

**MINISTRY OF EDUCATION AND TRAINING  
NATIONAL ECONOMICS UNIVERSITY**



**LE VA XI**

**IMPACT OF HIGH-RISE APARTMENT BUILDING  
OPERATION AND MANAGEMENT SERVICE  
QUALITY ON RESIDENTS' SATISFACTION:  
RESEARCH IN HANOI AND HAI PHONG**

**Major: Business Administration (Marketing)**

**Code: 9340101**

**DOCTOR THESIS EXECUTIVE  
SUMMARY**

**HANOI - 2022**

**THESIS CONDUCTED AT NATIONAL ECONOMICS  
UNIVERSITY**

**Academic supervisor:**

**ASSOC. PROF. DR. TRUONG DINH CHIEN**

**Defendant 1:**

**Defendant 2:**

**Defendant 3:**

**The thesis is defended at the Thesis Committee of the National  
Economics University**

*At:        date        month        year 2022*

*The thesis can be found at:*

**- National Library**

**- National Economics University Library**

## CHAPTER 1: INTRODUCTION TO THE RESEARCH

### 1.1. Rationale

Most people in big cities live in high-rise apartment buildings. High-rise apartment buildings need regular operation management services, ensuring the essential requirements of residents when they buy and live in apartments. High-rise apartment buildings also need regular maintenance to increase their lifespan and preserve their aesthetics as well as to ensure their economic value is maintained. Obviously, the management and operation of apartment buildings have many different characteristics compared to other types of housing. To manage and operate a high-rise apartment building, of course, a professional apartment building management and operation organization is required.

Residents' satisfaction with housing is often linked to the benefits they receive from living in their home. The residents' satisfaction measurement will be used to assess the quality of high-rise buildings, and the results will serve as benchmarks or metrics to improve service quality in high-rise apartment buildings. Therefore, of course, residents' satisfaction living in high-rise apartments has been concerned by researchers, housing policy makers, housing businesses and apartment managers for many years. However, up to now, the majority of research works have been on residents' satisfaction with their accommodation or housing in general, on the management and operation of high-rise apartment buildings, on the overall quality of service. The research works on residents' satisfaction with the quality of apartment building operation management services of apartment management organizations are relatively few. On the other hand, residents' satisfaction about the quality of apartment building operation management services is a multidimensional concept, so there are many different approaches to measuring it, so in fact, more research is still needed. Theoretical research to improve the measurement of residents' satisfaction with the service quality of management and operation of high-rise apartment buildings. In the context of high-rise apartment buildings in developing countries, so far, there is still a lack of in-depth studies on the population's satisfaction with the quality of apartment building operation management services provided by managers. Moreover, with the type of multi-owned high-rise apartment building, there is always a mixture of private ownership with common ownership and many types of services for residents depending on the management organization of the high-rise apartment building. Management and operation of apartment buildings becomes complicated. Therefore, this is a gap for the research thesis to measure residents' satisfaction with the quality of management and operation services of high-rise apartment buildings that apartment management organizations provide with the desire to detect particular points.

In fact, the management and operation of high-rise apartment buildings in developing countries are still limited. Complaints about service quality by residents living in apartment buildings in developing countries are becoming common and serious due to poor operation management leading to residents' dissatisfaction. This requires a serious and comprehensive study on the satisfaction with the quality of operation management services of residents living in high-rise apartment buildings. Understanding the satisfaction and expectations of residents for the quality of operation management

services will be the key to helping apartment management companies improve and enhance service quality.

Residents' satisfaction living in the apartment is affected by many objective and subjective factors. There are few studies on the impact of subjective factors of apartment building management organization on residents' satisfaction (Tao et al., 2014). Therefore, the research gap that the thesis focuses on is to study the subjective factors of the management and operation of the apartment management organization that affect residents' satisfaction such as: repair and maintenance, utility management activities, etc. The high-rise apartment building management and operation organization provides services to residents, including: operation management, building maintenance and repair, utility management, bonsai care, cleaning, etc. In which, maintenance and repair is considered one of the most important services for apartment buildings, because maintenance and repair activities need to be performed throughout the life of the apartment building to ensure the operation of the building's equipment and prevent functional failures (Koch et al., 2014). Therefore, this is also a gap for the thesis to focus on research: determining and evaluating the impact of the quality of high-rise apartment management services of high-rise apartment management organizations on satisfaction of residents.

Residents' satisfaction provides useful information for housing policymakers to monitor the housing operations management service provision of building management companies, as well as the expenditure policies of the building management companies to coordinate their activities. The evidence shows that so far, research on residents' satisfaction in high-rise apartments has not been really interested, is becoming important in the goal of improving the quality of service of management and operation of housing in urban areas of developing countries. Therefore, this study provides the necessary knowledge to support housing policy makers in promulgating legal regulations to ensure the provision of apartment building operation management services that meet the requirements of residents.

Vietnam is a developing country, the process of urbanization is happening rapidly, the dense population concentration has created a huge demand for housing. The high demand for housing, the limited urban land fund leads to the development of high-rise apartment buildings as an objective necessity in Vietnam's urban areas. Over the years, housing businesses have been developing multi-owner high-rise apartment buildings that integrate many utilities to serve people's lives. From 2000 to 2019, high-rise apartment building projects grew at a high rate in all major cities in Vietnam. By 2020, according to statistics, 34.4% of the total population of Vietnam will live in urban areas. Preliminary statistics so far, the country has about 5,000 apartment buildings; concentrated mainly in Hanoi and Ho Chi Minh City. However, the process of residents moving into apartment buildings has generated many inadequacies, affecting residents' confidence in the apartment living environment.

In fact, apartment management services in Vietnam's urban areas still have many shortcomings. The development of high-rise apartment buildings in large cities in Vietnam has also raised problems about the management of apartment building services to ensure people's lives. Although high-rise apartment buildings can provide enough apartments with sufficient amenities and attached utilities, there are also increasing problems and risks of residents' dissatisfaction towards apartment buildings.

The main problems and hazards can appear in apartment buildings such as fire, repair and maintenance problems, sanitation problems and others. These problems directly affect the health and life of the residents of the buildings, leading to large building maintenance costs. In practice, the management services of multi-owned high-rise apartment buildings are suffering from many limitations such as delayed service, high costs, poor quality of operation management, high number of complaints and deadlines for resolution. There is still a long delay in the resolution of people's complaints.

Up to now, in Vietnam, there have been a number of studies on apartment building operation management services, on apartment building management regulations in legal documents; about the inadequacies occurring between residents and the management or investors of high-rise buildings; as well as a number of studies, the model of apartment building management is proposed, such as the establishment of the Board of Directors, and a model of an apartment building management company. However, there are not many studies on residents' satisfaction with the management and operation services of an apartment building, and often studies on residents' satisfaction living in a particular apartment building. Operational management activities, management models and operational management regulations providing high-rise apartment building management and operation services to residents have not been fully and comprehensively studied. Moreover, some apartment developers only focus on making profits from the sale of apartments but have not paid attention to the after-sale obligation of providing professional apartment building management and operation services.

