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**CUSTOMER SATISFACTION ON SEMI LUXURY APARTMENTS IN SRI LANKA**

**February, 2011**

## **I. Declaration**

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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G.D.D. Perera

February, 2011

### **III. Abstract**

There has been a significant growth in the residential apartment market in Sri Lanka during the last decade. The main reason behind this upsurge include the growth of population, changes in living patterns, demand for the second house concept, high density in the urban areas of the country and soaring prices of property particularly in urban areas of the country. Sustainability of this segment of construction depends to a greater extent on the ability of developers to satisfy the customer requirements in the long run. At present most of the residential apartments are designed without the involvement of potential users or customers. Further, specification of the finishes, maintenance of common services, duration of handing over the end product and the final cost factor which were promises by the developers leads to make conflicts. To ensure conflicts free and customer friendly form of residential apartment, the right blend of design, construction and operation phases are vital.

This study has analyzed the information obtained through questionnaire survey to measure customer's perception of characteristics of their apartment and its surroundings in terms of difference between the "Importance" and "Satisfaction". i.e., Quality Gap. This study has more emphasized on the owners of the Semi Luxury apartments who occupied their own apartment, rather than occupant rented in the apartment buildings. The analysis considered private sector apartments and its process; critical issues regarding housing, customer satisfaction and customer attitudes were identified. Further, the results of the study revealed that understanding and determining the real customer satisfactions are met in the residential apartment business; to address the issue of promises given by the developers to customers during the pre-sales done before the construction been started in the apartment building and if there is a mechanism to listen to the voice of the customers such as the Post Occupancy Evaluation (POE) surveys presented in this research or any other that enables the involvement of users during the early stages.

**Key Words:** Semi Luxury Apartment, Specifications, Maintenance of Common Services, Duration of handing over, Cost factor, Customer Satisfaction, POE

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# **1. INTRODUCTION**

## **1.1 Background**

Today “Living in Apartments” is becoming popular in all over the world. This is mainly because of increasing the urban population and the flow of heads in to the city. The central bank annual report – 2006 says the population is growing at 1.1 percent annually, whereas the urban population is growing at a higher rate of three percent. Trends indicate that more than half the population of the country would live in urban areas by two thousand sixteen, requiring rapid development of urban infrastructure. The annual new demand for houses is estimated to be around hundred thousand units. In addition there is an estimated housing shortage of 350,000 units. Because of the increasing demand for apartments, “Mass Housing” has become the pet subject of politicians, planners, developers and investors.

The central bank report further mentioned that the trend of involvement of private sector in apartment construction also increased. The report says that “The condominium housing development backed by corporate property developers has become one of the promising areas of investment. Construction of condominium housing is increasing trend with corporate property developers being encouraged with various direct and indirect financial intensives, mostly under BOI status and the growing interest of expatriate Sri Lankans to invest in the real estate sector. Just to indicate the scale of mushrooming apartments, there are over 5000 apartment units that have been approved for construction in Wellawatta area alone, in addition to the high rise apartments that are already built on almost every by road. Further, there are 600 apartments units have been approved in Boralla area alone.

As this booming of apartments is seems to be continued, it is a must to analyze the reasons for the booming and dangers arise due to the rapid development of high rise buildings and precautions to be taken to make this developments sustainable and beneficial to the community.

Since, Sri Lanka’s economy turn in to free market economy policy, there has been a significant growth in the residential real estate industry in Sri Lanka. During the last decade main reasons behind this upsurge include the growth of population change in living patterns, soaring price of property in the urban areas, migration to urban cities from rural areas and

traditional business partners diversified their businesses to real estate industry seeking new business ventures. The demand for the residential individual houses, apartments and lands further encouraged by the “second house” concept which has being created by the developers to enhance their business strategy. As a result of above outcomes a huge demand for individual houses, apartments and properties has been developed. As a result lot of property developers,(local and foreign) started their real estate businesses in Sri Lanka. This further enhanced as a result of huge competition seen among local property developers and foreign [property developers are to construct residential apartments and housing projects and sell them before construction starts. (Pre-sale)

Customer satisfaction has become one of the key issues for companies in their efforts to improve quality in the competitive real estate business. Further customer satisfaction becomes major factor to retain the demand for apartment and residential housing industry. It can be seen as either a goal of or a measurement tool in the development of construction quality in the apartment and residential housing business. Customer satisfaction is considered to affect customer retention and, therefore, profitability and competitiveness (Anderson and Sullivan, 1993). According to (Jones and Sasser, 1997), complete customer satisfaction is the key to securing customer performance. It is also apparent that high customer satisfaction leads to the strengthening of the relationship between a customer and a company, and this deep sense of collaboration has been found to be profitable.(e.g. Storbacka et al, 1994)

Accordingly, customer satisfaction is an important factor in the development of the construction process and the customer relationship. Also it applies the same to the development of apartment and individual housing business. It is natural that managers in the construction and real estate industry should be concerned about customer satisfaction because of its expected influence on future projects and word-of mouth reputation. However, so far customer satisfaction in the construction and real estate industry is under-researched. For example, (Torbica & Stroh, 2001) emphasize that the Use of “soft” performance criteria, such as customer satisfaction, is at an early evolutionary stage in construction. In addition, the main focus on customer satisfaction approaches in the construction has been on individual house building and apartment business.

The significance of customer satisfaction, and its use for evaluating the quality from customer's perspective, have been emphasized by many authors in construction (Barret, 2000; Torbica and Stroh, 2001; Maloney, 2002; Yasami's et al, 2002).

Total Quality Management (TQM) is a complete management philosophy that emphasizes overall satisfaction through the continuous improvements to products and processes. Notably, TQM is concerned with customer satisfaction and is not merely a slogan. Since 1988, TQM has been codified in a national award (the Malcolm Baldrige National Quality Award) in the United States, "customer satisfaction", once the most criteria in TQM evaluation, has been transformed into "customer relationship and satisfaction" in the category of customer and market focus. Obviously, customer satisfaction is a key factor in achieving quality improvement.

In the construction industry, customer satisfaction demands on the contractor's performance are in accordance with contractual duties, obligations and responsibilities. Total customer satisfaction has been a goal for designers, construction managers, subcontractors and material suppliers. It is hard to achieve higher satisfaction level by any single project participant. However, there is no doubt that making customer (client) as satisfied as possible is an essential task for any firm in the construction industry regardless of the construction-related products or services they provide.

Initially, this research presents an overview of customer satisfaction, which has developed in the real estate industry. Then a brief review of existing approaches to customer satisfaction and degree of importance. In order to examine the links between developer, customer satisfaction and quality, a theoretical framework is also created. Subsequently, the results of data analysis and findings are presented, base on performance of developer and customer in the apartment business.

## **1.2 Research Problem**

The concept of customer satisfaction has been developed in the manufacturing industry rather than in the construction industry. Literature shows in recent years there have been a tremendous movement towards customer satisfaction in any industry including apartment

building sector. This high impact towards the customer satisfaction has created problems between the real estate developer and the customer in the areas of finishes of the apartment unit, maintenance and services of common facilities in the apartment building and the time factor for handing over of the finished unit and final cost of the finished apartment. Also, the impact from Time, Cost and Quality the developer may reluctant to satisfy the customer in many times. Therefore this research project will find out suggestions to these problems and strengthen the understanding of the customer and developer relationship with the perception of the degree of importance in the Sri Lankan context for betterment of semi luxury apartment industry.

### **1.3 Research Objective**

The main objective is to determine the ways of improving “Customer Satisfaction” and “degree of importance” of Semi Luxury Apartments when the matters related to the value for the money invested by the customers/occupants.

The related objectives of the research are:

- Review the relationship between the current level of customer satisfaction and the degree of importance of customers/occupants in semi luxury apartments in Sri Lanka.

### **1.4 Sub Objectives**

- To identify the factors that affect customer satisfaction in semi luxury apartments in Sri Lanka.
- To identify the age limits of customers/occupants in semi luxury apartments in Sri Lanka.

### **1.5 Framework**

This analysis is limited only for customer satisfaction on semi luxury apartments in Sri Lanka as the author’s experiences are mostly based on the Real Estate Industry projects and Semi Luxury Apartments in Sri Lanka. Further apartment industry in Sri Lanka vary from government flats to super luxury apartments as it is vary from customer demand/satisfaction. Such as government flats are mainly for low income people who need basic living and apart

from super luxury apartments, the customer has a very high standard of living. Since the scope for customer satisfaction in semi luxury apartment industry is also varies. Hence in my research project I have narrowed it down to; 1. Finishes of the Apartments 2. Maintenance and Services of Common Facilities in semi luxury apartments in Sri Lanka.

### **1.5.1 Study Area**

The prime justification for selecting Colombo Metropolitan Area (CMA) as the study area is the growing number of semi luxury apartment projects developed by the private sector developers and severe demand for the housing within CMA.

### **1.5.2 Limitation to the Study**

The real demand pattern in house construction industry has not been considered in this study and super luxury apartments have not been investigated of the customer satisfactions and the degree of importance.

The researcher examines customer satisfaction in semi luxury apartment industry. In my research the satisfaction on public customers are not considered as they are more interested on government owned apartment projects and housing projects as those are much cheaper cost compare to private owned apartment projects. Also these projects are catering for government servants who earn very less income comparative to private sector employees.

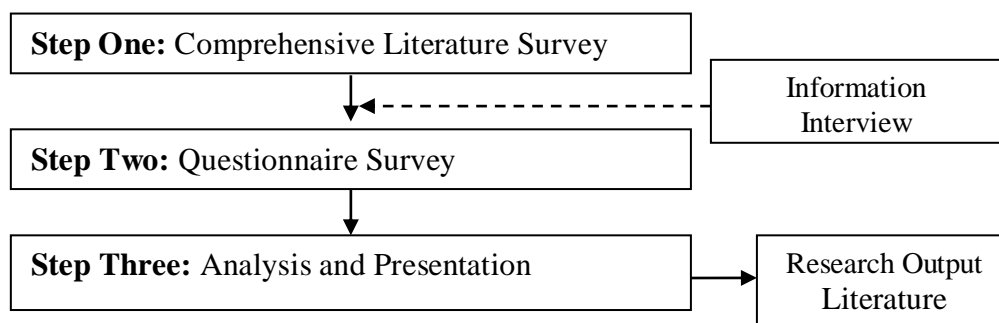
## **1.6 Research Methodology**

In order to achieve the objective sets above, the following methodology was adopted. Figure 1.1 presents the research methods and Figure 1.2 illustrates the research framework utilized in the research. The first step involved a review of literature. For this comprehensive review, publications such as Journals, Magazines, Books, Reports and News Papers were examined. In addition, Internet facilities were used and many relevant literatures were downloaded.

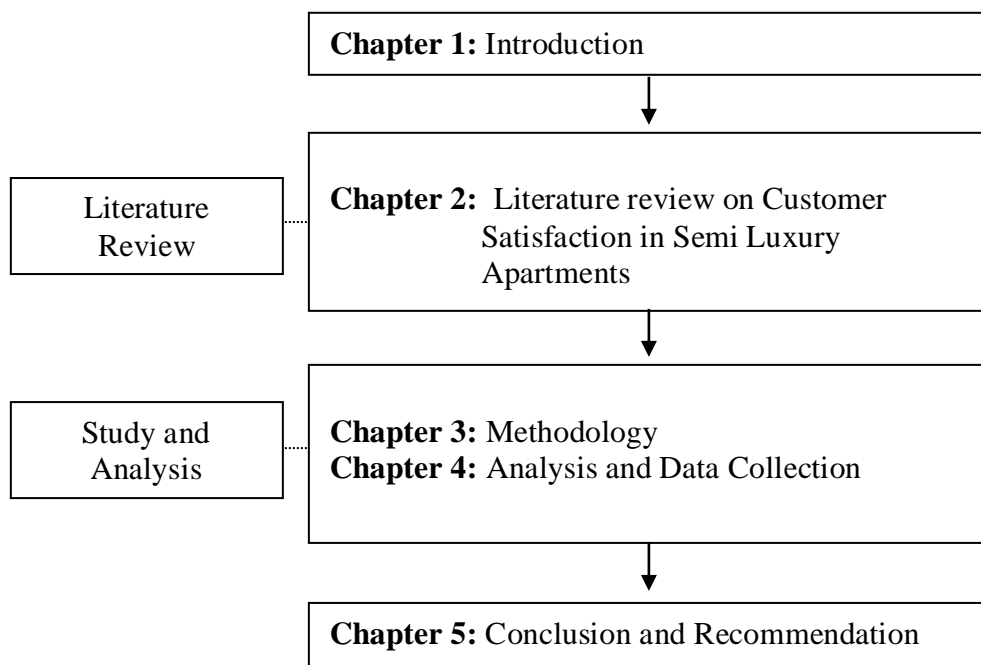
[www.apartmentrating.com](http://www.apartmentrating.com), the largest apartment ratings website in the United States and researches done before related to the topic. Further, many researches has been done in countries like Singapore, Hong Kong, UK and Australia. In this research, the researcher will compare those research works with Sri Lankan context.

