho Chi Minh City.

1. INTRODUCTION

Housing is not only a great asset for families and individuals but also the satisfaction of the most essential needs for a comfortable life (according to Maslow's hierarchy of needs theory, living conditions and house are the first level of needs each person must be satisfied before their need moving up to the next levels) [5]. From a socio-economic perspective, the growth rate of the housing market is also a factor that reflects the economic development and social stability of a country. Housing is always a need for any person who wants to have comfortable life and employment because they more comfortable place of living for the entire family, the more sustainable and improvement in works and living standards.

Apartment houses are always an option available for average-income residents because of the accompanying technical and social infrastructure such as: security, parks, swimming pools, supermarkets, kindergartens, and polyclinics. From the perspective of real estate developers, apartment buyers can enjoy services at optimal costs; travel time and cost saving for work, education, shopping, entertainment, and security services.

As HCMC's natural and mechanical population growth rate gradually increases, housing demand is increasing. Investment decisions for building and selling apartment houses by real estate developers are keystones for individuals and organizations to satisfy the increasing demand for comfortable living standards in a rapidly developing society.

The availability of residential land in big cities is so scarce that the optimization of residential land usage is becoming an increasingly urgent issue not only in the global problem but also in Vietnam, especially in big cities.

Therefore, high-rise apartment building projects combined with commercial centers are becoming increasingly popular, especially in industrial parks and urban areas.

Ho Chi Minh City is the largest industrial city in the country (megacity) with a population of approximately 13 million people; therefore, housing needs are even more urgent. This suggests that real estate developers need to develop and distribute products based on the actual needs of consumers.

From the perspective of real estate developers, to make accurate investment decisions for building apartment houses, it is necessary to research the market in terms of price, quality, and users' needs. In-depth market and customer research will have a great impact on the planning, implementation, and control of the marketing management process, thus improving the developer's profits and rate of return [8].

According to statistics, there are currently more than 1,200 apartments in Ho Chi Minh City, and this number continues to increase every year [10]. The main reason for the uptrend mentioned above comes from the policy of rearranging and expanding the city; relocation of industrial facilities, hospitals, and universities out of the crowded central areas as well as projects focused on renovating living conditions and urban esthetics of the city. These policies create a need for resettlement for a portion of the city's population. There were periods when the housing market developed rapidly and vibrantly, with a series of new housing projects and urban areas being introduced to the market. However, because housing prices in Vietnam are often higher than the average income of most population, only a small percentage of end users can afford to purchase. The rest of the crowds, especially middle-income workers, officials, civil servants, public employees, workers, and policy beneficiaries, have almost no opportunity to own property. To resolve this situation, the Vietnamese government has issued important guidelines and policies to encourage and mobilize all resources in society to develop housing for the urgent needs of the people. These policies have been supported by the local authorities and real estate businesses, which encourage aids and supports are: corporate income tax incentives for developers of apartment housing projects; VAT incentives and favorable interest rate of financing for apartment buyers.

However, during the implementation of the development of apartment housing projects in HCMC, many incompatibilities, inconsistencies, and failures to keep up with the actual development of the apartment housing market such as: the legality of the project, illegal construction, building exceeding the permitted structure; issues related to apartment maintenance; conflicts between the apartment management board and residents; lack of green areas, and degraded amenities due to insufficient maintenance funding[13]. These situations affect the economic, cultural, and social development of the city in general and affect the housing needs of apartment buyers in particular. They stem from the primary conflict between buyers and sellers that the process of marketing must resolve.

To develop the apartment housing market in HCMC rapidly and vigorously, solve the inequalities against home buyers, and finally satisfy the needs of people, the need for a study of factors that affect investment decision-making in apartment house projects is inevitable. Furthermore, in an age of robust technologies, the marketing management process for apartment housing needs to be digitized to cope with the changing marketing environment [3].

This study is based on the standpoint of turning existing ideas and concepts from real estate developers into products that satisfy the needs of consumers through improving marketing management of the development, building, and selling of apartment housing projects, which heavily depend on the project investment decision making [7].

2. FOUNDATION THEORIES AND ASSUMPTIONS

2.1 Overview of the apartment house investment decision

Physiological needs, including basic needs, are the lowest level in the hierarchy of needs according to Maslow's theory. Shelter is one of the fundamental human needs to protect them from harm, followed by food, sleep, and air. This hierarchy of human needs must first be satisfied from lower levels to higher levels. This clearly shows that housing is the primary desire and essential living goal of people [9]. However, recent studies have shown that housing is a category of family life, acting as an essential element, not simply to satisfy basic needs for shelter.