Therefore, the requirement to improve the quality of apartment building operation management services to maintain and develop high-rise apartment buildings is becoming more and more necessary in urban areas in Vietnam. Therefore, the practice of apartment building management and operation in Vietnam poses an urgent requirement to study and evaluate the impact of the quality of apartment building operation management services on residents' satisfaction in order to improve the quality of life. improve the management and operation of high-rise apartment buildings by organizations/building management boards.

Thus, from both theory and practice of apartment building management in Vietnam, studying the impact of the quality of apartment building operation management services on residents' satisfaction is an urgent requirement. The research results will help to detect the limitations in the management and operation of high-rise apartment buildings of current apartment management organizations in Vietnamese urban areas. From the reasons mentioned above, the author chooses the topic: "Impact of high-rise apartment building operation and management service quality on residents' satisfaction: Research in Hanoi and Hai Phong" to conduct the thesis.

The meaning of this thesis lies in discovering the quality variables of multi-owner apartment building operation management services that have an impact on residents' satisfaction; determining the relationship between high-rise apartment building management organization, performance and quality of performance management services and resident satisfaction; understanding the relationship between these key factors can enable high-rise apartment building management organizations to implement activities that can have a positive impact on the satisfaction of the residents living in their high-rise apartment buildings.

The research results of the thesis will add more knowledge about the quality of apartment building operation management services and residents' satisfaction living in multi-owned high-rise apartments; contribute new findings on both theory and practice in the management and operation of high-rise apartment buildings in urban areas in Vietnam.

## **1.2 Research objectives**

General objective: To evaluate the impact of the quality of the service elements of apartment building management and operation services of the apartment building management organization on residents' satisfaction living in multi-owned high-rise apartment buildings.

### **Specific research tasks of the thesis are:**

- Building a theoretical basis on the influence of the quality of high-rise apartment building operation management factors on residents' satisfaction;
- Measuring residents' satisfaction with the quality of apartment building operation management services provided by apartment building management service organizations;
- Measuring the influence of the quality of the management and operation factors of the apartment building on residents' satisfaction in a number of multi-ownership apartments in Hanoi and Hai Phong;
- Assessing the influence of the quality of the management and operation factors of the apartment building on residents' satisfaction under the influence of two regulating variables, namely income and living time in the apartment;
- Proposing a number of solutions to improve residents' satisfaction with apartment building operation management services for apartment building management organizations in Vietnamese urban areas.

## **1.3 Research object and scope**

### **1.3.1. Research object**

Residents' satisfaction with the quality of apartment building operation management services; the quality of service factors of apartment building operation management affecting residents' satisfaction towards apartment building management organizations; issues in management and operation of apartment buildings affect residents' satisfaction living in apartment buildings in urban areas of Vietnam.

### **1.3.2. Research scope**

- *Survey respondents:* The research focuses on surveying respondents, including:
  - + Residents who are living in a number of multi-owned high-rise apartment buildings. The high-rise apartment buildings selected for the study are medium and affordable quality apartments, which already have an apartment building management board responsible for management and operation.
  - + Some officials of the management boards of high-rise apartment buildings.
- *Geographical space:* The thesis studies residents' satisfaction for apartment building management and operation services in a number of multi-owned apartment buildings in Hanoi and Hai Phong.

- *Timing*: Secondary data were collected in the last 5 years. Primary data were collected in 2020 – 2021.

#### **1.4 Research process and research methodology**

The objective of this thesis is to study residents' satisfaction living in the apartment buildings, the impact of the quality of service elements of apartment management and operation of apartment building management organizations on satisfaction of residents. Therefore, the researcher has identified research processes and methods to collect data and analyze data for the purposes of combining qualitative and quantitative research with both residents and apartment managers (The specific content of research methodology is presented in Chapter 3).

The research process of the thesis is determined to include:

##### *Step 1: Review the research and determine the research model*

From the identified research problem, the researcher collected and consulted research works related to residents' satisfaction with housing, satisfaction with apartment building services, on transportation management services of apartment buildings; quality factors of service management and operation of high-rise apartment buildings affecting residents' satisfaction. From that overview, the researcher built a theoretical basis for the research problem of the thesis, established a theoretical research model, the relationships between the variables in the model and the research hypotheses.

##### *Step 2: Qualitative and quantitative research in phase 1*

To accomplish the research objective, in this thesis, the researcher combined two methods of qualitative research and quantitative research in two phases.

*Qualitative research* is research that explores scientific theories, building on previous research. In phase 1, the qualitative research objective is to identify the important factors and criteria affecting the residents' satisfaction with the apartment building operation management service. Interviewing residents and apartment managers to select criteria to evaluate the quality of apartment operation management services is essential for the research. The qualitative research results have helped the researcher identify the factors and criteria to measure residents' satisfaction and the management and operation services of the high-rise apartment building.

Quantitative research – phase 1: From the questionnaire built after qualitative research, the researcher conducted quantitative research to determine the factors that need to collect assessment information from residents, serving the design of the questionnaire according to the formal research model. At this stage, the research sample was selected from the convenience sampling method, the data were collected directly by questionnaire of residents in the apartment buildings. Phase 1 research results are the basis for adjusting and supplementing the questionnaire for the official quantitative research..

##### *Step 3: Qualitative and quantitative research in phase 2*

*Quantitative research* to collect information according to the research model: The researcher conducted a survey by direct and online questionnaires to residents living in selected high-rise apartment buildings in Hanoi and Hai Phong, in which, most of them are direct survey of residents in some apartment buildings. The data collected in the official quantitative research phase were analyzed

using SPSS 22 software. Techniques to test the reliability of the scale and the appropriateness of the model were used.

Next, qualitative research with the type of action research used by the researcher, with in-depth interview techniques with residents and apartment managers to confirm the quantitative survey results and find out the causes of research results.

*Step 4: Summarize research results and comment*

The researcher analyzed the obtained research results including both quantitative and qualitative research results in phase 2. From there, the researcher made conclusions about testing statistical hypotheses and checking the suitability of the research model. Through comments, the researcher proposed solutions and recommendations for businesses providing high-rise apartment building management services and relevant state management agencies.

### **1.5 Research structure**

Chapter 1: Introduction to the research

Chapter 2: Theoretical backgrounds and research model

Chapter 3: Research methodology

Chapter 4: Research results

Chapter 5: Conclusion and management implications

## **CHAPTER 2: THEORETICAL BACKGROUNDS AND RESEARCH MODEL**

### **2.1. Theory of high-rise apartment buildings and high-rise apartment building operation management**

#### **2.1.1 Concept of high-rise apartment building**

High-rise apartment buildings are a popular housing model in cities where population density is high. A high-rise apartment building can be defined as a vertical construction on an area of land with many apartments of residents, with private ownership, shared ownership and a system of infrastructure facilities using shared. A high-rise apartment building consisting of modern buildings of the same type, built according to the plan, developed for the purpose of providing residential housing and owned by individuals or organizations - public or private.

#### **2.1.2 Concept of high-rise apartment building operation management service**

*Apartment service is a concept that refers to all services provided to residents living in high-rise apartment buildings to ensure the lives of residents and their families.* High-rise apartment services include: utility services such as water supply, electricity, access roads, drainage systems, waste treatment facilities as well as timely attention to building damage construction and equipment for timely repair and maintenance.