The second step of the research involved structured questionnaire survey. Questionnaires were designed to fill by customers/occupants in semi luxury apartments in private sector.

Finally statistical tests were carried out to analyze the collected data in order to presents the recommendations of the research.



**Table 1.1: Research Methodology used**



**Table 1.2: The Research Framework**

### **1.7 Structure of the Thesis**

The Thesis was divided in to five main Chapters.

**Chapter One** comprises the background of the problem, definition of the research problem, Research Objective, Research Question, Methodology and Theoretical Framework, Data Collection and sampling frame.

**Chapter Two** involves in literature review on customer satisfaction about apartments and previous research done relevant to satisfaction and the degree of importance. Further, it includes the demand for real estate business and apartment industry in countries like Singapore etc.

**Chapter Three** includes theoretical framework, research methodology, limitations of the study and data analysis methods in detail while problem definition, research questions and objectives have been restated.

**Chapter Four** discusses the findings of the study with the descriptive statistics and t-test outputs.

**Chapter Five** presents the conclusion on the main findings and recommendations. Also it includes the study areas of future research to be carried out.

### **1.8 Summary**

The objective of this chapter is to provide an overview of background of the problem which focused and the research is about what and outline of the whole thesis. In overview, the background of the problem was discussed in detail while including the research objectives

and research questions of the study. The theoretical framework and research methodology were stated briefly. In next, Chapter two will study the literature around the level of satisfaction and the importance of customer expectations and its benefits and challenges.

## **2. LITERATURE REVIEW**

### **2.1 Introduction**

The followings are composed of several dimensions covering almost all important elements that have been dealt with many other research works. Review of this literature also brings to light other research findings and suggestions on similar customer satisfaction practices. The purpose of this literature review is to verify whether the selected model is applicable in this study. Since the research analyze the impact of important contextual factors on these practice, several research findings associated with some contextual factors are also discussed in this review. Literature review covers the following areas of previous research studies;

- I. Customer Satisfaction in China's Real Estate Industry, 2005



- II. Real Estate Investment Trust and Customer Satisfaction in Apartment Housing, 2008
- III. Customer Satisfaction using Data Mining Techniques, 1998
- IV. Analyzing Customer Satisfaction and Quality in Construction, 2004
- V. Customer Satisfaction in Home Building, 2001
- VI. Quality Management in Construction, 2005

## **2.2 Customer Satisfaction**

Customer satisfaction has been viewed both as transaction specific satisfaction, which is the post purchase evaluation of the match between expectations and actual performance [1], and cumulative satisfaction, which reflects the overall evaluation, based on transactions over time and is the net sum of the customer experience with the seller [2].

Customer satisfaction is assumed to lead to attitude change, repeat purchase, and brand loyalty [3], lower costs of attracting new customers [4], and lower costs of handling returns and complaints [5]. (Payne and Richard 1993) state that relationship marketing focuses on keeping customers and building a relationship with them, thus enhancing customer loyalty. It is now being increasingly recognized that the greater the satisfaction the customer has with the firm and its products, the more likely long term customer retention and improved profitability.

Many cases show that increasing customer satisfaction levels can bring a company's facility and customer service systems to a level that's above and beyond the quality of others [7]. ACSI (American Customer Satisfaction Index) model is a series of causal equation, linking customer expectation, perceived quality, perceived value and customer satisfaction together. In the model, customer satisfaction leads to two results: customer complains and customer loyalty. Loyalty is regarded as the source of customer retention and their tolerance to price. In the last decades, lots of causal models were constructed to indicate the relationships among perceived performance, customer satisfaction and loyalty, most of which concluded that increase in satisfaction led to improvement in loyalty which might lead to repurchase, positive word-of-mouth behavior, cross buying and price tolerance. But among these research results, few of them took industry factors into account. There is no practical suggestion for real estate enterprises to evaluate and improve customer satisfaction either. Combined other

scholars' results and industry conditions, we proposed a customer satisfaction conceptual model for real estate enterprise.

There has been a quite obvious increase in the emphasis on a firm's ability to produce high-quality products and/or provide high-quality services. Identification of high-quality products or services can be achieved by measuring customer satisfaction with these products or services. The concept of customer satisfaction transforms all industries from production centralized to customer based. Several evaluation models or indices exist for assessing customer satisfaction in various industries. To achieve a highly reliable and stable index of satisfaction, the American Customer Satisfaction Index (ACSI) [44] defines the satisfaction as a weighted average of three survey ratings: perceived quality, perceived value, and customer expectations. The ACSI index has been used to measure the satisfaction in the manufacturing/nondurables, manufacturing/durables, transportation, communications and utilities, retails, finance and insurance, services, public administration, and government. Although the ACSI index has an accepted satisfaction evaluation methodology, it is not designed for the construction industry. Generally, the evaluation result for customer satisfaction is highest for competitive products, lower for competitive services and retailers, and lowest for government and public agencies [45]. The ACSI system criteria cannot be adapted to the construction industry; a new evaluation model must be developed not only for the construction industry, but also for CPM services.

### **2.2.1 Customer Satisfaction Model of Real Estate Industry**

Real estate enterprises usually have a longer project development and operation duration compared with other enterprises. There are many business processes in this industry, including financing, land selecting, land development, design, construction, marketing, and property management. Any of the processes has influence on product quality and the price level. These two factors plus service quality are three key factors to customer purchase decision, and the latter is critical to customer satisfaction. House developers cannot visit the issue of value without including service quality. Especially in this industry, price no longer differentiates companies and products are going to be homogenized. We surveyed and studied customer relationship of four real estate enterprises in Hebei Province, and designed a customer satisfaction conceptual model. This model indicates that four key factors have influence on perceived value and customer satisfaction. And two extreme levels of customer satisfaction: customer loyalty and customer dissatisfaction are presented. The four key factors

that have influence on customer's perceived value and satisfaction to real estate enterprises are selected as listed below.

### **2.2.2 Customer Expectations**

Expectations reflect customers' anticipated performance before usage. Customers may use different "types" of expectations when forming opinions about a product's anticipated performance. There are four types of expectations: the ideal, the expected, the minimum tolerable, and the desirable expectations. Many factors affect house buyers' expectations, including marketing, advertising and sales promotions as well as innate personal needs, word of mouth and competitive offerings. Measuring expectations disconfirmation apart from expectations is also significant in consumer satisfaction research [6]. Expectations disconfirmation has a negative influence on customer's perceived product and service value. Real estate enterprises should pay attention to the inverse relationship between customer expectations and perceived value.

### **2.2.3 Perceived Price**

Perceived price is the sacrifice of money to obtain certain product or service. Perceived value comes from the interaction process between perceived quality and customer's sacrifice. Higher price often means higher quality and may create higher purchase intention. It also increases customer's purchase costs. Sometimes a house's objective price is high, but for a certain customer it is acceptable, because the customer feels that it's reasonable to afford such a sacrifice. In real estate industry, rational customers pay more attention to product and service quality developers supply. Comparatively speaking, price is an influencing factor to customer satisfaction, but not as critical as other factors. Developers should make an effort to enhance housing planning and service quality as well as lower development cost, because only those high performance-cost ratio houses will satisfy customers.

### **2.2.4 Perceived Product Quality**

The most important determinant of quality for a product is the customer's perception of its quality. The more a product achieves its intended qualities, the more we would expect customers to be satisfied. Creating quality in a product is, therefore, a matter of achieving the right balance between delivering customer expectations and exceeding them. House is a kind of durable product. Generally, commercial house quality includes: community planning,

position, community scale, family area, transportation condition, environment, construction design, material, equipment and construction quality etc.

### **2.2.5 Perceived Service Quality**

Perceived service is the customer's perception of what actually did, should or will occur. Service quality comes from service strategy, service system and service personnel. In the whole service process, customer perceives service quality by evaluating service attitude, service content, service price, service equipment, service efficiency and convenience; the six dimensions affect customer satisfaction through affecting service quality perception.

Service quality has a characteristic of heterogeneity. In real estate industry, a company without luxurious department or villa still can have high-level customer satisfaction and competitive edge through service quality improvement strategy. Customer will buy a house when the product quality matching its price, but they cannot tolerate poor service level. Actually, our customer satisfaction survey (in five residential communities in Hebei) results indicate 86.5 percent complaints come from dissatisfaction with service.

If customer satisfaction level is supreme, it leads to customer loyalty that will bring corresponding loyal behaviors and intention of repurchase, word-of-mouth, cross buying and price tolerance respectively. China's real estate market has great potential, a lot more Chinese would invest in real estate for profit in years to come, and satisfaction improvement means more to real estate enterprises. High referral rates and word-of-mouth have great impact on companies' sales because less money for marketing would need to be spent. Besides, a loyal customer may have price tolerance to expensive house or service. As there is a cross-regional development trend in China's real estate market, cross buying (the customer's willingness to buy other products or service provided by the same company) may improve housing developers' profitability. If customer's perceived value is quite low, customer dissatisfaction will come. Developers have to deal with complaints, negative word-of-mouth, and customer defection. Undoubtedly, no one would like to be involved in those kinds of problems. To avoid this risk, real estate enterprises should know better what factors lead to satisfaction and what factors lead to another direction, and then set up and implement a customer-oriented, quality-centered satisfaction strategy.

## **2.3 Impact of Real Estate Investment Trust (REIT), Ownership on Renter Satisfaction**

Customer satisfaction in housing can have societal implications far beyond those of standard consumer product experiences. Residential satisfaction is, in its own right, an important component of overall life satisfaction, (Golant, 1985). Residential dissatisfaction can have direct impacts on physical and psychological health, (Evans, 2006).

In addition to these direct effects, residential satisfaction is also a major factor in decisions to move. (Morris and Winter, 1978), P187 dissatisfaction with the dwelling as “the key determinant of the propensity to move.” (Schachter, 2001) also found that residential dissatisfaction was the most common factor in mobility decisions. Several other studies have repeatedly demonstrated that residential satisfaction is a key component in predicting residential mobility, (McHugh, Gober, and Reid, 1990); (Oh, 2003); (Reschovsky, 1990); (Sinai, 2001).

Thus, residential dissatisfaction tends to increase transience. Transience, in turn, is a critical factor in several important issues for both families and communities. Increased transience decreases the incentives to invest time and effort into improving one’s community, (Glaeser, Laibson, and Sacerdote, 2002). Building community relationships and supporting community development simply makes less sense for someone who is planning to leave. In particular, transience has been linked to parents’ lack of participation with local schools, (Nakagawa, et al., 2002). Whether through this or other mechanisms, several researchers have linked frequent residential moves with diminished educational performance by children, especially in single parent and low-income households, (Adam and Chase-Lansdale, 2002); (Astone and McLanahan, 1994); (Eckenrode, et al., 1995); (Tucker, Marx, and Long 1998). Others have found that excessive transience can generate negative psychological effects for women, (Magdol 2002) and (children Adam and Chase-Lansdale, 2002), as well as increase the potential for marital dissolution, (Boyle et al., 2006).

Although transience and residential dissatisfaction are important for all individuals, they are especially concerning issues for renters. The 2005 Current Population Survey showed that 30% of renters moved during the previous year as compared with only 7% of homeowners, U.S. Census Bureau (2006). Thus, renters account for one-third of all Americans, (Katz and Turner, 2007), but undertake over 68% of all residential moves. As a group, the median length of residence for renters is only about two years, (Ahluwalia, Crowe, and Corletta 1992); (National Association of Home Builders, 2002). The potential negative effects of such

transience are especially concerning given that renters include the most economically vulnerable populations, (Joint Center for Housing Studies, 2006). While many factors contribute to the greater transience of renters, (Ahn and Blázquez, 2007) found that lower residential satisfaction was a major cause of renter mobility. This corresponds with other research finding that renters have lower residential satisfaction than homeowners do, even after controlling for other economic and residential characteristics, (Elsinga and Hoekstra, 2005); (Rohe and Stegman, 1994); (Rossi and Weber, 1996).