Apartment housing is a largely affordable housing unit for a portion of the society with low or moderate household income. Although different countries have different definitions of public housing, they are generally the same, i.e., affordable housing, which must address the housing needs of low-income or middle-income households. Apartment housing has become a key issue, especially in developing countries where most people in mega cities cannot afford houses at market prices. People's disposable income is still the main factor determining affordability. Therefore, the government's responsibility to meet the growing demand for apartment housing is increasingly rising. Governments have taken various measures to meet the growing demand for multi-family housing along with some planners and emphasized on public-private partnerships (PPP) to develop these units.

Governments of developing countries recognize that access to housing for low- and middle-income groups is important. A family in the low to middle-income group can buy an appropriate house if the spending ratio is not more than 30% of income. Affordability becomes a concern for buyers when they think about the ability to buy a house with the desired structure, such as the size and type of house. Apartment housing is a product that satisfies the needs of middle-income households [15].

Frequently, previous studies have only considered the general attitudes and preferences of homeowners. Therefore, the purpose of this study is to identify the reasons that influence the decision to invest in apartment construction, providing deeper, more specialized insights to understand the reasons behind such decisions for project owners along with related parties such as: project developers, investors, financial advisors, sponsoring banks, and real estate brokerage companies [2].

The focus of this research is to determine the factors that affect investment decisions in building apartments in HCMC so that the marketing process for the building and distribution of apartments in HCMC can be efficiently implemented.

2.2 Research model and hypotheses

Based on the overall results of previous related research and background theories including: information systems theory, Technology-Organization-Environment theory and DeLone & McLean 2003 information systems models, as well as the results of surveys on experts, the author develops a research model in Figure 1.

3. RESEARCH METHODS, DATA COLLECTION, AND PROCESSING

3.1. Research Methods

The research was conducted through two stages: (1) Qualitative research by developing a concept/scale system and observed variables, then adjusting the observed variables in accordance with reality. (2) Quantitative research by applying exploratory factor analysis (EFA) through the use of Cronbach's alpha reliability coefficient to test the degree of closeness between the items in the scale and how they correlate with each other; Exploratory factor analysis (EFA) is used to test influential factors and identify factors that are considered appropriate; At the same

time, multivariate linear regression analysis is used to determine the factors and the level of impact of each factor on the investment decision in building apartment houses in HCMC [1].

3.2. Data collection methods

Through a review of related research documents and regulations on apartment housing, the author identified seven independent factors with 28 scales that are believed to have an impact on a dependent variable with three observed variables. For this research, the author collected primary data to test the research model. Primary data is collected through document collection, interviews with experts, and questionnaires. The content of the questions are observed variables that measure the level of impact each factor has on the decision to invest in building an apartment in HCMC. We use a 5-Likert scale for the entire questionnaire: 1 – completely disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 – completely agree. The survey subjects were board members, executive board members, heads of departments, and employees of construction companies in HCMC.

To use EFA, a large sample size is required. According to Bollen’s (1989) perspective, the minimum sample size for a question to be estimated is five observations. Accordingly, this study has 28 questions, so the minimum sample size is $28 \times 5 = 140$. To achieve a minimum of 120 observations, the author sent out 250 questionnaires from February 2024 to March 2024 to interview subjects in the HCMC. As a result, 246 survey questionnaires were received, of which 19 were eliminated due to invalidity (mainly due to lack of information). Therefore, the remaining number of observations to be included in the analysis is 227 votes.

3.3. Data processing method

Based on survey data, the article uses SPSS Statistics 22.0 to analyze the reliability of factors as well as factor measurement criteria, while simultaneously applying statistical methods to synthesize and compare the factors’ influence on investment decisions in apartment construction in HCMC.