The apartment building operation management service includes all the management and operation activities of the apartment building to ensure a comfortable life for the residents living in the apartment building, such as the management of the building's facilities, resident management, etc. In addition to the use and operation of tangible elements, the management of multi-owned high-rise apartment buildings also cares about various aspects such as security, tranquility and sanitation environment.



In the process of using apartment buildings, there should be a management organization responsible for providing services to residents living in the apartment building and ensuring the operation of the apartment building. High-rise apartment building management is “the integration of processes within an organization to maintain and develop the agreed services that support and improve the efficiency of its main activities”. The management of high-rise apartment building services includes a variety of activities aimed at effectively managing physical assets and providing services efficiently.

### ***2.1.3 Forms of organization and management of high-rise apartment buildings***

In fact, multi-owner high-rise apartment buildings have been managed and operated according to 3 different types of management organization models.

- The form of the investor directly organizing the management and operation of the apartment building
- The form of the management board of the apartment building to hire a professional enterprise to manage and operate all the services of the apartment building
- The form of the management board of the apartment building to manage and operate the apartment building according to each separate service group

## **2.2 Theory of residents’ satisfaction and factors affecting residents’ satisfaction for apartment buildings**

### ***2.2.1 General concept of satisfaction***

The word ‘satisfaction’ is defined by the Oxford Dictionary as “the fulfillment of one’s want, expectation or need, or the pleasure derived from it” (Oxford Dictionary, 2017). Satisfaction is considered to be the extent to which a consumer rating or feedback about a product or service meets their expectations.

### ***2.2.2 Customer satisfaction index model***

Research by Willard Hom (2000) on customer satisfaction has divided satisfaction into 2 models: macro model and micro model. In particular, the macro model uses the concept of customer satisfaction in the impact, linked with a network of related concepts such as: value, quality, complaint behavior and loyalty; while the micro model considers the factors constituting customer satisfaction such as expectations, fairness, regret, etc.

### **2.2.3 Residents’ satisfaction**

#### ***Housing satisfaction***

Housing satisfaction is a complex concept, and researchers have been using a number of different meanings: residence satisfaction (RS), housing satisfaction (HS). Housing satisfaction is a component of accommodation satisfaction (in other words, housing satisfaction has a broader meaning). Housing satisfaction is the level of satisfaction expressed by a person or a family member about the actual housing situation (Abolade et al., 2014).

#### ***Residents’ satisfaction about apartment buildings***

Studies on residents’ satisfaction with the apartment environment have shown complex relationships between satisfaction levels and residents’ personal, physical and social characteristics (Sam et al. events, 2012).

The researchers agree that apartment residents' satisfaction is a complex concept that needs to be measured in multiple dimensions. Residents' satisfaction is also reflected as a measure of the adequacy of the living environment assessed by residents. The high-rise apartment building itself is not the only factor of residents' satisfaction; it is only part of a larger system that establishes the livability of the population (Amerigo & Aragonés, 1990; Mridha 2015). Varady and Carrozza (2000) have identified four groups of factors that have an impact on residents' satisfaction: individual factors of residents; satisfaction with the apartment; satisfaction with the high-rise apartment building transportation management services provided; satisfaction with the full range of paid resident services; and satisfaction with neighborhood characteristics.

#### ***2.2.4 Factors affecting residents' satisfaction living in apartment buildings***

Over the years there have been studies on residents' satisfaction living in high-rise apartment buildings. The studies all agree that residents' satisfaction is linked to groups of factors: characteristics of the environment and residents; residents' subjective beliefs, perceptions and aspirations (Galster 1987). The residential environment is where residents are accustomed to spend most of their time and it is rated differently among residents. The thesis has reviewed 6 factors affecting the overall satisfaction of residents for the apartment.

- *Physical characteristics of the apartment*
- *Features of the neighborhood*
- *Characteristics of residents*
- *Social environment*
- *Features of utilities*
- *Elements of high-rise apartment building operation and management*

The thesis focuses on studying the impact of the management and operation factors of high-rise apartment buildings, which are very important variables affecting residents' satisfaction living in high-rise apartments. To address this research gap, the thesis will determine and measure the impact of factors on the quality of operation management services provided by the apartment management on residents' satisfaction.

### **2.3 Impact of the quality of apartment building operation management service elements on residents' satisfaction**

#### ***2.3.1 Service quality and service quality measurement***

Service quality is what customers perceive. Service quality is based on the customer's perception or perception of their individual needs. The service quality measurement models presented in the thesis include:

- *SERVQUAL model (Parasuraman, 1988)*
- *SERVPERF model of Cronin and Taylor (1992)*
- *Antecedent and intermediate model of Dabholkar et al. (2000)*

Service quality is the most influential factor on customer satisfaction (Cronin & Taylor, 1992; Yavas et al, 1997; Ahmad & Kamal, 2002). Therefore, to improve customer satisfaction, service providers must improve service quality. In other words, service quality and customer satisfaction are

closely related. The causal relationship between these two factors is a key issue in most customer satisfaction studies.

### ***2.3.2 Overview of studies on the relationship between service quality and residents' satisfaction***

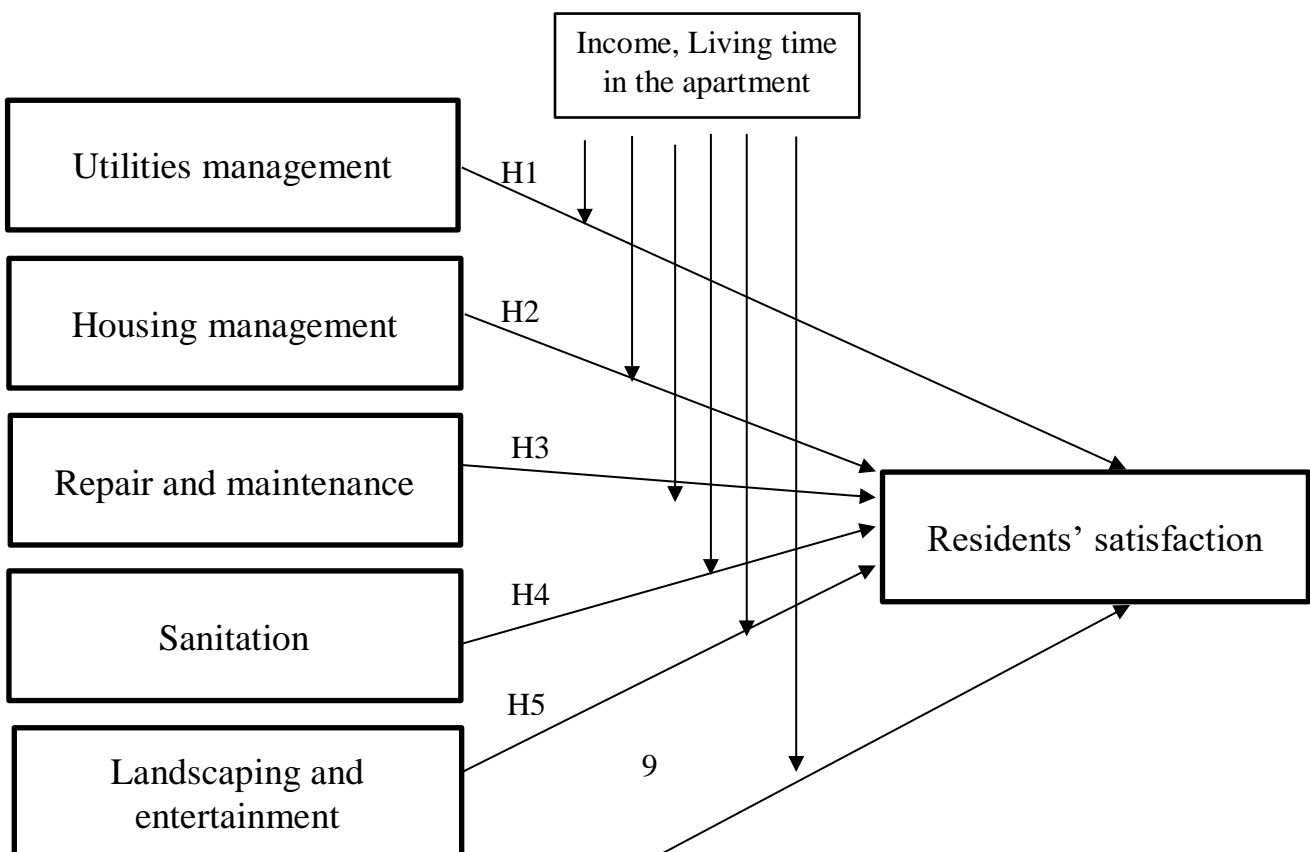
In the world, there are many studies on the relationship between residents' satisfaction and service quality of apartment management. The thesis inherits a number of studies on the influence of the quality of apartment building operation management services on residents' satisfaction; selects appropriate scales to measure the quality factors of high-rise apartment building operation management provided by apartment service management organizations to residents and form research hypotheses.