The following study uses data from a national consumer comment and rating site for apartments. Despite the limitations inherent in using such open access ratings, several academic studies have successfully employed similar data sources. (Dellarocas, Farag, and Zhang 2008) found on-line consumer ratings to be the most significant explanatory variable in predicting sales in motion pictures. Similar studies have found such ratings to be successful in predicting sales in video games, (Bounie et al., 2005), (cameras, Jiang and Wang, 2007), and books (Chevalier and Mayzlin, 2006); (Huang and Chen, 2006). (Bickart and Schindler, 2001) reported that consumer comment sites were far more influential in consumer behavior than traditional advertising. (Chiou and Cheng, 2003) found that comments on such sites had a significant effect on consumers' evaluations of brand quality, especially for low-image brands. Ratings data from the website used in this study, ApartmentRatings.com©, have been previously used in studies on the inter-connectedness of residential satisfaction subcomponents, (James, Carswell, and Sweaney, 2008) and the change in residential satisfaction in Baton Rouge, Louisiana following Hurricane Katrina, (James and Zahirovic-Herbert, 2008).

## **2.4 Customer Satisfaction Using Data Mining Techniques**

Customer Satisfaction research is one of the fastest growing segments of the marketing field. Marketing and management sciences, nowadays, are focusing on the coordination of all the organization's activities in order to provide goods or services that can satisfy best specific needs of existing or potential customers.

To reinforce customer orientation on a day-to-day basis, a growing number of companies choose customer satisfaction as their main performance indicator. However, it is almost impossible to keep an entire company permanently motivated by a notion as abstract and intangible as customer satisfaction. Therefore, customer satisfaction must be translated into a

number of measurable parameters directly linked to people's job-in other words factors that people can understand and influence, (Deschamps and Nayak, 1995).

The aim of this paper is to present an original methodological approach to the problem of customer satisfaction evaluation, combining multicriteria preference disaggregation analysis and rule induction data mining. The two methodologies were applied to the results of a customer satisfaction survey.

The main objectives are:

- to compare the results of the two methods,
- to evaluate the homogeneity of the set of customers,
- to overcome the problem of no response (missing data) in the data set.

#### **2.4.1 Multicriteria Satisfaction Analysis (MUSA)**

The MUSA (Multicriteria Satisfaction Analysis) is based on a preference disaggregation model. The aggregation of individual preferences into a collective value function is the main objective of this approach. More specifically, it is assumed that the customers' global satisfaction can be explained by a set of criteria or variables representing its characteristic dimensions.

The preference disaggregation methodology is an ordinal regression based approach, (Lagrèze and Siskos, 1982); (Siskos and Yannacopoulos, 1985) in the field of multicriteria analysis. It is used for the assessment of a set of marginal satisfaction functions in such a way that the global satisfaction criterion becomes as consistent as possible to customers' judgments.

According to the model, each customer is asked to express his/her judgments, namely his/her global satisfaction and his/her satisfaction with regard to the set of discrete criteria. The collected data is analyzed with the preference disaggregation model, respecting the ordinal and qualitative form of customers' judgments and preferences.

The main results of the method are, (Grigoroudis et al., 1998); (Siskos et al., 1998); (Mihelis et al., 1998):

- global and partial satisfaction functions,
- weights on the criteria (relative importance),
- average satisfaction indexes.

#### **2.4.2 Rule Based Data Mining Techniques**

The objective of data mining is to extract valuable information from one's data, to discover the 'hidden gold'. In Decision Support Management terminology, data mining can be defined as 'a decision support process in which one search for patterns of information in data', (Parsaye, 1997).

Data mining techniques are based on data retention and data distillation. Rule induction models belong to the logical, pattern distillation based approaches of data mining. These technologies extract patterns from data set and use them for various purposes, such as reduction of the value of a dependent field (Field to Predict). By automatically exploring the data set, the induction system forms hypotheses that lead to patterns. These patterns may be logic, equations or cross-tabulations. Logic can deal with both numeric and non-numeric data.

The central operator in a logical language is usually a variation on the 'if-then' statement. By supervised learning paradigm derive rules, of 'if-then' type, from data. Such rules relate an outcome of interest to a number of attributes. They are of the following form (Akeel, 1994):

- if attribute1 = a and attribute2 = b then outcome = c (probability = .9)

The rule's probability is the probability that for a random record satisfying the rule's condition(s), the rule's conclusion is also fulfilled, (Meidan, 1999).

Rules may easily go beyond attribute- value representations. They may have statements such as 'shipping state = receiving state'. Here, in attribute logic, we compare the values of the



two fields, without naming any values. By expressing attribute-based patterns, rules have the advantage of being able to deal with numeric and non-numeric data (categorical fields).

## **2.5 Analyzing Customer Satisfaction and Quality in Construction**

Improving quality and customer satisfaction has received considerable attention in recent years. This study examines construction in terms of customer satisfaction and quality. A framework is developed to evaluate the dynamics of customer satisfaction and quality. An empirical analysis is conducted to explore customer satisfaction in construction as perceived by two customer groups: public and private customers. Results indicate that the need for contractors to improve performance relates mostly to quality assurance, handover procedures and material. Public customers were found to be less satisfied with the contractor's performance than private customers. For a contractor, the main benefit of high customer satisfaction is the opportunity to remain a customer's potential partner in the future. (Sami Karna., 2004)

The relationship between customer and contractor in construction constitutes a multilevel complex in which parties operate simultaneously and collaborate with in-groups of networks. Therefore, customer satisfaction should be understood as a relationship-specific rather than transaction-specific construct see e.g. (Homburgh and Rudolph, 2001). As a result, traditional customer relationship management models used in product manufacturing will not produce the best results in construction. In addition, co-operation between customer and contractor is strongly emphasized; the customer's input has considerable implications for the outcome of the construction project. The complex nature of the construction process, changes in project organization, and the uniqueness of each project make it difficult to exploit past experiences and customer feedback in future projects. In addition, (Love and associates, 2000) suggest that each firm in the construction supply chain is both customer and supplier, and that their creation of value is the fundamental factor in successful projects.

(Ireland, 1992) emphasizes that the project manager's role is vital for mutual, trusting relationships and customer satisfaction. Ireland also found that the project manager's ability to manage customers relates directly to the success of the project. (Soetanto and associates, 2001) additionally recognize that the satisfactory performance of participants is a prerequisite to maintaining harmonious working relationships. Because the performance of each

participant in the construction project coalition is interdependent, other participants should assess their performance.

Determining quality in construction is a complex issue. In general, quality can be defined through two approaches: conformance to requirements and customer satisfaction. The major concern in the conformance to requirements approach is how well the constructed facility conforms to design specifications. This is the contractors' internally focused definition of quality. The limitation of this approach is that customers may not know or care about how well the product and/or service conforms to internal specifications; customers want their needs and expectations met or even exceeded. The strengths of this approach are that measuring quality is relatively straightforward and easy and should lead to increased efficiency on the part of the organization.

On the other hand, the customer satisfaction approach defines quality as the extent to which a product or service meets and/or exceeds a customer's expectations. The strength of this approach compared to the quality approach is that it captures what is important for the customers rather than establishes standards based on management judgments that may or may not be accurate. Customer satisfaction thus approaches quality from a customer's viewpoint. According to this determination, it is the customer who defines quality. The weaknesses of this approach are that measuring customers' expectations is a difficult task and the fact that a customer's short-term and long-term evaluations may differ, (Reeves and Bednar, 1994).

(Barrett, 2000) sees that quality in construction can be thought of as the satisfaction of a whole range of performance criteria held by an interacting host of stakeholders and mediated by a range of mechanisms. According to (Winch and associates, 1998) the problem with the existing literature on construction is that it concentrates on the problems of producers instead of providing value for the customer. There is a need for customer orientation and satisfaction, not for allocating liability.

Customer satisfaction can be used for evaluation of quality and ultimately for assessment of the success of a company's quality improvement programme. According to (Torbica and Stroh, 2001), a quality improvement effort will lead to a higher product and service quality, which will lead to improved customer satisfaction. Their study has confirmed that implementation of TQM is positively associated with homebuyer satisfaction, and it is the

“total offering” that generates the total degree of customer satisfaction. (Al-Momani, 2000) examined service quality in construction delivered by contractors and the project owner’s expectations using the service quality gap as his analysis tool. He found that contractors pay very little attention to the owners (customers) satisfaction, and that this contributes to poor performance.

## **2.6 Development of a Customer Satisfaction Evaluation Model for Construction Project Management**

With the ISO 9000 standard gaining popularity worldwide, Total Quality Management (TQM) has become a strategic and survival approach for most firms in every industry. TQM is a complete management philosophy that emphasizes overall satisfaction through the continuous improvements to products and processes. Notably, TQM is concerned with customer satisfaction and is not merely a slogan [35]. Since 1988, TQM has been codified in a national award (the Malcolm Baldrige National Quality Award) in the United States, “customer satisfaction,” once the most criteria in TQM evaluation, has been transformed into “customer relationships and satisfaction” in the category of customer and market focus [36]. Obviously, customer satisfaction is a key factor in achieving quality improvement. The construction industry has many characteristics common to manufacturing and service industries. In the construction industry, customer satisfaction demands on contractor’s performance are in accordance with contractual duties, obligations and responsibilities. Total customer satisfaction has never been a goal for designers, construction managers, subcontractors and material suppliers [37]. It is hard to achieve higher satisfaction level by any single project participant. However, there is no doubt that making customer (client) as satisfied as possible is an essential task for any firm in the construction industry regardless of the construction-related products or services they provide.

The application of Professional Construction Management (PCM) has increased rapidly since it was first introduced and promoted in the early 1960s [38–41]. In a narrow sense, PCM forms a three-party team, including the owner, the architect/engineer (A/E) and the project manager, to accomplish the owner’s authorized tasks [39]. On the contrary, from a broad perspective, PCM is an effective means of satisfying an owner’s construction needs [38]. Functional PCM tasks consist of the following phases of construction projects: conceptual planning; conceptual design; detailed design; construction; closeout; and, startup. PCM is now regarded as a professional team for serving all owner needs in a construction project.

In Taiwan, the Government Procurement Law (GPL), promulgated on May 27, 1998, allows several innovative concepts and regulations, including the PCM (the official term in GPL is project management, therefore, construction project management (CPM) is used hereinafter replacing the PCM term) approach and the most advantageous tendering approach [42] for construction projects and procurement entities. As stated in Article 39 of GPL—“In conducting a procurement, an entity may entrust a supplier, according to this Act, with the project management related to planning, design, supply, or contract performance”, a construction project can have a CPM contract to serve the consultative and administrative needs [43]. After the GPL of Taiwan went into effect, the number of construction projects with CPM contracts issued has been increasing (see Fig. 1). With CPM stepping into its flourishing phase in Taiwan, it is necessary to appraise the performance of CPM services. This study focuses on developing a customer satisfaction evaluation model for evaluating CPM services and examines its applicability in Taiwan.

### **2.6.1 Stakeholder Satisfaction**

Construction projects involve numerous stakeholders that are closely related and interacted during a given project. The level of a stakeholder satisfaction directly influences the current project and subsequent projects and the level of satisfaction experienced by other stakeholders. For contractors, completing a project in accordance with the plans and specifications within budget and on time satisfies owner needs and generates profit. (Ahmed and Kangari [46] used six client-satisfaction factors, including time, cost, quality, client orientation, communication skills and response to complaints, to conduct a survey for analyzing the client-satisfaction factors in the construction industry. They concluded that these six factors are equally important when evaluating client satisfaction. Maloney argued that the physical product and service delivery must be considered when assessing customer satisfaction in the construction industry. For electrical construction projects, Maloney proposed a dual-influence model using five dimensions contractor/customer relationship, project management, safety, prepared/skilled workforce and cost to evaluate customer satisfaction and for contractor selection decisions [47]. Furthermore, Maloney claimed that labor-management activities at levels of contractor–workforce, contractor–local union and contractor association–local union influence customer satisfaction [48]. Contractors need to establish partnerships with labors to enhance customer satisfaction.