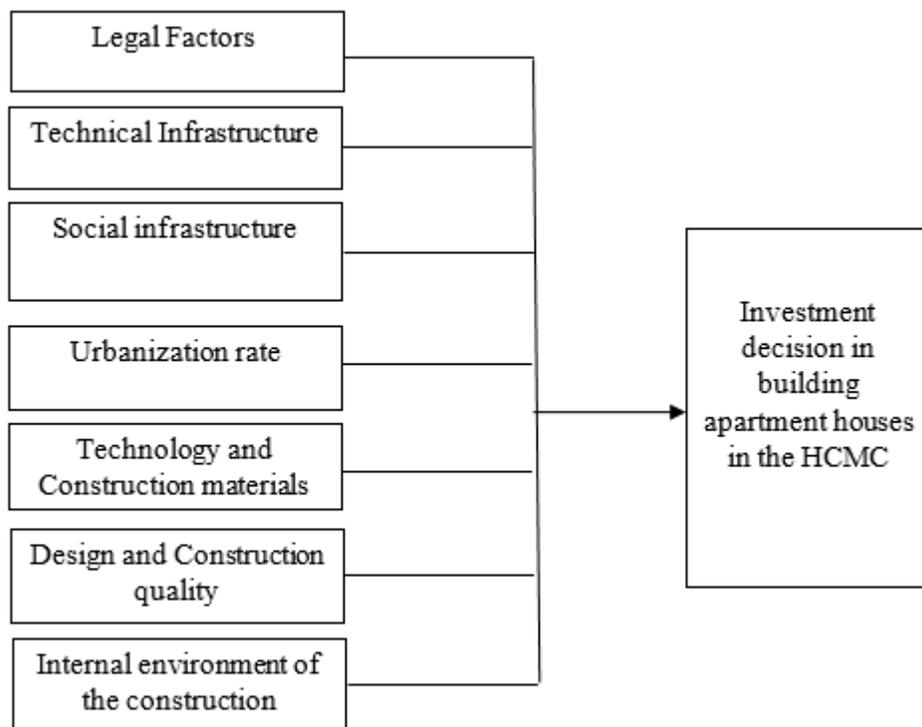


Figure 1. Research model (Source: Author's development)

H1: Legal Factors have a positive (+) impact on the investment decision in building apartment houses in HCMC.

H2: Technical infrastructure has a positive (+) impact on the investment decision in building apartment houses in HCMC.

H3: Social infrastructure has a positive (+) impact on the investment decision in building apartment houses in HCMC.

H4: Urbanization rate has a positive (+) impact on the investment decision in building apartment houses in HCMC.

H5: Technology and Construction materials have a positive (+) impact on the investment decision in building apartment houses in HCMC.

H6: Design and Construction quality have a positive (+) impact on the investment decision in building apartment houses in HCMC.

H7: The internal environment of construction companies has a positive (+) impact on the investment decision in building apartment houses in HCMC.

4. RESEARCH RESULTS

4.1. Descriptive statistics of the study sample

SPSS 22.0 was used to conduct the analysis. Among the 227 individuals surveyed, information about the research sample is shown in detail in Table 1.

Table 1. Descriptive statistics of the survey sample

Characteristic	Frequency	%
Subjects participating in the survey	N = 227	100%
board of directors, executive board members, and head of department	102	45%
Staff	125	55%
Proficiency	N = 227	100%
Bachelor	163	72%
Postgraduate	64	28%

Source: Analysis results from SPSS 22.0

4.2. Test Cronbach’s alpha coefficient

The Cronbach’s alpha test results for the scales are shown in Table 2, showing that these scales all have Cronbach's Alpha coefficient > 0.6 and a total variable correlation coefficient of >0.3. Therefore, all scales and observed variables are reliable and are used in the next EFA analysis.

Table 2. Cronbach’s alpha coefficient of the scale testing results

Scales	Observed variables	Cronbach’s Alpha	Note
Legal Factors (YTPL)	4	0.781	Satisfied
Technical Infrastructure (HTKT)	4	0.762	Satisfied
Social Infrastructure (HTXH)	4	0.714	Satisfied
Medical environment (MTYT)	4	0.745	Satisfied
Urbanization Rate (VDTH)	4	0.713	Satisfied

Technology and Construction materials (CNVL)	3	0.733	Satisfied
Design and Construction quality (TKXD)	5	0.617	Satisfied
Internal environment of the construction company (MTNB)	3	0.782	Satisfied

Source: Analysis results from SPSS 22.0

4.3. EFA analysis

(a) EFA analysis of the scale of factor:

From the survey results, the data were analyzed to explore the factors with the support of SPSS software. After eliminating variables with factor loading coefficients less than 0.5, the final factor analysis results were obtained in Table 3.

Table 3. EFA analysis results for the independent variables scale

KMO = 0.745 > 0.5, Batlett’s Chi-Square Test = 1612.266,
 Sig = 0.000 < 0.05
 Extracted variance = 74.211% > 50%

Source: Analysis results from SPSS 22.0

The analysis results show that the KMO coefficient = 0.745 > 0.5, the Batlett test has a p-value of 0.000 < 0.05, extracted variance 74.211% > 50% (Table 3), factor loading coefficients are all greater than 0.5, and observed variables form seven factors. Thus, the standards when using EFA are consistent with the research data set.