### ***2.3.3 Research model on the impact of apartment building operation management service quality on residents' satisfaction***

The thesis is based on a research model developed by Lai (2010) to develop a research model on the influence of quality factors of high-rise apartment building operation management on residents' satisfaction in high-rise apartments in Hanoi and Hai Phong. The impact variables are determined based on the component properties of each variable which are the service elements of apartment building operation management.

### ***2.3.4 Quality factors of apartment building operation management service affect residents' satisfaction and hypotheses in the research model***

Service elements of high-rise apartment building operation management include: housing management, repair and maintenance, security, sanitation, landscaping and entertainment, and utilities management. Specifically, the thesis studies the influence of 6 quality variables of high-rise apartment building operation management on residents' satisfaction, with the following hypotheses:



H6



*Figure 2.4: Research model of the influence of the quality of service elements of apartment building management and operation on the satisfaction of apartment residents*

***H1: Utilities management has a positive impact on residents' satisfaction with apartment building operation management services.***

***H2: Housing management has a positive impact on residents' satisfaction with apartment building operation management services.***

***H3: Utilities management, repair and maintenance has a positive impact on residents' satisfaction with apartment building operation management services.***

***H4: Sanitation has a positive impact on residents' satisfaction with apartment building operation management services.***

***H5: Security has a positive impact on residents' satisfaction with apartment building operation management services.***

***H6: Landscaping and entertainment has a positive impact on residents' satisfaction with apartment building operation management services.***

Two moderating variables in the research model, including: living time in high-rise apartment buildings and average income of residents' families.

### **CHAPTER 3: RESEARCH METHODOLOGY**

The thesis chooses to use both qualitative and quantitative research methods at the same time to accomplish the research objectives. Qualitative research methods are used in phase 1 of the quantitative research process to serve to identify observed variables/measurements of service quality of apartment building operation management, development and evaluate the observed variables used to measure the factors in the research model. The researcher also used the quantitative research method in phase 1 to select criteria/scales for the quality of service quality of apartment building operation management and residents' satisfaction. The formal quantitative research method is used to measure the influence of the quality of the management and operation factors of the apartment building on the satisfaction of the residents. Action research (AR) method was to obtain direct confirmation data of residents and apartment management officers about the results of formal quantitative research assessing satisfaction and factors affecting residents' satisfaction. Qualitative and quantitative research results are combined to confirm the reliability of the research results and to interpret the research results obtained as well as to uncover the causes of the research results.

### **3.1 Qualitative and quantitative research in phase 1**

#### **3.1.1 Qualitative research in phase 1**

The thesis used the first qualitative research by interviewing residents and apartment managers to determine the appropriateness of the variables and hypotheses in the research model, and at the same time selecting and determining the observable variables are used to measure the variables in the research model. Therefore, the researcher has identified and conducted qualitative interviews with 2 groups: residents and management officers of apartment buildings.

#### **3.1.2 Quantitative research in phase 1**

The researcher has synthesized the factors discovered through qualitative research to build a questionnaire to collect information on selecting important factors from a survey of a sample of residents. This questionnaire was prepared and refined through a literature review and discussion with officers from apartment management boards, maintenance supervisors, developers and residents. Questionnaires were distributed to a number of residents living in selected high-rise apartment buildings for the study. A total of 200 questionnaires were distributed and 180 valid responses were received. Respondents were asked to select variables that influenced their satisfaction with a range of aspects of high-rise apartment building operations management services including general housing management, security, sanitation, repair and maintenance, management of utilities, landscaping and entertainment.

This method was conducted with a questionnaire to collect residents' opinions on observed variables measuring each element of apartment operation management services. The survey results helped identify resident-generated lists that were used to assist the researcher in identifying variables that impact apartment resident satisfaction.

### **3.2 Official quantitative research (phase 2)**

Both types of quantitative research: descriptive statistics and correlation analysis, were used in the thesis. Correlation design and regression analysis to explore the relationship between the quality of all aspects of the management and operation services of the apartment buildings and residents' satisfaction with the quality of the management and operation services of the apartment buildings was made use of by applying statistical analysis. This is meant to test whether the increase or decrease of an independent variable corresponds to the increase or decrease in residents' satisfaction (dependent variable). However, a correlation design is not concerned with cause and effect and is therefore mostly observational in terms of data collection. Descriptive statistics seeks to determine the measurement of behaviors and attributes through observation. This quantitative approach involves asking residents to rate the quality of aspects of high-rise apartment building operations management services. The results of the statistical analysis show the relationship between the satisfaction of the residents and the quality of apartment building operation management services of both the maintenance contractor and the apartment management.

#### **3.2.1 Questionnaire design**

##### ***Questionnaire scale and structure***

This thesis studies residents' satisfaction with the quality of apartment building management services, focusing on investigating the impact of the quality of the management and operation factors of the apartment building by the apartment building management board to increase residents' satisfaction. Based on the observed variables referenced from existing studies and directly from the results of the qualitative and quantitative research in phase 1, the researcher has designed a questionnaire for the official quantitative survey.

### **3.2.2 Sample selection and data collection**

All data collected in this survey were taken from residents living in several apartment blocks in Hanoi and Hai Phong. Out of 400 questionnaires distributed to residents, the researcher obtained 368 valid answer sheets, accounting for 92%. The total number of useful questionnaires used was 322, representing an overall response rate of approximately 80.5%..