To measure home-buyer satisfaction, Torbica and Stroh [49–51] developed a model, called HOMBSAT, with three distinct dimensions of house design, house and services. The indicators of house design and house are used to rate the product quality of a transaction, whereas indicator of services is used to rate the service quality. The HOMBSAT can provide a total home-buyer satisfaction across three dimensions to the home builders to track the overall quality of their services. Moreover, Torbica and Stroh also confirmed that a home builder can increase home-buyer satisfaction by implementing TQM [52]. In 2002 and 2003, J.D. Power and Associates reported that the quality of workmanship/materials and customer services account for 50% of overall customer satisfaction among buyers of new homes, and the levels of customer satisfaction increased significantly in the highly competitive home-builder industry [53]. Liu, who surveyed residential satisfaction of housing estates in Hong Kong, utilized questionnaires comprising nine categories with a total of 51 questions [54]. That study developed a well-structured post-occupancy evaluation method for measuring customer satisfaction. (J.-B. Yang, S.-C. Peng / Building and Environment 43, 2008 p458–p468)

Tang et al. [55] investigated the client satisfaction of engineering consulting firms in Hong Kong using a questionnaire-based survey. Their study used the following eight factors (expressed in 29 indicators) to evaluate overall client satisfaction: professionalism of service; competitiveness of service; timeliness of service; quality of design; degree of innovation; completeness of other considerations; availability of support for client; and, supervision at implementation. Tang et al. concluded that the quality of engineering consulting services in Hong Kong was slightly higher (mean score is 3.122) than neutral (default score is 3) [55]. Leung et al. [56] measured participant satisfaction in the construction management process. Through 15 established and verified hypotheses, the study showed that management mechanisms (e.g., communication, participation and commitment) rather than particular project goals (e.g., time, cost and quality) influence directly participant satisfaction.

## **2.7 Summary**

In literature review it was found that in recent past, across the world, the progress of the customer satisfaction and the degree of importance. The researcher further emphasized the sustainability of the semi luxury apartment industry based on the customer satisfaction and

the importance of the customer expectations. The researcher discussed the related research work about the customer satisfaction and the importance.

The literature shows that customer satisfaction research was one of the growing segments of the marketing field and it discussed through Customer Satisfaction using Data Mining Techniques and Multicriteria Satisfaction Analysis. Further it discussed to measure the home-buyer satisfaction by using a model called HOMBAST, with three distinct dimensions of house design, house and services.

Chapter three will further discussed the problem and methodology of the study can be carried out.

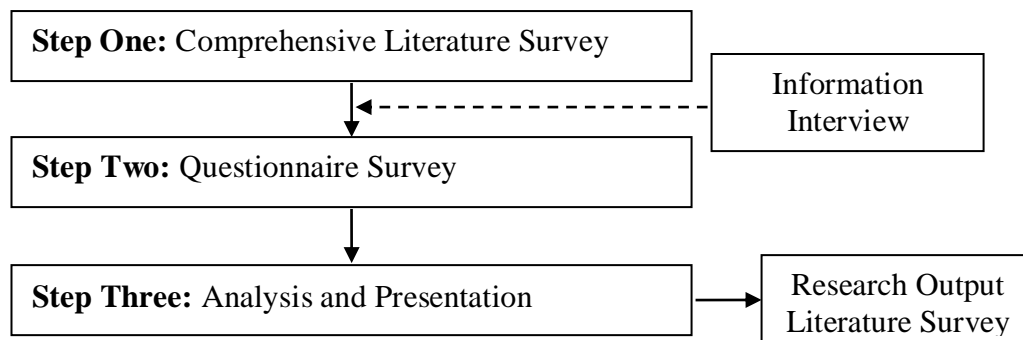
### **3. METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the designing of structured questionnaires survey and theoretical approach of using a statistical tool for analysis of the data. This study investigates the

individual level of satisfaction and degree of importance of the customer satisfaction. Therefore a survey was designed in order to collect primary data from customers. The perceptions of the customers were obtained through a structured questionnaire. Target population of semi luxury apartment units were around 4000 units in the Colombo Metropolitan Area. The researcher has targeted to distribute the questionnaire around 100 units and expected target sample is around 60 units. The survey was design to identify the features of an apartment that are considered their level of satisfaction and to be important by customers in existing residential apartments. The structured questionnaire mainly based on the approach of customer/occupants satisfaction on specification, actual finishes, services and maintenances of residential apartments.

In brief, the questionnaire based on 53 characteristics related to specifications, actual finishes, services and maintenances of semi luxury residential apartments.



**Table 1.1: Research Methodology used**

### 3.2 Research Statement

The concept of customer satisfaction has been developed in the manufacturing industry rather than in the construction industry. Literature Review shows in recent years there have been a tremendous movement towards customer satisfaction in any industry including apartment building sector.

This high impact towards the customer satisfaction has created problems between the real estate developer and the customer in the areas of finishes of the apartment unit, maintenance and services of common facilities in the apartment building and the time factor for handing over of the finished unit and final cost of the finished apartment. Further, strategies used by the developers to sell the apartments also may have contributed some extent for dissatisfaction of the customers in the semi luxury apartments. i.e., the developers used the strategy of improving visible finishes rather than long term facilities, such as services of common facilities and maintenances. This involves more cost to developers and this leads to dissatisfaction of customer for the end product.

Therefore this research study focus to find out suggestions and openings to future research studies of these problems and strengthen out the understanding of the customer and developer relationship with the perception of the level of satisfaction and degree of importance of customers in the Sri Lankan context for betterment of semi luxury apartment industry.

### **3.3 Research Objectives**

The main objective is to determine the ways of improving “Customer Satisfaction” and “Degree of Importance” of Semi Luxury Apartments when the matters related to the value for the money invested by the customers/occupants.

The related objectives of the research are:

- Review the relationship between the current level of customer satisfaction and the degree of importance of customers/occupants in semi luxury apartments in Sri Lanka.
- To identify the age limits of customers/occupants in semi luxury apartments in Sri Lanka.

### **3.4 Theoretical Framework**

Research framework was developed with reading several previous studies done by the researchers about the customer satisfaction in the literature review. Different approaches are used in order to group similar characteristics to one group. This creates each similar group has similar characters. Therefore, this study focuses on groups of Location and External Appearance, Internal Layout of the Apartment and Space Arrangement, Wall Finishes, Floor



Finishes, Safety Arrangements, Services etc. Also, research framework was developed in order collect primary data by use of structured questionnaire and the researcher's experiences are mostly involved to collect primary data. Further, it helps the knowledge of the researcher's in the Real Estate Industry projects and Semi Luxury Apartments in Sri Lanka.

Further apartment industry in Sri Lanka vary from government flats to super luxury apartments as it is vary from customer demands/satisfactions. Such as government flats are mainly for low income people who need basic living and apart from super luxury apartments, the customer has a very high standard of living. Since the scope for customer satisfaction in semi luxury apartment industry is also varies. Hence in my research study, I have narrowed it down to; 1. Location and External Appearance 2. Finishes of the Apartments 3. Maintenance and 4. Services of Common Facilities in semi luxury apartments in Sri Lanka.

### **3.5 Questionnaire Design**

As finding of Torbica and Stroh (1999) studies design of a product play major role in shaping customer satisfaction. The questionnaire consists of a list of 53 characteristics related to product specifications, finishes, services and maintenances in semi luxury apartments. These characteristics were chosen through the finding of previous research (Discussed in chapter two, Literature Review) that converting to suits semi luxury residential apartments in Sri Lanka. Primarily more considerations were given to product finishes of residential apartment units and its environment. Moreover the characteristics were categorized into 12 groups as shown in Table: 3.2-1. The same characteristics were used to assess the level of customer satisfaction and degree of importance.

Questionnaire was prepared in the English language. Sometimes the researcher has to translate the questionnaire in to Sinhala language and in to Tamil language with the help of colleagues of the researcher.

Questionnaire consists of three sections.

- Section I – To determine “Level of Customer Satisfaction.”
- Section II – To determine “Degree of Importance” of the same questionnaires used in section I.
- Section III – General Information.

Section I, consists of 53 characteristics related to product finishes of residential apartments, such as location and appearance, internal layout and space arrangement, wall finishes, floor finishes, door/window finishes, roof/ceiling finishes, washroom/toilet finishes, kitchen/pantry finishes, electrical finishes, safety arrangement, services and maintenance aspects etc.

Section III, consists of General Information, related to customers, such as period of reservation, factors for choosing a apartment, defects, handing over delays, cost increases etc.

**Table 3.2-1: Framework to Questionnaire Design**

<b>ID</b>	<b>Group</b>	<b>Detail Definition</b>
A	Location and External Appearance	Access to apartment, surrounding and external view
B	Internal Layout of the apartment and Space arrangement.	Sizes of living room, bed rooms, washrooms and kitchen/pantry and space & inside arrangement of living room, bedrooms, washroom and kitchen/pantry.
C	Wall Finishes	Workmanship of wall finishing and durability of material used.
D	Roof/Ceiling	Floor ceiling height
E	Floor Finishes	Workmanship of floor finishing and durability of material used.
F	Door/Window Finishes	Workmanship of door/window finishing and durability of material used.
G	Toilet Space & finishes	Workmanship of toilet finishing and durability of sanitary fittings used. Space availability in toilets.
H	Kitchen/Pantry area and finishes	Workmanship of kitchen/pantry finishing and durability of pantry/fittings used. Space availability in toilets.
I	Electrical Fittings	Layout of power points and brand used for MCB's, ELCB's etc.
J	Safety Arrangement	Height of handrails, sizes of common

		areas emergency alarming system etc.
K	Services Provided	Parking, Recreational facilities stand by generator, lift, garbage disposal, security, maintenance of common areas.
L	Maintenance	Availability of maintenance staff.

**Table 3.2-2: Details of Characteristics in Each Group**

Group	Characteristics
A	1. Easy Access to the apartment 2. View of Surrounding (Population density) 3. Neighborhood relation (Adjoining houses etc.) 4. External Features of building appearance 5. External Features of building shape 6. External Features of building colour 7. Social and Economic status of neighbours
B	1. Size of living room, bed rooms, washrooms, kitchen and pantry 2. Space and inside arrangement of living room 3. Space and inside arrangement of bed rooms 4. Space and inside arrangement of washrooms 5. Space and inside arrangement of kitchen/pantry 6. Space and inside arrangement of balcony's 7. Space and inside arrangement of store room/ servant room
C	1. Workmanship of wall plasters 2. Workmanship of wall painting
D	1. Ceiling/roof height (floor to floor)
E	1. Workmanship of floor tiling 2. External texture (smooth or rough) of floor tiling 3. Colour (dark or light) of floor tiling
F	1. Size and location of openings 2. Durability of building materials used 3. Workmanship of door/windows 4. Arrangement of air circulation space (No. of openings)
G	1. Make of sanitary fittings used 2. Durability of material used 3. Workmanship of finishes 4. Size and location of toilets 5. Functionality of performances of sanitary fittings/appliances 6. Arrangement of air circulation space (fanlight sizes) 7. Accessories used (shower cubical, exhort fans etc.)
H	1. Size and location of kitchen/pantry 2. Workmanship of finishes 3.

	Accessories provided (pantry cupboard, cooker head etc.) 4. Durability of materials used
I	1. Layout of light points/power points fixed 2. Durability of materials used (make of MCB's, ELCB's etc.) 3. Cooling arrangement made (A/C's and ceiling fans etc.)
J	1. Height of the balcony hand rail/balustrade 2. Emergency alarming system (smoke detectors, sprinklers etc.) 3. Evacuation for an emergency (additional staircase etc.) 4. Sizes of common areas (corridors, balcony's etc.)
K	1. Parking for customers 2. Parking for visitors 3. Recreational facilities (pool, children play areas, Gym etc.) 4. Stand by generator in case of a power cut 5. Maintenance of common areas ( cost of electricity, water etc.) 6. Lift for customers 7. Lift for services 8. Functionality of water and Electricity supply 9. Security arrangement 10. Method of garbage and waste disposal system
L	1. Availability of maintenance staff in case of a breakdown (water, electricity, A/C's etc.)