(b) EFA analysis results for the scale of customer satisfaction factors with service quality

Table 4. EFA analysis results for variable investment decision in building apartment houses (dependent variable)

Variable	Component	Matrix	(dependent variable) Factor
			1
QDDTXD2			0.921
QDDTXD3			0.908
QDDTXD1			0.878

KMO = 0.716 > 0.5, Batlett’s Chi-Square Test =330.523, Sig =0.000 < 0.05
 Extracted variance = 79.549% > 50%

Source: Analysis results from SPSS 22.0

The results of EFA analysis show that the KMO coefficient = 0.716 > 0.5, the Bartlett’s control has a p-value of 0.000 < 0.05, extracted variance 79.549% > 50%, and the observed variables form only one factor (Table 4). Thus, using EFA is appropriate, and the dependent variable scale (Decision to invest in apartment construction) is only a unidimensional scale.

Thus, after conducting EFA from the set of observed variables built, no factors have changed. Therefore, the research model and the research hypotheses remain the same as the original model.

4.4. Regression analysis results

From the results of table 5, we can see that there are seven statistically significant factors. They are: Legal Factors (YTPL); Technical Infrastructure (HTKT); Social Infrastructure (HTXH); Urbanization rate (VDTH); Technology and Construction materials (CNVL); Design and Construction quality (TKXD), and internal environment of construction company (MTNB). Therefore, the regression equation is determined as follows:

$$QDDTXD = 0.263.YTPL + 0.246.HTKT + 0.213.HTXH + 0.206.VDTH + 0.205.CNVL + 0.201.TKXD + 0.190.MTNB$$

In addition, the F statistic of the analysis of variance has a p-value of 0.000, showing that the estimated results are appropriate. The adjusted R2 value = 0.641 indicates that the independent variables in the model can explain 64.1% of the variation in the dependent variable. In other words, the adjusted R2 value explains 64.1% of the model’s capability. The VIF coefficients of the dependent variables in the model are all less than 10, thus indicating that there is no multicollinearity phenomenon.

Based on the results of table 5, we can see that all hypotheses are accepted because the p-value is less than (<) 0.05.

Table 5. Regression analysis results

Model	Unstandardized coefficient		Standardized coefficient Beta	t	Significance (Sig.)	Variance Factor (VIF)	Inflation
	B	Standard error					
(Constant)	-2.193	.323		-6.796	.000		
1	YTPL	.205	.047	.246	4.373	.000	1.211
	HTKT	.238	.054	.253	4.444	.000	1.249
	HTXH	.291	.051	.299	5.688	.000	1.167
	VDTH	.172	.039	.225	4.440	.000	1.161
	CNVL	.252	.054	.276	4.652	.000	1.529
	TKXD	.206	.052	.210	3.978	.000	1.243
	MTNB	.198	.050	.221	4.413	.000	1.126
	R ² correction	.641					
	F	50.988					
	Sig. F	0.000 ^a					

Source: Analysis results from SPSS 22.0

5. MANAGEMENT SOLUTIONS

5.1 For the legal factor

Housing Law [11] and current regulations applicable to the apartment housing sector must be strictly followed. On the other hand, it is necessary to strengthen state and independent audits at apartment housing projects to promptly detect fraud and errors to ensure operational efficiency and compliance, while simultaneously increasing mandatory disclosure and transparency in information provision.

5.2 Technical Infrastructure

Although it is an apartment building for middle and above-income people, the characteristics and functions of apartment real estate products like green area, parks, swimming pools, community houses, garbage collection and treatment systems, and car parks have a tendency to be simplified to meet minimum requirements. Buyers tend

to accept this, but these factors also have additional influence in the decision to buy a house, so it is important to make sufficient investments in these categories and not invest too little. In a competitive environment for building costs, a good strategy is to deliver higher living standards in comparison with competitors, which can make customers reconsider their cost-based purchase decision [6].

5.3 For Social Infrastructure

Social infrastructure, which includes economic, healthcare, educational, and cultural infrastructure, has a great impact on the selection of living location for Vietnamese. Thus, these sub-factors affect the investment decision of building apartment houses.

5.3.1 For economic infrastructure

City government leaders should have solutions to stimulate economic demand, create jobs, and implement income support programs for home buyers to increase additional sources of income. ensuring appropriate spending and saving ratios to meet financing conditions with preferential loans at credit institutions.