### **3.2.3 Data analysis**

Primary data were collected from questionnaires surveying residents living in apartment buildings. Then, the questionnaire data were entered into the Statistical Package for Social Science (SPSS) software. In this study, data were analyzed using SPSS 22 software.

## **3.3 Confirmatory qualitative research**

*The qualitative method in phase 2 after the quantitative research, was action research method*, which is still carried out by directly interviewing 15 residents and 5 officials of the management boards of high-rise apartment buildings (who were interviewed from phase 1) to confirm the results of quantitative research on residents' satisfaction and the level of impact of the service quality of apartment building operation management on the satisfaction of the residents.

The residents and officers of the apartment management board participating in the study provide objective opinions to help the researcher confirm the appropriateness of the impact level of component service factors in the management and operation of the apartment building. to residents' satisfaction. The officers of the apartment management board were consulted on the results of the evaluation of the component activities of the operation management service and the specific issues in the management and operation of the multi-owned high-rise apartment buildings that they are responsible for implementation.

## **CHAPTER 4: RESEARCH RESULTS**

### **4.1. Testing the model and scales**

To test the discriminant validity of all the concepts used, the following research applied the Saturated Model. The Saturated Model is the model in which the research concepts are freely related to each other (Anderson & Gerbing, 1988), so it has the lowest degree of freedom.

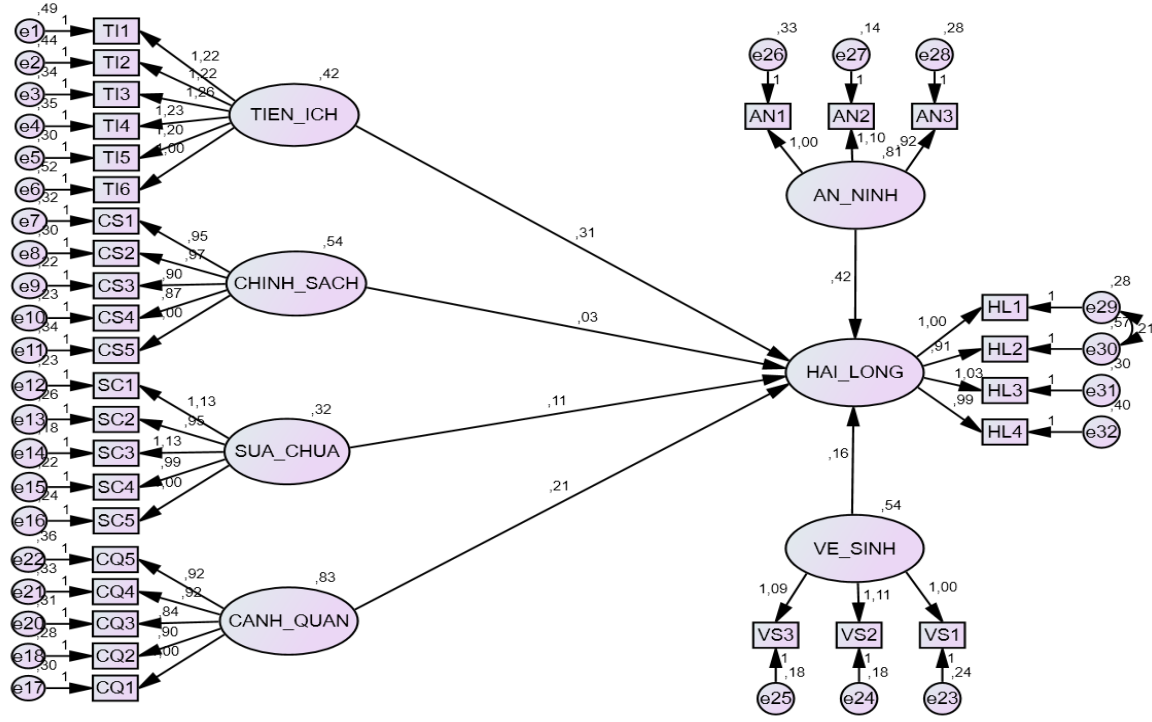
CFA analysis for 7 concept measurement model was performed on AMOS 22.0 software. The results show that the model has 405 degrees of freedom, Chi-square = 1438,627; df = 405; P = .000; Chi-square/df = 3,552; GFI = .817; TLI = .867; CFI = .884; RMSEA = .070. Thus, the model fits the market data or is compatible with the market data (Hair et al., 2010).

The significance of the explanatory variables for each factor is shown through the unnormalized weight table, in which the P-values of the explanatory variables of each factor in the model are all zero (significance level less than 0.05). Therefore, the significance of the explanatory variables in the model is ensured.

**4.2. Testing model and research hypotheses**

**4.2.1. Testing model**

With the application of SEM, we get the following test results:



**Figure 4.2: Results of SEM of unstandardized theoretical research model**

The estimation results show that the relationships are statistically significant (P<5%); except that the relationship between the quality of housing management policy of the apartment building management board and the satisfaction is not statistically significant (P>5%), the data in Table 4.9 unstandardized theoretical research model.

**4.2.2. Testing research hypotheses**

Hypotheses H1, H3, H4, H5, H6 corresponding to the situation of apartment building management service systems in Hanoi and Hai Phong are accepted.

**Table 4.11: Conclusion on research hypotheses**

Research hypothesis	Affecting coefficient	Sig. Coefficient	Testing result
H1: Utilities management has a positive impact on residents' satisfaction with apartment building operation management services.	,415	.000	Accepted
H2: Housing management has a positive impact on residents' satisfaction with apartment building operation management services.	,042	.324	Ignored

H3: Utilities management, repair and maintenance has a positive impact on residents' satisfaction with apartment building operation management services.	,129	.003	Accepted
H4: Sanitation has a positive impact on residents' satisfaction with apartment building operation management services.	,775	.000	Accepted
H5: Security has a positive impact on residents' satisfaction with apartment building operation management services.	,237	.000	Accepted
H6: Landscaping and entertainment has a positive impact on residents' satisfaction with apartment building operation management services.	,391	.000	Accepted

*Source: Self-collected and analyzed by researcher*

#### 4.2.3. Testing the difference in satisfaction of residents according to the moderator variable (Duration of living and income of residents)

##### *Multigroup analysis by living time*

The results of the variable model are selected and allow to conclude that there is a difference between living time in assessing the impact of factors on residents' satisfaction living in apartment buildings.

**Table 4.13: Differences between different groups regarding living time**

			< 3 years		> 3 years	
			Estimate	P	Estimate	P
SAT	<---	UTI	,188	***	,257	***
SAT	<---	HOU	,352	***	-,805	***
SAT	<---	REP	,024	<b>,583</b>	1,378	***
SAT	<---	LAN	,151	***	,043	<b>,399</b>
SAT	<---	SAN	,060	<b>,075</b>	-,089	<b>,116</b>
SAT	<---	SEC	,458	***	,682	***

*Source: Self-collected and analyzed by researcher*

There are differences in the impact factors and the degree of impact of these factors on the satisfaction of apartment residents in Hanoi and Hai Phong city. The satisfaction of living time for 3 years or less depends mainly on the quality of security service management, the quality of housing management policies of the apartment building management, the quality of facilities management,



benefits and quality of landscape and entertainment management. Sanitation management quality did not affect satisfaction.