### 3.5.1 Distribution of Questionnaire

The distribution of questionnaire done by visiting each apartment building or sending the questionnaire through colleagues of the researcher or by post. Also, some selected customer's questionnaire was e-mail. Most of the occasions the researcher himself readout the questionnaire to customers/occupants and recorded their answers at the same time. This method was adopted by the researcher to avoid the delays of collecting data.

Selections of the apartment buildings were done mainly due the convenience of the researcher to distribute the questionnaire. i.e., Easy approach to the customers of the apartments and the influences are available in those apartments. It is a tedious operation to distribute the questionnaire and collect the data from the customers. The researcher has to spend more time on this exercise to collect data.

### 3.5.2 Study Area

The prime justification for selecting Colombo Metropolitan Area (CMA) as the study area is that growing number of semi luxury apartment projects developed by the private sector developers and severe demand for the housing within CMA. Also the convenience of the researcher to collect data.

### **3.5.3 Limitation to the Study**

The real demand pattern in house building industry has not been considered in this study and super luxury apartments have not been investigated of the customer satisfactions and the degree of importance.

The researcher examines customer satisfaction in semi luxury apartment industry in Sri Lanka. In this study the satisfaction on public customers are not considered as they are more interested on government owned apartment units and housing projects as those are much cheaper cost compare to private owned apartments. Also these apartment units are catering for government servants who earn very less income comparative to private sector employees.

### **3.6 Research Methodology**

The first step involved a review of literature. For this comprehensive review, publications such as Journals, Magazines, Books, Reports and News Papers were examined. In addition, Internet facilities were used and many relevant literatures were downloaded.

[www.apartmentrating.com](http://www.apartmentrating.com), the largest apartment ratings website in the United States and researches done before related to the topic. Further, many researches has been done in countries like Singapore, Hong Kong, UK and Australia. In this research, the researcher will compare those research works with Sri Lankan context.

The second step of the research involved structured questionnaire survey. Questionnaires were designed to fill by customers/occupants in semi luxury apartments in private sector.

Finally statistical tests were carried out to analyze the collected data in order to presents the recommendations of the research.

### **3.6.1 Research Design**

The research was designed in order to answer the research questionnaire. The research approach used is based on a mix of qualitative and quantitative methods. Qualitative approach have different approaches, in attempt of understanding in people's perceptions or perceptive of a particular situation are called as phenomenological study. In this type of studies, researcher has to depend exclusively on lengthy interviews with carefully selected group of individuals (Leedy & Ormrod, 2005)

However it is not possible to have lengthy interviews with the customers and either to cooperate to answer the questionnaire. The *primary data* were collected from the selected group of customers. The perceptions of level of satisfaction and degree of importance were obtained through open ended questionnaire and the discussions had during the filling of questionnaires. In addition, it was used the personal experience and observations of the researcher in the Real Estate Industry, mainly in the semi luxury apartments in Sri Lanka for about five years and *secondary data* which is available in the Internet, Press releases, Articles and other published documents.

### **3.6.2 Target Population**

The customer's perception on the product or services willing to provide will be advantaged for successful foundation of the business. However, in Sri Lanka the semi luxury apartment industry become more popular in the Colombo Metropolitan Area with the increase of Tamil people who came to Colombo due to war in the North and North East. This has leads to more companies to diversify their initial business to apartment industry. Target population of semi luxury apartment units were around 4000 units in the Colombo Metropolitan Area. Mainly in the towns of Wellawatta and Bambalapitiya.

### **3.6.3 Target Sample**

The researcher has targeted to distribute the questionnaire around 100 units and expected target sample is around 60 units. The respondents of the sample were obtained on convenience to the researcher considering the easy accessibility to them and the influences of the researcher's colleagues who are living in some of the apartment's buildings. Finally the researcher has managed to collect 52 completed questionnaire samples from the customers/occupants.

**Table 3.6-3: List of Semi Luxury Apartments chosen**

<b>Name of the Apartment Buildings</b>	<b>No. of Residential Units</b>
1. Mount View Apartments, Ratmalana	40 units
2. Seagull Apartments, Wellawatta	36 units
3. Global Apartments, Kotte	24 units
4. Summerland Residencies, Col. 06	25 units
5. Span Tower, Peterson Lane, Col. 06	24 units
6. Rasika Courts, W.A. De Silva Mw. Col.06	36 units

### **3.6.4 Assumption to the Study**

Even though the researcher himself has not visited all the respondents, it is assumed that all the customers/occupants of the apartments have honestly and truthfully answered their personal viewpoints. Also, in answering to the questionnaire it is assumed that respondents have answered for all critical points completely with regard to level of satisfaction and degree of importance.

### **3.7 Descriptive Analysis**

For any kind of research type or interpreting the data findings, determining the impact of the results is dependent upon two concepts: validity and reliability are essentially, validity entails the question, “*does your measurement process, assessment, or project actually measure what you intend it to measure?*” on the other hand, reliability addresses whether repeated measurement or assessments provide a consistent results given the same initial circumstances (Singleton & Strait, 1999)

### **3.8 Reliability Test**

For each measurement of scale, this step will help to make sure that all scales have adequate or high reliable scales or items are highly inter-correlated, means they are measuring the same issues. Thus, to measure internal consistency and reliability the researcher used the Cronbach’s Alpha. High alpha values imply that the inter-item correlations are high and thus the items are measuring the same underlying construct and hence reliable.

Cronbach’s alpha can be used only for quantitative data. Therefore, the researcher has converted the qualitative data in to quantitative data by using Likert scale.

### **3.9 Summary**

The chapter reshaped the problem definition and objectives which are given in the Chapter One. The research questions were re-stated according to the theoretical framework. The appropriate methodology was developed as possible to answer those questions. Further it discussed data collection methods, target sample, methods of data analysis, assumptions and its limitations. According to the framework described, at the next, the Chapter Four will be attempted in Analysis of Data, Findings and Discussions.

## **4. ANALYSIS AND DATA COLLECTION**

### **4.1 Introduction**

This chapter presents the analysis and data collection of the questionnaire survey. The survey was to identify the features of an apartment that are considered their level of satisfaction and to be important by customers in existing residential apartments.

Further this chapter of the research focuses on the presentation and analysis of data and describes dataset and statistical tools that are used, throughout the research and how data analysis is done by using Computer Statistical Package for Social Science (SPSS) version 15.0 as well as MS Excel 2007 as a main tool to analyze the collected data.

This study mainly has been concentrated on customer satisfaction on quality/specification and services provided by the developers in apartment units and its environment in the assessment of housing satisfaction. POE survey has been developed to address this challenge. In addition, a comparison is also made among the Level of Satisfaction and Degree of Importance.

### **4.2 Data Collection**

The questionnaire survey was carried out among a convenient sample of fifty two (52) customers/occupants in private semi luxury residential apartments (Middle Income) within Colombo Metropolitan Area (CMA). For the questionnaire survey six semi luxury apartment buildings were selected, mainly due to convenience of the survey. i.e. The researcher had



known to some customers in those apartments and it leads to collect the completed questionnaires much easier. In semi luxury residential apartment customers were middle income earners which were mostly the owners of a one residential unit. The researcher had the privilege to interview more customers while answering to the questionnaires. This leads the researcher to collect more information's such as age group of the customers and the ownership of one unit or more. Thus both mixes of quantitative and qualitative methods were used. Finally qualitative data were converted in to quantitative data. Eighty questionnaires were distributed among the customers and received the responses from fifty customers. i.e. A rate of approximately 70% of the customers. However the researcher has a target sample group of more than hundred customers, but reluctance of the customers to receive the questionnaires may reduce the targeted amount.

### 4.3 Data Analysis

Five point Likert rating scale used (see Table: 4.3-1). i.e. Qualitative Data were converted into Quantitative Data by using the Likert Scale. The average Degree of Importance (DOI) and average Level of Satisfaction (LOS) given by the occupants/customers was calculated using formula (1) and (2) respectively (Rahman et al., 1999).

**Table 4.3-1: Likert Scale**

<b>Likert Scale</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
Level of Satisfaction	Highly Satisfied	Satisfied	Neutral/Do Not Know	Dissatisfied	Highly Dissatisfied
Degree of Importance	Very Important	Important	Somewhat Important	Less Important	Not Important at all

$$\text{Average Level of Satisfaction} = \frac{\text{Sum of all the scales given by respondents}}{\text{No. of respondents}} \dots\dots (1)$$

$$\text{Average Degree of Importance} = \frac{\text{Sum of all the scales given by respondents}}{\text{No. of respondents}} \dots\dots (2)$$

### 4.4 Examination of Reliability

For each measurement of scale, this step will help to make sure that all scales have adequate or high reliable scales or items are highly inter-correlated, means they are measuring the same issues. Thus, to measure internal consistency and reliability the researcher used the Cronbach's Alpha. High alpha values imply that the inter-item correlations are high and thus the items are measuring the same underlying construct and hence reliable.

#### 4.4.1 Cronbach' Alpha

Cronbach's alpha can be used to estimate the average reliability coefficient that would be obtained from all possible splits. Cronbach's is an appropriate method to analyze the reliability of questionnaires that use Likert Scale, since Likert scales gives rank type results (Andy Field, 2006)

Alpha can take values between negative initially and one. Although only positive values make sense. ie. Range between 0.0 & 1.0, some professionals as a Rule of Thumb require a reliability of  $\alpha = 0.6$  or higher (obtained on a substantial sample) before they will use on instrument. Beside, alpha > 0.9 is excellent and show perfect reliability of the dataset. The standardized score of alpha is the same to the value before alpha is standardized which indicate that the average and variance in the original scales don't differ much and standardization does not make a great difference in the alpha (George & Mallery1, 2003). Cronbach's alpha does not provide reliability estimates for single items (Gliem & Gliem, 2003)

#### 4.5 Summary of Cronbach's Alpha Values of Reliability Test of Group Characteristics for Level of Satisfaction

Summary of "Cronbach's Alpha" values of Reliability Test for "Level of Satisfaction" of group characteristics presented as follows;

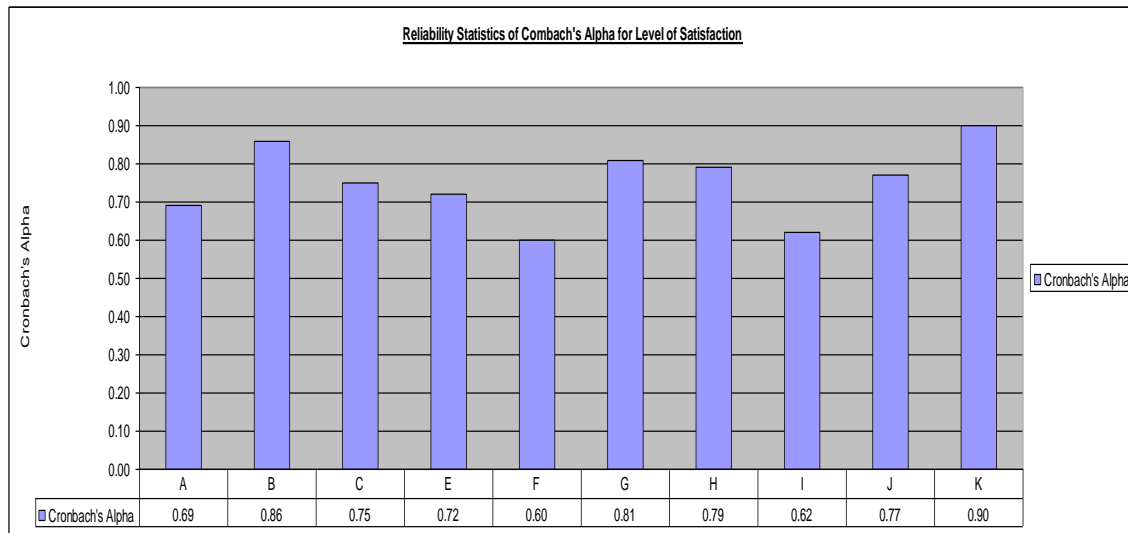
**Table 4.5 -1: Summary of Cronbach's Alpha Values of Reliability Test of Group Characteristics for Level of Satisfaction**

ID	Group Characteristics	Cronbach's Alpha	"N" of Items	Level of Reliability
A	Location and External Appearance	0.688	07	Acceptable

				Reliability
B	Internal Layout of the Apartment and Space Arrangement.	0.857	07	Good Reliability
C	Wall Finishes	0.752	02	Acceptable Reliability
E	Floor Finishes	0.722	03	Acceptable Reliability
F	Door/Window Finishes	0.595	04	Acceptable Reliability
G	Toilet Area Finishes	0.814	07	Good Reliability
H	Kitchen/Pantry Area Finishes	0.787	04	Acceptable Reliability
I	Electrical Fittings	0.617	03	Acceptable Reliability
J	Safety Arrangement	0.770	04	Acceptable Reliability
K	Services	0.896	10	Good Reliability

This illustrate the values of cronbach's alpha obtain in the group of characteristics of Reliability Test for "Level of Satisfaction". The "Good Reliability" levels are obtained for the characteristics of "Internal Layout of the Apartment and Space Arrangement", "Toilet Area Finishes" and "Services". All other group characteristics have "Acceptable Reliability" levels.