5.3.2 For healthcare infrastructure

City government officials and real estate developers need to develop and deploy a combined public and private healthcare system suitable for the customer segment of homeowners to attract buyers toward new projects deployed in the suburbs and near the center of the city. Additionally, there is a need to have preferential medical examination and treatment policies and implement public health insurance to improve the quality of medical care for home buyers to ensure labor capacity and maintain the ability to repay the loans taken to finance the purchase of apartments.

5.3.3 Educational infrastructure

City government officials and real estate developers need to develop and deploy a system of compulsory educational establishments, especially vocational education, to attract more skilled workers to settle in apartment housing projects when deployed, as well as ensure social labor reproduction.

5.3.4 Cultural infrastructure

City government officials need to create a multi-regional cultural environment, with exchanges between regions on customs, practices, and cultural behavior for communities in the areas to meet the diverse cultural adaptation requirements of housing buyers from different areas.

5.4 Urbanization rate factor

The urbanization rate has a significant impact on the construction of apartments in cities and urban areas. As more people move from rural areas to urban centers in search of better opportunities and amenities, the demand for apartment housing in these areas increases. This trend has led to a surge in apartment construction to accommodate the growing urban population.

One of the key aspects of urbanization in building apartments is the need for high-density housing solutions. With limited space in urban areas, developers often opt to build apartments and multi-family housing units to maximize land use and provide housing for a larger number of residents. This has led to the proliferation of high-rise apartment buildings and mixed-use developments in urban centers.

In addition, the rapid urbanization rate has influenced the design and amenities of apartment buildings. Developers are increasingly focusing on creating modern, sustainable, and well-equipped living spaces to attract urban dwellers. Features such as green spaces, rooftop gardens, fitness centers, and smart home technology are becoming more common in apartment buildings to cater to the needs and preferences of urban residents.

Furthermore, the urbanization rate has led to increased investment in infrastructure and transportation systems, which can have a direct impact on the location and accessibility of apartment buildings. Apartments located in close proximity to public transportation hubs, commercial centers, and recreational facilities are in high demand among urban residents who value convenience and connectivity.

In conclusion, the urbanization rate has a profound effect on the construction of apartments in urban areas. As cities continue to grow and attract more residents, the demand for high-density housing solutions will continue to increase. Developers and construction companies must adapt to these changing trends by building innovative, sustainable, and well-designed apartment buildings that meet the needs of urban dwellers. By understanding the implications of urbanization on apartment construction, stakeholders can better plan and develop housing solutions that contribute to the overall livability and sustainability of construction companies.

5.5 Building and Construction materials technology

Building technology and building material technology have a significant impact on the construction of modern apartments. These advancements have revolutionized the way buildings are designed, constructed, and maintained, leading to more efficient and sustainable living spaces.

One of the key benefits of building technology is the use of innovative construction methods and materials that allow for faster and more cost-effective building processes. For example, prefabricated building components can be manufactured off-site and assembled on-site, thereby reducing construction time and labor costs. Additionally, the use of advanced building materials such as high-performance concrete and steel can improve the structural integrity and energy efficiency of apartment buildings.

Building technology also plays a crucial role in enhancing the overall comfort and quality of living spaces. Smart home technology, for instance, allows residents to control various aspects of their apartments, such as lighting, heating, and security, through automated systems. This not only improves convenience but also helps reduce energy consumption and lower utility bills.

Furthermore, building material technology has enabled the development of sustainable and eco-friendly construction materials with a lower environmental impact. Emphasis on eco-friendly building materials plays an important role in modern marketing strategies [12]. For example, the use of recycled materials, such as reclaimed wood or recycled glass, can help reduce waste and promote a more circular economy. Additionally, the integration of green building practices, such as passive solar design and green roofs, can help reduce energy consumption and improve indoor air quality.

Thus, the effect of building technology and building material technology on building apartments is undeniable. These advancements have transformed the construction industry, leading to the development of more efficient, sustainable, and comfortable living spaces. As technology continues to evolve, we need more innovative solutions that will further enhance the design and construction of apartment buildings.

5.6 Design and construction quality

The affection of architect design and construction quality on building apartments is paramount in creating functional, esthetically pleasing, and durable living spaces for residents. Collaboration between architects and construction professionals is essential to ensure that the design vision is translated into a well-built structure that meets the needs and expectations of the occupants.