Satisfaction of residents with living time of 3 years or more depends mainly on the quality of security services, the quality of facilities management services, repair and maintenance, which have a stronger impact than respondents with living time of 3 years or less. Quality of sanitation services, landscaping and entertainment do not affect the satisfaction of those residents.

*Multi-group analysis by resident's income level*

The above analysis data shows that both invariant and partially variable model groups of the two groups of residents' income levels are consistent with the actual data. The results of testing the difference of compatibility criteria between the invariant and partially variable models (Table 4.13) show that the difference between the two models is statistically significant ( $p = 0.000 < 0.05$ ). Therefore, the variable model is selected and allows to conclude that there is a difference between the income levels of residents in assessing the impact of factors on residents' satisfaction living in apartment buildings.

**Table 4.15: Differences between different groups regarding residents' income**

			< VND 16 mil./month		> VND 16 mil./month	
			Estimate	P	Estimate	P
SAT	<---	UTI	,296	***	,386	***
SAT	<---	HOU	,501	***	-,519	***
SAT	<---	REP	-,515	***	,184	***
SAT	<---	LAN	-,221	***	,171	***
SAT	<---	SAN	1,308	***	,227	***
SAT	<---	SEC	,065	<b>,142</b>	,614	***

*Source: Self-collected and analyzed by researcher*

The quality of security services does not affect the satisfaction of respondents whose income is under VND 16 million/month, however, this factor strongly affects respondents whose income is from 16 million VND/month or more. Thus, the higher the income group, the more attention is paid to security issues in the apartment. The group with an income of less than VND 16 million/month was satisfied mainly with the quality of housing management policies of the apartment building management board and the quality of facilities management, repair and maintenance services.

In addition to the impact factor of the quality of security services, the satisfaction of the group with income of VND 16 million/month or more strongly depends on the quality of housing management policy of the apartment management board, quality management of utilities. The factors of housing management, utility management, repair and maintenance, and landscape and entertainment had no significant influence on the satisfaction of those respondents..

### **4.3. Discussion of research results**

#### ***4.3.1 Discussion of quantitative research results***

Research results have shown a rather close relationship between the factors in the research model and residents' satisfaction with apartment management and operation services in Hanoi and Hai Phong.

- With an impact factor of 0.775, the factor "Security" has the strongest impact on residents' satisfaction living in the apartment. Moreover, this criterion is highly appreciated by the survey subjects with the overall mean of 3.64. Thus, residents living in the apartment are quite satisfied with the quality of security services.

- Next is the factor "Utilities management" which has a strong impact on residents' satisfaction with an impact coefficient of 0.415. Compared with other factors, this factor is assessed with high mean (3.52).

- The factor "Landscaping and entertainment" has a good impact on satisfaction with an impact coefficient of 0.391. Studies have identified landscaping and entertainment as one of the main areas of high-rise apartment building operation management services. The overall mean of this criterion is assessed at a fairly high level with 3.54 (just behind the security and sanitation factors).

- Sanitation is determined to have a good impact on residents' satisfaction with apartment operation management services with a coefficient of 0.237. The overall mean of this factor is highest rated by residents with 3.72.

- Utilities management, repair and maintenance has a negligible impact on residents' satisfaction living in the apartment building with an impact coefficient of 0.129. The overall mean of the factor is the lowest rated by apartment residents (3.30). In general, residents are not satisfied with the quality of facilities management, repair and maintenance services in apartments in Hanoi and Hai Phong. Thus, the speed, convenience, regularity and reliability of repair and maintenance services at the apartment building have not convinced the majority of residents living in apartments.

- The quality of housing management policy of the apartment building management board was determined to have no impact on residents' satisfaction about apartment operation management services.

#### ***4.3.2 Results of qualitative research in the period after the quantitative survey***

Most of the interviewed residents agree with the survey results with variables that have a strong impact on their satisfaction. The residents agree that safety and security issues, the quality of utilities such as electricity and water, and sanitation are always factors that they consider very important to the lives of residents in the apartment. The reason is because of these important issues, there are still problems in the management and operation of high-rise apartment buildings in urban Vietnam. When asked why residents still pay little attention to the quality of repair and maintenance activities with a low impact factor, the residents all agree that the reason is that the apartment is relatively new, so these problems not serious. However, some residents have reflected that they are not satisfied with the repair requests that do not meet the quality and time for residents. The interviewed residents also confirmed that the impact of the factor "maintenance and repair" has not

had a strong impact because the surveyed apartments have not been put into use for too long, so the physical factors of the building as well as the facilities are still relatively good, so residents are not fully aware of the importance of building maintenance. However, this will be an important factor that strongly affects residents' satisfaction when the apartments have been used after a certain number of years.

The apartment managers interviewed all determined that the specific variables in the research model are important for residents' satisfaction and therefore the research model is completely consistent with the reality in apartment management in Vietnam. Four apartment building managers strongly agree and one person agrees that the quality of security and safety management and the right management of utilities are two factors that have a strong influence on residents' satisfaction. The reason is that people are very interested in ensuring the safety of their place of residence. The reason also comes from the current state of security and safety in urban areas, which are currently unstable. In addition, three of them agree and another strongly agree that the quality of landscape and entertainment management also has a great influence on residents' satisfaction. All 5 managers believe that the quality of repair and maintenance of high-rise apartment buildings must be the factor that has the strongest influence on residents' satisfaction, however, the results of this quantitative survey show that this is the 4th important factor (impact coefficient of 0.129). This result can be explained by the fact that most of the surveyed apartments have only a short useful life, so the construction works as well as the facilities and equipment are still relatively new, so the residents have not yet seen the importance of repair and maintenance work. The apartment managers proposed to determine the quality of repair and maintenance that has a particularly important influence on the long-term operation of the apartment building and in the future, the management boards of the apartment building must pay attention to this work. The apartment building managers also confirmed that increasing the experience and improving skills of maintenance technicians will lead to fewer complaints and, therefore, increased satisfaction of residents living in the apartment. All apartment building managers agree that strengthening maintenance management is necessary, especially in performing tasks such as inspection, maintenance, repair and replacement of equipment during apartment operation.

The apartment managers also admit that among the reasons for the low quality of apartment operation management services, there are causes stemming from the organizational and management capacity of the apartment management board, capacity and attitude, as well as service level of officers, especially repair and maintenance technicians. The training on professional knowledge and skills for officers of the apartment management boards is not adequate, leading to a situation where some officers members in the management board are still unable to understand the professional information. Questions from residents in an easy to understand and quick, thorough way. The issue of job assignment of the management board is still overlapping, not really scientific.

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

### **5.1. Conclusion**

#### ***5.1.1. Summary of research results***

The satisfaction of apartment residents is considered an important area in the management and operation of apartment buildings in urban areas. The topic of research on the influence of the service factors of apartment management and operation on the satisfaction of apartment residents can access and use the research models here made in the world adapted to the Vietnamese context. The proposed research model includes 6 main factors affecting the satisfaction of apartment residents in Hanoi and Hai Phong, including: (1) Utilities management, (2) House management, (3) Repair and maintenance, (4) Sanitation, (5) Landscaping and entertainment, and (6) Security.