**Table 4.5-1A: Cronbach’s Alpha for Level of Satisfaction**



This illustrate the values of cronbach’s alpha obtain in the group of characteristics for level of satisfaction. The minimum alpha value obtain for the reliability of door/window finishes and the maximum alpha value obtain for the reliability of services.

#### 4.5.1 Summary of Cronbach’s Alpha Values of Reliability Test of Group Characteristics for Degree of Importance

Summary of “Cronbach’s Alpha” values of Reliability Test for “Degree of Importance” of group characteristics presented as follows;

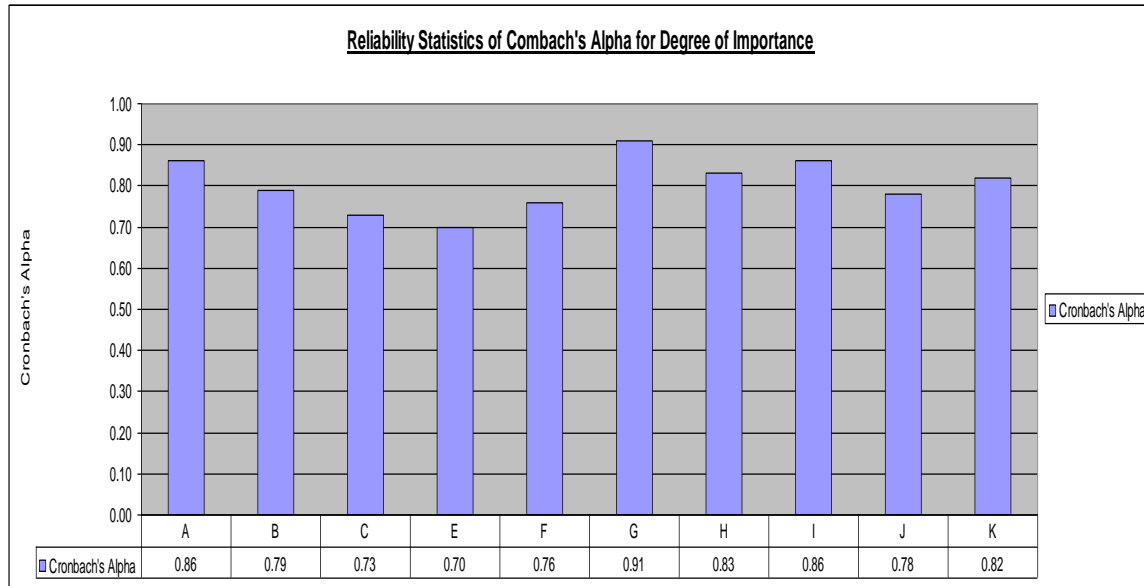
**Table 4.5-2: Summary of Cronbach’s Alpha Values of Reliability Test of Group Characteristics for Degree of Importance**

ID	Group Characteristics	Cronbach’s Alpha	“N” of Items	Level of Reliability
A	Location and External Appearance	0.857	07	Good Reliability

B	Internal Layout of the Apartment and Space Arrangement.	0.789	07	Acceptable Reliability
C	Wall Finishes	0.733	02	Acceptable Reliability
E	Floor Finishes	0.697	03	Acceptable Reliability
F	Door/Window Finishes	0.762	04	Acceptable Reliability
G	Toilet Area Finishes	0.911	07	Excellent Reliability
H	Kitchen/Pantry Area Finishes	0.830	04	Good Reliability
I	Electrical Fittings	0.857	03	Good Reliability
J	Safety Arrangement	0.781	04	Acceptable Reliability
K	Services	0.821	10	Good Reliability

This illustrate the values of cronbach's alpha obtain in the group of characteristics of Reliability Test for "Degree of Importance". The "Excellent Reliability" level is obtained for the characteristics of "Toilet Area finishes". The "Good Reliability" levels are obtained for the "Location and External Appearance", "Kitchen/Pantry Area Finishes" and "Electrical Fittings". All other group characteristics have "Acceptable Reliability" levels.

**Table 4.5-2A: Cronbach's Alpha for Degree of Importance**



This illustrate the values of cronbach's alpha obtain in the group of characters for degree of importance. The minimum alpha value obtain for the reliability of floor finishes and the maximum alpha value obtain for the reliability of toilet area finishes.

#### 4.6 Summary of Group Characteristics for Descriptive Statistics in Level of Satisfaction

Summary of "Average Mean" of the Descriptive Statistic Tests for "Level of Satisfaction" of group characteristics presented as follows;

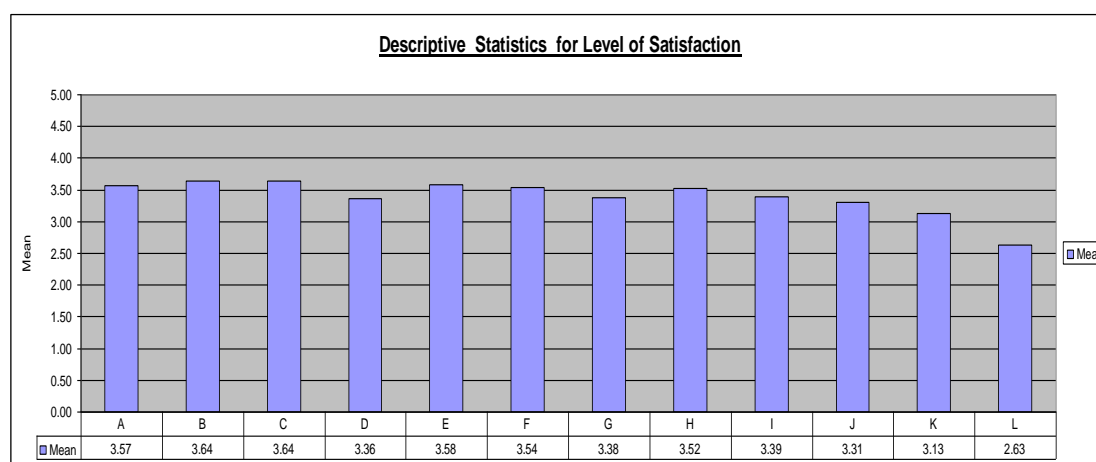
**Table 4.6-1: Summary of "Average Mean" for Level of Satisfaction for Group Characteristics of Descriptive Statistics**

ID	Group Characteristics	Average Mean
A	Location and External Appearance	3.57
B	Internal Layout of the Apartment and Space Arrangement	3.64
C	Wall Finishes	3.64
D	Roof/Ceiling Finishes & Material used.	3.60
E	Floor Finishes	3.58

F	Door/Window Finishes	3.54
G	Toilet Area Finishes	3.38
H	Kitchen/Pantry Area Finishes	3.52
I	Electrical Fittings	3.39
J	Safety Arrangements	3.31
K	Services	3.16
L	Maintenance	2.63

This illustrates the summary of mean values of descriptive statistics for each group obtains in the group of characters for Level of Satisfaction. The minimum mean values obtain for Maintenance & Services, i.e. for Maintenance & Services in the semi luxury apartments are not fulfilled by the developers as per customers wish. And the maximum mean values obtain for Wall Finishes, Internal Layout of the Apartment & Space Arrangement, Roof/Ceiling Finishes & Material used and Floor Finishes, i.e. for above characters are fulfilled by the developers as per the satisfaction of customers in the semi luxury apartments.

**Table 4.6-2: Descriptive Statistics for Level of Satisfaction**



This illustrates the mean values of descriptive statistics; obtain in the group of characteristics for level of satisfaction. The minimum mean values obtain for the descriptive statistics is Maintenance & Services and the maximum mean values obtain for the Internal Layout & Space Arrangement and Wall Finishes of semi luxury apartments.

#### **4.7 Summary of Degree of Importance for Group Characteristics of Descriptive Statistics**

Summary of “Average Mean” of the Descriptive Statistics Tests for “Degree of Importance” of group characteristics presented as follows;

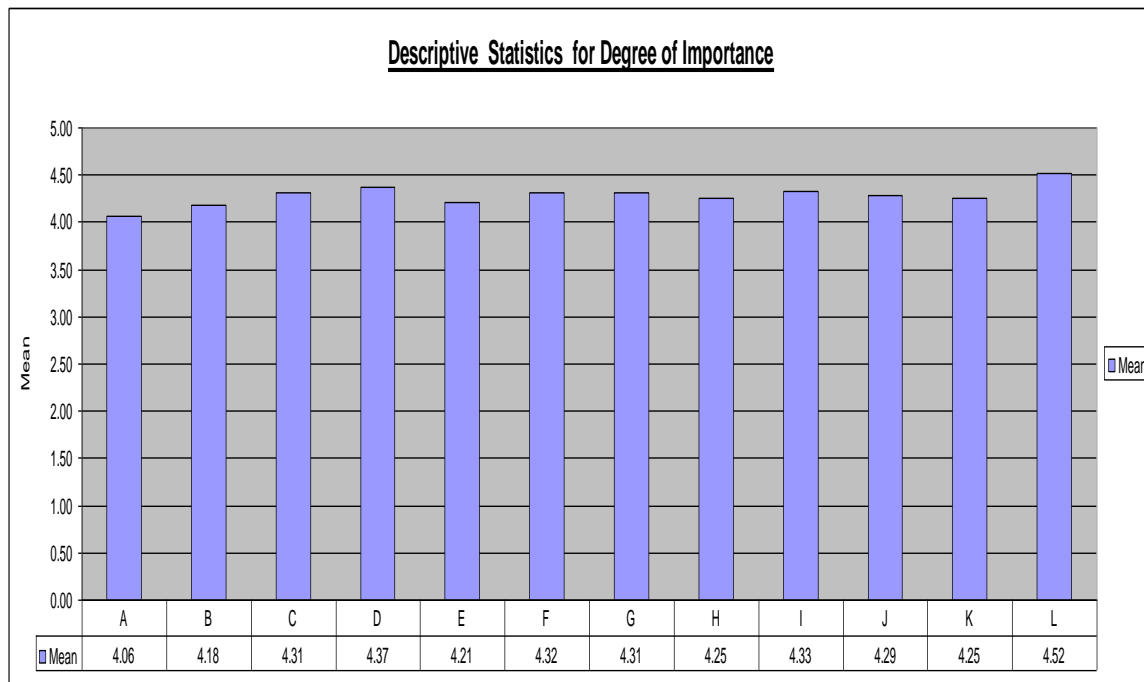
**Table 4.7-1: Summary of “Average Mean” for Degree of Importance for Group Characteristics of Descriptive Statistics**

<b>ID</b>	<b>Group Characteristics</b>	<b>Average Mean</b>
A	Location and External Appearance	4.06
B	Internal Layout of the Apartment and Space Arrangement	4.18
C	Wall Finishes	4.31
D	Roof/Ceiling Finishes	4.37
E	Floor Finishes	4.21
F	Door/Window Finishes	4.32
G	Toilet Area Finishes	4.31
H	Kitchen/Pantry Area Finishes	4.25
I	Electrical Fittings	4.33
J	Safety Arrangements	4.29
K	Services	4.25
L	Maintenance	4.52

This illustrates the summary of mean values of descriptive statistics for each group obtains in the group of characters for Degree of Importance. The minimum mean values obtain for Location and External Appearance & Internal Layout of the Apartment and Space Arrangement i.e. for Location and External Appearance & Internal Layout of the Apartment and Space Arrangement in the semi luxury apartments are not much “Important” as per customers wish. And the maximum mean values obtain for Maintenance, Electrical Fittings, Door/Window Finishes & Safety Arrangements i.e. for above characters are more Importance as per the customers’ perception in semi luxury apartments.