Architect design plays a crucial role in shaping the overall feel of an apartment building. The layout, facade, and interior design elements are carefully considered to create a cohesive and visually appealing space. Architects also take into account factors such as natural light, ventilation, and views to enhance the quality of life for

residents. A well-designed apartment building not only provides a comfortable and functional living environment but also adds value to the surrounding neighborhood.

Construction quality, on the other hand, is essential in ensuring the structural integrity and longevity of the building. Skilled construction professionals must adhere to building codes and standards to ensure that the apartment building is safe and meets all regulatory requirements. Quality construction practices, such as proper foundation work, high-quality materials, and attention to detail during the building process, are essential for preventing issues such as water infiltration, mold growth, and structural failures.

Collaboration between architects and construction professionals is crucial in achieving a successful apartment building project. Architects provide creative vision and design expertise, while construction professionals bring their technical knowledge and skills to execute the design effectively. Communication and coordination between the two parties are essential throughout the design and construction phases to ensure that the project stays on track and meets the desired quality standards.

In conclusion, the attention of architect design and construction quality on building apartments is essential in creating well-designed, functional, and durable living spaces. Collaboration between architects and construction professionals is key to achieving a successful project that meets the needs and expectations of residents while enhancing the overall built environment. By prioritizing design excellence and construction quality, developers can create apartment buildings that will stand the test of time and provide high-quality living.

5.7 Internal environment of construction company

Internal construction company factors play a crucial role in the successful completion of building apartments. These factors encompass various aspects of the construction process, including project management, workforce capabilities, financial resources, and quality control measures.

One of the key factors that can affect the construction of apartments is the project management capabilities of the internal construction. Effective project management involves coordinating various tasks, managing timelines and budgets, and ensuring that all aspects of the construction process are carried out efficiently. A well-organized and experienced project management team can help streamline the construction process, minimize delays, and ensure that the project stays on track.

Another important factor is the workforce capabilities of the internal construction company. A skilled and experienced workforce is essential to ensure that the construction of apartments is carried out to high standards of quality and craftsmanship. From carpenters and masons to electricians and plumbers, each member of the construction team plays a vital role in bringing the architect's design vision to life. Training and development programs can help enhance the skills and expertise of the workforce, leading to better construction outcomes.

Financial resources are also a critical factor that can impact the construction of apartments. Adequate funding is necessary to cover the costs of materials, labor, equipment, and other expenses associated with the construction project. A well-managed budget and financial planning are essential to ensure that the project remains financially viable and that there are no delays or disruptions due to lack of funds. Thus, a construction company that has a good investor relationship management can attract more potential investors as well as well-known financing institutions [4].

Quality control measures are another important internal factor that can affect the construction of apartments. Quality control involves monitoring and inspecting the construction process to ensure that all work meets the required standards of quality and safety. Regular inspections, testing, and quality assurance protocols can help identify and address any issues or defects early on, thereby preventing costly rework or repairs later in the project.

In conclusion, internal construction company factors play a significant role in the construction of apartments. Effective project management, skilled workforce capabilities, adequate financial resources, and robust quality control measures are essential to ensure that the construction process runs smoothly and that the final product meets the expectations of residents and developers. By prioritizing these internal factors, construction companies can deliver high-quality, well-built apartments that are comfortable and sustainable [14].

6. CONCLUSION

Based on the results of quantitative research on factors affecting investment decisions to build apartment buildings in HCMC, several conclusions can be drawn as follows: Multiple linear regression equation extracted by standardized Beta coefficient shows that all seven factors have positive Beta coefficients and impact in the same direction on the decision to invest in apartment housing projects in HCMC. In which the Social Infrastructure factor has the highest standardized Beta coefficient of 0.299 compared to all other factors and has the strongest impact on the investment decision of building an apartment. The standardized Beta coefficient of the Technology and Construction materials factor is 0.276 and has the second strongest impact; Next is the Technical Infrastructure factor with a standardized Beta coefficient of 0.253 and is the third strongest impact; The Legal Factors factor has a coefficient of 0.246 and has the fourth strongest impact level; The Urbanization rate factor has a standardized Beta coefficient of 0.225 and has the fifth strongest impact level; The Micro-environment of construction businesses factor has a standardized Beta coefficient of 0.221 and Design and Construction quality has a standardized Beta coefficient of 0.210, with the sixth and seventh impact levels, respectively.

Based on the model and research results, the author has suggested management solutions to further improve the efficiency and effectiveness of investment decisions in building apartment houses in Ho Chi Minh City.

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