From 28 observed variables, 6 influencing factors and 1 satisfaction factor with 4 observed variables were included in testing the reliability of the scale. Through analyzing the reliability of the scale with Cronbach Alpha coefficient, it shows that all the scales ensure the permissible reliability because it is greater than 0.6 and the correlation with the sum of all variables is greater than 0.3.

All scales are included in exploratory factor analysis, the results show that all scales have extracted variance greater than 50% and the breakpoint for factor extraction has Eigenvalue  $> 1$ . Factor loading factor is greater than 0.5, so the research scales are satisfactory. These factors are all kept the same as before.

With CFA confirmatory factor analysis to check the fit of the model, the Chi-square, df, P test indexes; Chi-square/df, GFI, TLI; CFI, RMSEA all achieve the necessary value, achieve unidirectionality, convergent value, discriminant value and ensure reliability, the model achieves comprehensive validity. So, the model fits the market data.

Then, the researcher tested the model and research hypothesis by SEM. The analytical indicators in the model all reach the necessary values, ensuring reliability. From the 6 initially proposed hypotheses, 5 hypotheses about the relationship between the independent factors and the dependent variable as satisfaction are accepted because of the Sig value.  $< 0.05$ . Hypothesis H2 (Housing management has a positive impact on residents' satisfaction with apartment building operation management services) is excluded because of the Sig. value  $> 0.05$ .

Security has the strongest impact on satisfaction, followed by factors with decreasing impact, respectively, utilities management, landscaping and entertainment, sanitation, repair and maintenance.

The overall level of residents' satisfaction in terms of trust, understanding and service support also needs to be improved and promoted. The negative feedbacks on residents' satisfaction can come from the attitude, working style and qualifications of the apartment management staff.

Descriptive statistical analysis on the status of the management service elements of the apartment building shows that the quality of these elements is not high (only around the level between 3 and 4). The quality of service elements for management and operation of the apartment building is also evaluated by apartment residents differently. With the highest overall mean of 3.72 points, sanitation was the factor with the highest residents' satisfaction. The lowest overall mean (3.30), utilities management, repair and maintenance services have not satisfied apartment residents. The housing management policy of the apartment management board has not yet satisfied the apartment residents in Hanoi and Hai Phong. In general, residents living in multi-owned apartments are relatively satisfied with security, landscape and entertainment issues.

The survey results show that the response and handling of complaints from residents of the apartment management boards are still slow, for example, there are more than 4 complaints about the same issue. This may come from the complex service delivery process, the management board's responsibility to serve residents is not high. In fact, the complaint dispute handling process has many steps, wasting time and causing dissatisfaction among residents.

Residents' satisfaction by living time group and income group is also different according to the factors mentioned above.

The satisfaction of respondents living for 3 years or less depends mainly on the quality of security services, the housing management policy of the apartment management, the quality of the management of utilities, the quality of landscape management and entertainment. Sanitation quality does not affect satisfaction. Satisfaction of respondents living for 3 years or more depends mainly on the quality of security services, the quality of facilities management services, repair and maintenance has a stronger impact than respondents who live in 3 years or less. The quality of sanitation, landscaping and entertainment management does not affect those respondents' satisfaction.

The quality of security services does not affect the satisfaction of respondents whose income is VND 16 million/month or less, however, this factor strongly affects respondents with income from VND 16 million/month or more. Thus, the higher the income group, the more attention is paid to security issues in the apartment. Respondents with an income of less than VND 16 million/month was satisfied mainly with the quality of housing management policies of the apartment management board and the quality of facilities management, repair and maintenance services.

In addition to the impact factor of the quality of security services, the satisfaction of respondents with an income of VND 16 million/month or more strongly depends on the housing management policy of the apartment management board, quality management of utilities, quality factors of facilities management, repair and maintenance services; quality of management of utilities and landscape and entertainment had no significant influence on satisfaction of those respondents..

### **5.1.2. New contributions of research**

#### **\* Theoretical contributions**

- The theoretical problems of multi-owner apartment management services and the challenges faced by apartment management service providers in the context of developing countries like Vietnam have been discovered.

- The study has built a research model to study the influence of the quality of the components of the management and operation service of the apartment building on the satisfaction of the residents. The service elements of management and operation of high-rise apartment buildings of the apartment management organization include: (1) Utilities management, (2) Housing management, (3) Repair and maintenance management, (4) Sanitation, (5) Landscape and entertainment management, (6) Security and safety. In particular, the addition of component factors measuring these groups of factors, especially the quality of apartment building repair and maintenance management, in previous studies has not been mentioned in depth. The quality scales of apartment operation management factors have been determined through empirical research to ensure their suitability with the research

context. The research model has also added 2 more regulating variables: income and time spent living in high-rise apartments of residents.

- The studies on the influence of factors on residents' satisfaction so far have mainly been approached according to SERVQUAL and SERVPELF models, there are very few studies approaching the quality factors of successful services of high-rise apartment building operation management services. Therefore, the research model of the thesis contributes to enriching the theory of factors affecting residents' satisfaction. Furthermore, the researched influencing factors associated with the functions of the apartment management organization contribute to perfecting the management theory of this type of business organization.

#### **\* *Practical contributions***

- Research to help managers, businesses/organizations managing multi-owned high-rise apartment buildings understand the influence of operational management factors on residents' satisfaction living in the apartment. The level of impact of the quality of service elements of apartment management and operation on residents' satisfaction in two big cities, Hanoi and Hai Phong, has been assessed. In which, the quality of utility management, safety and security management, and sanitation management quality are the factors that have the strongest influence on residents' satisfaction living in the apartment. The quality of repair and maintenance services is not an important factor at the moment, but in the future it will be an extremely important factor in the management and operation of multi-owner high-rise apartment buildings.

- The research results have also shown the actual quality level of the operational management elements of the apartment management boards, from which the apartment managers know which factors the residents are satisfied with (Quality of Sanitation, Security, Landscape and Entertainment), factors that residents are not satisfied or satisfied at a low level (Utilities management, Repair and Maintenance, Housing Management) to have improvement solutions.

- In addition, the research results also show that the influence of factors of management and operation of high-rise apartment buildings on the satisfaction of apartment residents varies by living time groups and income groups. This result suggests to the apartment management board, apartment business units need solutions to group customers and develop apartment management and operation activities to best meet the needs of each group of residents.

- The research results on the different effects of the quality of apartment operation management factors on the satisfaction of apartment residents provide useful information for apartment operation managers to be able to offer solutions to improve management and operation activities to increase the satisfaction of apartment residents, contributing to sustainable apartment building development for Vietnamese cities.

## **5.2. Recommendations**

### ***5.2.1. Recommendations for apartment management boards, apartment management service organizations in urban areas***

The results of this study provide some implications for apartment management boards and business units related to apartment housing in urban areas in order to increase satisfaction for

apartment residents.