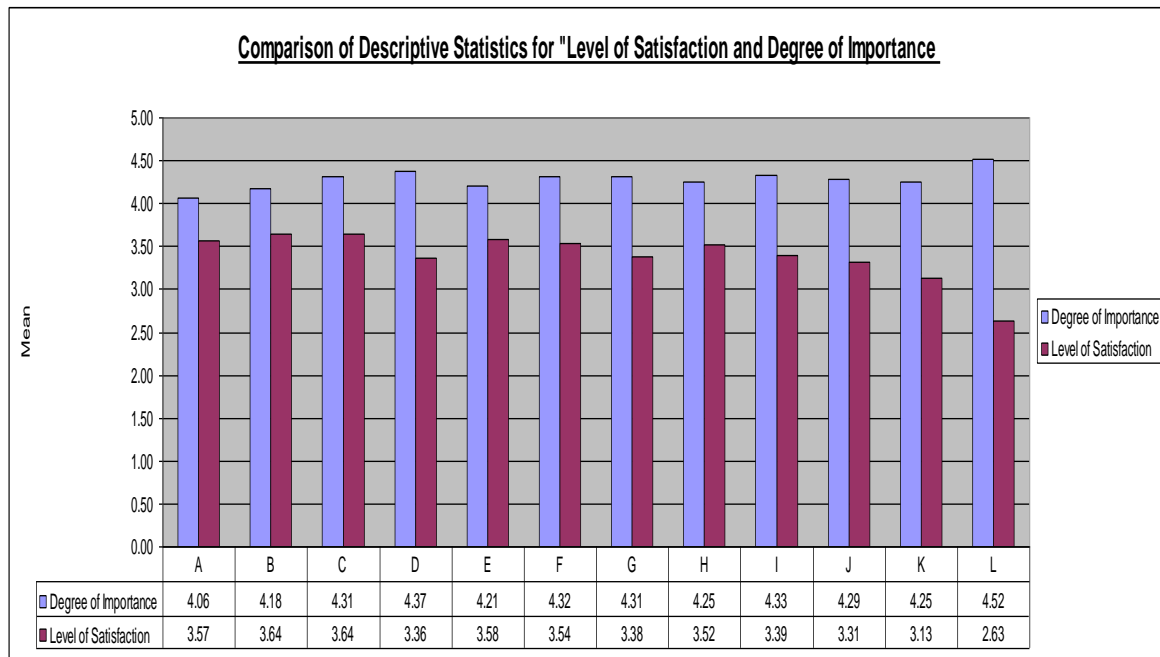
**Table 4.7-2: Descriptive Statistics for Degree of Importance**





This illustrates the mean values of descriptive statistics; obtain in the group of characters for the Degree of Importance of customers. The minimum mean values obtain for the descriptive statistics of degree of importance is “Location & External Appearances” and “Internal layout of the Apartment” and the maximum mean values obtain for the “Maintenance” and “Floor Finishes” of semi luxury apartments.

**Table 4.7-3: Difference between Descriptive Statistics for Level of Satisfaction  
And Degree of Importance**



This illustrates the comparison of mean values of descriptive statistics of Descriptive Statistics for Level of Satisfaction and Degree of Importance obtains in the groups of characters of customers. The minimum mean values difference obtains in the descriptive statistics of level of satisfaction and degree of importance is for “Location & External Appearances” and “Internal layout of the Apartment” and the maximum mean values difference for descriptive statistics of level of satisfaction and degree of importance is for “Maintenance”, “Services” and “Safety Arrangements” of semi luxury apartments.

#### **4.8 Difference between Degree of Importance and Level of Satisfaction; Quality Gap**

There can be a gap between the quality of the product expected by the customer and the quality perceived when the final product received by the customer. (Gunawardena, N.D., 2005). In situations where gap between “Degree of Importance” and “Level of Satisfaction” is resulted the above quality gap. In a semi luxury apartment building the above gap creates due to nonconformance of customer requirement by the developers of semi luxury apartments. Further, “Importance” is applied as a “Constant” factor and the satisfaction is a varying factor. Hence, the quality gap shows as a result of the variation of customer satisfaction factor.

#### 4.9 T-Test (t-test)

First the standard deviation was determined to measure the dispersion of the data about the mean. Then using the mean values and standard deviations computed from the data, t- test were carried out. T-test was applied to identify the significant of the characteristics of satisfaction and importance.

##### 4.9.1 Test

- To identify the characteristics which were significantly “Satisfied” by customers/occupants.
- To identify the characteristics which are significantly “Important” by customers/occupants.
- Thus, appropriate null and alternative hypotheses will be stated as follows,

$$\text{➤ } H_0 : \mu \leq 3.00 \text{ [ Null Hypothesis ]}$$

$$\text{➤ } H_0 : \mu > 3.00 \text{ [ Alternative Hypothesis ]}$$

Where  $\mu$  is the neutral mean of the corresponding factor. The t- test was performed at 5% significance level ( $\alpha = 0.05$ ) and t - value was calculated by using formula (3) where  $\bar{x}$  represent the mean and  $\sigma$  in the standard deviation (Anderson D.R., 1990)

$$t = \frac{\bar{x} - 3}{\sigma / \sqrt{n}} \dots \dots \dots (3)$$

Since,

- $H_0 : \mu_1 \leq 3.0$  [ Null Hypothesis ]
- $H_a : \mu_1 > 3.0$  [ Alternative Hypothesis]

Hence,  $H_0 : \mu_1 \leq 3.0$  No difference

$H_1 : \mu_1 > 3.0$  Is difference

Significance value  $< 0.05$ ,  $H_0$  reject

Hence,  $\mu > 3.0$

#### 4.10 One Sample T– Test for Group Characteristics of Level of Satisfaction

Summary of One Sample t-test results for group characteristics of Level of Satisfaction presented as follows;

**Table 4.10-1: Summary of One Sample T– test Results for Group  
Characteristics of Level of Satisfaction**

<b>ID</b>	<b>Group Characteristics</b>	<b>“T” Value (t)</b>	<b>Degree of Difference (df)</b>	<b>Significance</b>	<b>Remarks</b>
A	Location and External Appearance	7.908	51	0.000	Satisfied
B	Internal Layout of the Apartment and Space Arrangement.	8.844	51	0.000	Satisfied
C	Wall Finishes	6.893	51	0.000	Satisfied
D	Roof/Ceiling Finishes & Material used	4.823	51	0.000	Satisfied
E	Floor Finishes	6.345	51	0.000	Satisfied
F	Door/Window Finishes	7.569	51	0.000	Satisfied
G	Toilet Area Finishes	4.827	51	0.000	Satisfied
H	Kitchen/Pantry Area Finishes	6.796	51	0.000	Satisfied
I	Electrical Fittings	4.321	51	0.000	Satisfied
J	Safety Arrangement	3.556	51	0.001	Satisfied
K	Services	1.573	51	0.122	Dissatisfied
L	Maintenance	-2.130	51	0.038	Dissatisfied

This illustrates the summary of one sample t-test values for Level of Satisfaction of group characteristics. Accordingly, “Maintenance” and “Services” are the, only “Dissatisfied” characteristics. Further, group characteristic of “Safety Arrangement” also indicates less Satisfaction compare to other group characters. i.e. for above group characters are not much concern by the developers of semi luxury apartments in Sri Lanka. However the customers are more concern about Maintenance, Services and Safety Arrangements in their semi luxury apartments.

#### 4.11 One Sample T–test for Degree of Importance of Customers for Group Characteristics

Summary of One Sample t-test results for group characteristics of Degree of Importance presented as follows;

**Table 4.11-1: Summary of One Sample T– tests Results for Group Characteristics of Degree of Importance**

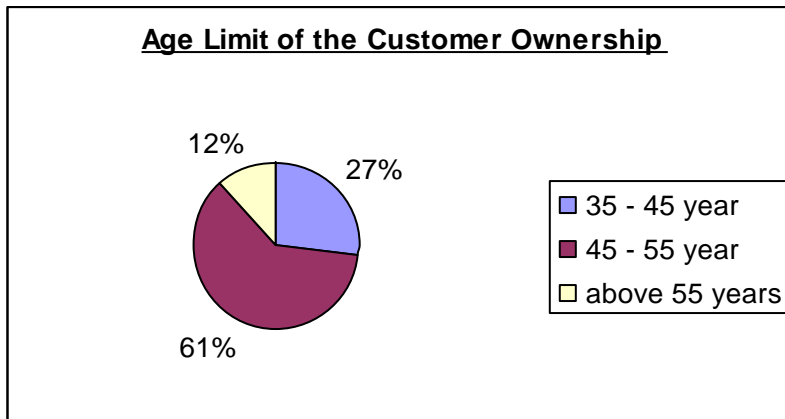
ID	Group Characteristics	“T” Value (t)	Degree of Difference (df)	Significance	Remarks
A	Location and External Appearance	12.896	51	0.000	Important
B	Internal Layout of the Apartment and Space Arrangement.	19.736	51	0.000	Important
C	Wall Finishes	16.540	51	0.000	Important
D	Roof/Ceiling Finishes & Material used	15.000	51	0.000	Important
E	Floor Finishes	15.383	51	0.000	Important
F	Door/Window Finishes	22.595	51	0.000	Important
G	Toilet Area Finishes	22.382	51	0.000	Important
H	Kitchen/Pantry Area Finishes	19.748	51	0.000	Important
I	Electrical Fittings	19.293	51	0.000	Important
J	Safety Arrangement	18.677	51	0.000	Important
K	Services	20.177	51	0.000	Important
L	Maintenance	20.214	51	0.000	Important

This illustrates the summary of one sample t-test values for “Degree of Importance” of group characteristics. Accordingly, all the group characters are “Important” “Maintenance” and “Services” are the, only “Dissatisfied” characteristics. Further, group characteristic of “Safety Arrangement” apartments.

#### 4.12 Age Analysis of Apartment Ownership and Ownership of 1<sup>st</sup> or 2<sup>nd</sup> House

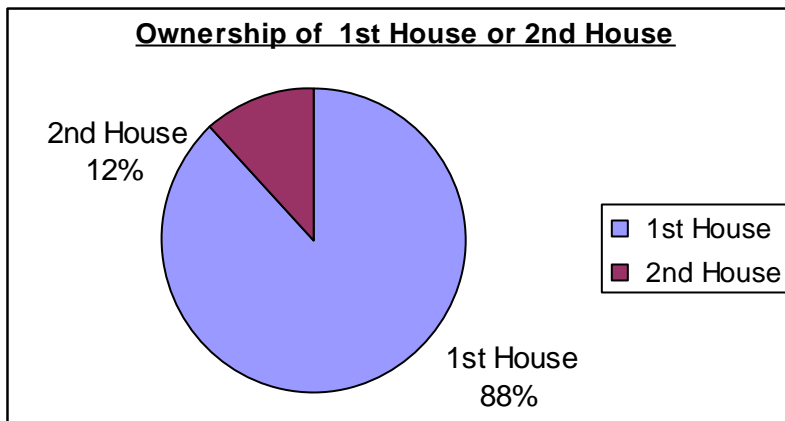
The following data's were observed during the data collection of the questionnaire surveys

**Chart 4.12-1: Age Limit of the Customer Ownership**



This illustrates the age limits of apartment ownership of semi luxury apartments where my questionnaire survey was conducted. It's clearly shows that 61% of the customer population was in the age group of 45-55 years i.e. the matured level of the customers has the ownerships of semi luxury apartments.

**Chart 4.12-2: Ownership of 1<sup>st</sup> House or 2<sup>nd</sup> House**



This illustrates that 88% of the customers are living in their 1<sup>st</sup> house. It indicates that they have only a single house. Only 12% of the customers are living in their 2<sup>nd</sup> house. Because they live in this apartment mainly due to the convenience of their living process; such as schooling their children and convenience of travelling to jobs etc.

#### **4.13 Summary**

This survey was undertaken to investigate the objectives such as the relationship between the current level of customer satisfaction and the degree of importance of customers/occupants in semi-luxury apartments in Sri Lanka. The results of this survey identified characteristics with relatively significant quality gaps between expected and perceived quality among the occupants with respect to functionality and design arrangement of their living places based on the perspective of the user groups.