***- First: Paying attention to security and safety***

Security and safety is the factor that has the strongest influence on the satisfaction of apartment residents. At apartment buildings, it is necessary to focus on recruiting well-trained security guards on duty 24/24 with surveillance camera systems at locations such as elevators, lobby, parking basement, campus, ensuring safe and healthy environment for residents to live.

***- Second: Focusing on utilities management***

This factor has the second strongest impact on the satisfaction of apartment residents, but in general, apartment residents are satisfied with this factor at a low level, in which many criteria evaluate scores quite low. Specifically, for the criterion “Good soundproofing system, no noise”, apartment residents are least satisfied. Therefore, the management board and business units related to the apartment need an effective soundproofing solution.

***- Third: Paying attention to landscape and entertainment***

This factor is highly appreciated by apartment residents, but there are also some criteria in this scale that residents are less satisfied such as “The entertainment areas in the apartment are very diverse”, “The entertainment areas have a system of modern facilities which can well serve my needs”, “Suitable green space”. Moreover, respondents with living time for 3 years or more are not satisfied with landscape and entertainment.

***- Fourth: Focusing on utilities management, repair and maintenance***

This is the factor that apartment residents in Hanoi and Hai Phong are least satisfied with. In Vietnam, according to the provisions of the Law on Housing 2014, apartment buyers will have to pay an additional 2% of the apartment purchase contract value to use as an apartment maintenance fund. After the apartment has been put into operation, residents will elect a management board and the investor is obliged to hand over this entire amount to the management board for maintenance of damaged items of the building when putting it into operation. However, apartment maintenance fees are one of the causes leading to many disputes between investors and residents over time. According to statistics of the Ministry of Construction, in big cities such as Hanoi, Ho Chi Minh City, etc., up to 36% of the current apartment disputes revolve around the issue of appropriating this fund, which leads to dissatisfaction of residents living in the apartments.

***- Fifth: Paying attention to sanitation***

This is the factor that apartment residents are most satisfied with, but the management and operation of the apartment building need to promote and strengthen it further. It is important to emphasize recruitment and training of cleaning employees. It is also necessary to hire outside cleaning service units to ensure prestige and quality.

***- Sixth: It is necessary to have appropriate policies and operations for different population groups***

Management boards of apartment buildings need to group residents living in the apartment building by time living in the apartment building and by income; and at the same time develop and implement policies on management and operation of high-rise apartment buildings taking into account the differences between population groups.

### ***5.2.2 Some recommendations on the management mechanism of high-rise apartment buildings***

- Completing regulations on management and operation of apartment buildings and specific accompanying instructions to ensure easiness for apartment complexes to set up management boards and deploy professional apartment management service providers.

- The management and operation of multi-owner high-rise apartment buildings is complicated, so it is advisable to promote the development of hiring professional companies - third-party property management agents (PMAs) to participate in providing operation and management services.

- There are sanctions to ensure that the apartment management boards fully perform the functions of apartment management and operation, ensuring the long-term sustainability of the apartment buildings.

### ***5.2.3. Recommendations for further studies***

#### *Limitations of the research*

The new thesis focuses on studying the factors of apartment management services that affect residents' satisfaction living in apartments in some typical apartment buildings in the area of two cities, namely Hanoi and Hai Phong. The thesis has only surveyed in a number of medium-sized multi-owner apartment buildings with a relatively complete high-rise apartment management model, has not studied cheap and high-class apartments, nor has studied apartment with minimal services and complex apartment buildings directly managed by investors such as Vinhomes, etc.

The researcher has just proposed 6 factors of apartment building operation management service affecting residents' satisfaction, so research models can be used with other factors of the environment or behavioral characteristics of the inhabitants.

Non-probability sampling method, convenient sampling method was applied so the representativeness of the survey subjects is not high.

Thirdly, there is a limitation in terms of space, the study only carried out the survey in Hanoi and Hai Phong, in each area, the researcher only selected a limited number of apartments, which implies the general management policy for each entire apartment system..

#### *Further research directions*

- Adding a number of factors to the research model and research hypotheses, especially during the Covid-19 epidemic period related to the issue of travel restrictions and isolation in residential areas and apartments.

- It is possible to use more probabilistic sampling method, to ensure the high representativeness of the respondents, and at the same time increase the size of the survey subjects to ensure the reliability of the collected information.



- Expand the scope of the survey, which can be carried out in big cities of Vietnam such as Saigon, Da Nang, etc., to have a comparison of the satisfaction level of residents, from which there is enough information to propose some suitable solutions.
- Research on residents' satisfaction with the quality of service management and operation of apartment buildings with different quality levels.

## CONCLUSION

The thesis has built a model to measure the influence of the service quality factors of apartment building operation management on residents' satisfaction. An important factor that creates resident satisfaction in the management and operation of the building depends on the nature of the relationship between the customers, the residents, and the service provider, the apartment management. The higher the service quality, the higher the satisfaction level, so service quality is an important indicator to assess the satisfaction level of residents. The thesis has focused on studying the main variables affecting residents' satisfaction, which are the daily and long-term management and operation services of the apartment building. The quality factors of apartment building operation management service affect residents' satisfaction, including: management of maintenance, security, sanitation, landscape and entertainment and management of utilities, repair and maintenance.

By combining qualitative and quantitative research methods focusing on collecting data both from residents and officers of apartment management boards at a number of typical high-rise apartment buildings in Hanoi and Hai Phong, the thesis has assessed the level of satisfaction of residents and the influence of the quality of service elements of apartment building operation management on residents' satisfaction.

The findings of the thesis have provided policy suggestions and solutions for apartment management boards to improve the quality of their high-rise apartment building operation management services. In addition, the findings of this study highlight the impact of sanitation, entertainment and landscaping activities and suggest improvements to these services to increase residents' satisfaction.

**LIST OF REFERENCES**

1. Lê Va Xi (2017), “Các yếu tố ảnh hưởng đến ý định mua căn hộ nhà chung cư của người tiêu dùng Việt Nam tại các đô thị quy mô trung bình - Nghiên cứu tại Hải Phòng”, *Tạp chí Công thương*, ISSN: 0866- 7756, số 1 - tháng 1/2017.
2. Lê Va Xi (2017), “Một số đề xuất nhằm phát triển thị trường bất động sản ở Hải Phòng”, *Tạp chí Kinh tế và dự báo*, ISSN: 0866- 7120, số 5 tháng 2/2017.
3. Lê Va Xi (2017), “Thực trạng và giải pháp chất lượng dịch vụ quản lý nhà chung cư tại Hải Phòng”, *Tạp chí Công thương*, ISSN: 0866-7756, số 2- tháng 2/2017.
4. Lê Va Xi (2021), “Một số vấn đề trong quản lý vận hành các chung cư đa sở hữu ở các đô thị lớn Việt Nam: thực trạng và giải pháp”, *Tạp chí Kinh tế Châu Á Thái Bình Dương*, ISSN: 08683808, số cuối tháng- Tháng 5/2021.
5. Lê Va Xi (2021), “Impact of condominium management service factors of satisfaction of residents in Vietnamese cities”, *Hội thảo khoa học quốc tế*, ISBN 978-604-79-2811-8, Hội thảo lần thứ 13- tháng 6/2021.