In the context of this survey, majority of dissatisfaction areas are due to poor property management characteristics, as well as attitudes of the developers view to consider it in marketing point of view. Thus, this wealth of information ensures, it is important that some changes must be made in the current process. Moreover, it is important that more studies of this nature are needed to carry out to determine whether apartments are meeting user needs and need to adopt suitable management tools and new thinking of customer needs to support this. Further, analysis of T-test results clearly indicates the level of customer satisfaction and the degree of importance of characteristics of the groups. Also additional information was collected with regard to age limit of the apartment owners and the concept of the 1<sup>st</sup> house or 2<sup>nd</sup> house.

## **5. CONCLUSION AND RECOMMENDATION**

## **5.1 Introduction**

This chapter includes the summary of findings for this study and recommendations for further research.

This study attempted to identify the key requirements of the semi luxury apartments from the point of view of customers and their expectations and perceptions of the semi luxury apartment with respect to functionality, degree of importance and level of satisfaction. Also the survey results are to realize the importance of the customers in order to improve the quality of semi luxury residential apartments.

## **5.2 Conclusion and Recommendations**

Conclusion based on Questionnaire Survey. Based on the results of questionnaire survey, the following conclusions were made.

- The survey has identified, there are significant quality gaps between perceived “Degree of Importance” and “Level of Satisfaction” among the customer/occupants. According to data analysis the maximum quality gap indicates in the group characteristics of “Maintenance” & “Services”. This concludes that customer perception has not fulfilled by the developers though it is Important. The minimum quality gap indicates in the groups of “Location & External Appearance” and “Internal Layout of the Apartment & Space Arrangement”. Hence, more gaps indicate that, customer Importance is more than customer Satisfaction.
- According to the statistical analysis the level of satisfaction considerably higher in the areas such as in the characteristics of Groups of Roof/Ceiling Finishes material used, Floor Finishes, Internal Layout of the Apartment and Space Arrangement, Wall Finishes, Location and External Appearance, Door/Window Finishes, Toilet Area Finishes, and Kitchen/Pantry Area Finishes. This indicates that most of the developers are now focus on “Appearances” and “Internal & External Finishes” of apartments. This is mainly doing as a Sales Strategy on apartments.



- According to the data analysis of this research 61% of semi luxury apartment owners were of 45-55 year group and 88% of semi luxury apartment owners were their 1<sup>st</sup> house. However 12% of apartment owners were their 2<sup>nd</sup> house. i.e., due to the importance of living in the urban areas for their children's education.
- Moreover, statistically, this survey supported to show the significant differences between the characteristics Groups of Services & Maintenance. This indicates that customers are now more keen on aspects of Services and Maintenance of their apartments to have a trouble free living environment. Therefore, when developing semi luxury residential apartments, it is essential to give due consideration of what customers would really need and expect. Thus, in order to produce quality semi luxury residential apartments, not only basic needs but the perception of the customers should also be considered. Sooner or later more and more property developers will realize that positive action is required to ensure the customer satisfaction and making more profitable and successful businesses in the Real Estate market in Sri Lanka.

### **5.3 Further Research Work**

There are several types of future studies that would build on the results of this study. Therefore, this section intends to present possible areas where further research could be carried out.

- This study was concerned about the product performance and aspect of product finishes. Since, service performance, environmental variables and neighbourhood have a greater influence on customer satisfaction in semi luxury apartment industry; recommend further researches are desirable for above areas.
- This study was done considering middle-income customers who occupy in the semi luxury apartments. In a similar context of study need for low-income and high living residential apartments. Because they may have more serious problems than the selected group.

- It was found that the improvements in semi luxury residential customer satisfaction pointed towards quality and property management attributes. Thus, studying the relationship between the design, management process and residential satisfaction level is essential.
- Since, the cost implication of the customer requirement is one critical area, recommend for further researches are necessary.
- In the context of this survey identified contractor performance plays vital role to attain high quality standards in building projects. Thus, further research need to investigate the contractor's awareness of quality management systems like TQM, ISO 9000 and QFD etc.

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## **Appendix: I**

### **The Quest for Customer/Occupants on “Satisfaction” and “Importance” of Semi Luxury Apartments**

The purpose of the questionnaire is to identify the features of Semi Luxury Apartments considered of satisfaction by the customers and their level of importance respect to characteristics of the Semi Luxury Apartments which they are presently living.

Name of the Apartment Complete: .....

**Section I:** Express your views on the **Level of Satisfaction** in relation to the following characteristics.

Highly Satisfied	Satisfied	Neutral/Do Not know	Dissatisfied	Highly Dissatisfied
5	4	3	2	1

No.	Characteristics	5	4	3	2	1
1.	<b><u>GROUP A- Location and External appearance</u></b> Easy access to the apartment					
2.	View of surrounding (population density)					
3.	Neighborhood relation (Adjoining house etc)					
4.	External features of building appearance					
5.	External features of building shape					
6.	External features of building colour					
7.	Social and economic status of neighbours					
8.	<b><u>GROUP B - Internal layout of the Apartment and Space Arrangement</u></b> Sizes of Living room, bed rooms, washrooms, kitchen and pantry					
9.	Space and inside arrangement of Living room					
10.	Space and inside arrangement of Bed rooms					
11.	Space and inside arrangement of Wash rooms					
12.	Space and inside arrangement of kitchen and pantry					
13.	Space and inside arrangement of Balcony's					
14.	Space and inside arrangement of Store rooms/Servant Room					
15.	<b><u>GROUP C- Wall finishes</u></b> Workmanship of wall plaster					
16.	Workmanship of wall painting					
17.	<b><u>GROUP D - Roof/Ceiling finishes Material used</u></b> Ceiling/roof height (floor to floor)					
18.	<b><u>GROUP E - Floor Finishes</u></b> Workmanship of floor tiling					
19.	External texture (Smooth or rough) of floor tiling					
20.	Color (dark or light) of floor tiling					
21.	<b><u>GROUP F - Door/Window Finishes</u></b> Size and location of openings					
22.	Durability of building materials used					
23.	Workmanship of Door/Windows					
24.	Arrangement of air circulation space (no. of windows)					
25.	<b><u>GROUP G - Toilet Area Finishes</u></b>					

	Make of sanitary fittings used					
26.	Durability of materials used					
27.	Workmanship of finishes					
28.	Size and location of toilets					
29.	Functionality of performance of sanitary fittings/appliances					
30.	Arrangement of air circulation space (Fanlight size)					
31.	Accessories used (Shower cubicles, Exhaust fans)					
32.	<b>GROUP H - Kitchen/Pantry Area Finishes</b> Size and location of Kitchen/Pantry					
33.	Workmanship of finishes					
34.	Accessories provided (Pantry Cupboard, Cooker Head)					
35.	Durability of materials used					
36.	<b>GROUP I - Electrical Fittings</b> Layout of Light Points/Power Points fixed					
37.	Durability of materials used (make of MCB's, ELCB's)					
38.	Cooling arrangement made (A/C's, Ceiling fans)					
39.	<b>GROUP J - Safety Arrangement</b> Height of the balcony Hand rail/balustrade					
40.	Emergency alarming system (smoke detectors, sprinklers)					
41.	Evacuation for an emergency (additional staircase)					
42.	Sizes of common areas (Corridors, Balconies)					
43.	<b>GROUP K - Services</b> Parking for customers					
44.	Parking for visitors					
45.	Recreational facilities (pool, Children area Gym etc)					
46.	Standby generator in case of a power cut					
47.	Maintenance of common areas (Cost of Electricity, Water)					
48.	Lift for customers					
49.	Lift for Services					
50.	Functionality of water, Electricity supply					
51.	Security Arrangement					
52.	Method of Garbage and Waste disposal system					
53.	<b>GROUP L - Maintenance</b> Availability of maintenance staff in case of a breakdown (Water, Electricity, A/C)					

**Section II:** Express your views on the **Degree of Importance** in relation to the same characteristics identify in section I.

Very Important	Important	Some what Important	Less Important	No Important at All
5	4	3	2	1



**Note:** [Please mark not available facilities or characteristics N/A]

No.	Characteristics	5	4	3	2	1
1.	<b><u>GROUP A - Location and External Appearance</u></b> Do you think Easy access to the apartment is important?					
2.	Do you think View of surrounding is important? (population density)					
3.	Do you think Neighborhood relation is important? (Adjoining house etc)					
4.	Do you think External features of building appearance is important?					
5.	Do you think External features of building shape is important?					
6.	Do you think External features of building colour is important?					
7.	Social and economic status of neighbours is important?					
8.	<b><u>GROUP B - Internal layout of the Apartment and Space Arrangement</u></b> Do you think Sizes of Living room, bed rooms, washrooms, kitchen and pantry is important?					
9.	Do you think Space and inside arrangement of Living room is important?					
10.	Do you think Space and inside arrangement of Bed rooms is important?					
11.	Do you think Space and inside arrangement of Wash rooms is important?					
12.	Do you think Space and inside arrangement of kitchen and pantry is important?					
13.	Do you think Space and inside arrangement of Balcony's is important?					
14.	Do you think Space and inside arrangement of Store rooms/Servant Room is important?					
15.	<b><u>GROUP C - Wall finishes</u></b> Do you think Workmanship of wall plaster is important?					
16.	Do you think Workmanship of wall painting is important?					
17.	<b><u>GROUP D - Roof/Ceiling finishes Material used</u></b> Do you think Ceiling/roof height is important? (floor to floor)					
18.	<b><u>GROUP E - Floor Finishes</u></b> Do you think Workmanship of floor tiling is important?					
19.	Do you think External texture (Smooth or rough) of floor tiling is important?					
20.	Do you think Color (dark or light) of floor tiling is important?					
21.	<b><u>GROUP F - Door/Window Finishes</u></b> Do you think Size and location of openings is important?					
22.	Durability of building materials used is important?					
23.	Do you think Workmanship of Door/Windows is important?					
24.	Do you think Arrangement of air circulation space is important? (no. of windows)					
25.	<b><u>GROUP G - Toilet Area Finishes</u></b> Do you think Make of sanitary fittings used is important?					

26.	Do you think Durability of materials used is important?					
27.	Do you think Workmanship of finishes is important?					
28.	Do you think Size and location of toilets is important?					
29.	Do you think Functionality of performance of sanitary fittings/appliances is important?					
30.	Do you think Arrangement of air circulation space is important? (Fanlight size)					
31.	Do you think Accessories used is important? (Shower cubicles, Exhaust fans)					
32.	<b>GROUP H - Kitchen/Pantry Area Finishes</b> Do you think Size and location of Kitchen/Pantry is important?					
33.	Do you think Workmanship of finishes is important?					
34.	Do you think Accessories provided is important? (Pantry Cupboard, Cooker Head)					
35.	Do you think Durability of materials used is important?					
36.	<b>GROUP I - Electrical Fittings</b> Do you think Layout of Light Points/Power Points fixed is important?					
37.	Do you think Durability of materials used is important? (make of MCB's, ELCB's)					
38.	Do you think Cooling arrangement made is important? (A/C's, Ceiling fans)					
39.	<b>GROUP J - Safety Arrangement</b> Do you think Height of the balcony Hand rail/balustrade is important?					
40.	Do you think Emergency alarming system is important? (smoke detectors, sprinklers)					
41.	Do you think Evacuation for an emergency is important? (additional staircase)					
42.	Do you think Sizes of common areas is important? (Corridors, Balconies)					
43.	<b>GROUP K - Services</b> Do you think Parking for customers is important?					
44.	Do you think Parking for visitors is important?					
45.	Do you think Recreational facilities is important? (pool, Children area Gym etc)					
46.	Do you think Standby generator in case of a power cut is important?					
47.	Do you think Maintenance of common areas is important? (Cost of Electricity, Water)					
48.	Do you think Lift for customers is important?					
49.	Do you think Lift for Services is important?					
50.	Do you think Functionality of water, Electricity supply is important?					
51.	Do you think Security Arrangement is important?					
52.	Do you think Method of Garbage and Waste disposal system is important?					
53.	<b>GROUP L - Maintenance</b> Do you think Availability of maintenance staff in case of a					

	breakdown is important? (Water, Electricity, A/C)					
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### **Section III:** General Information

1. When did you reserve your apartment (applicable only if you are the owner)

During the Pre-Contract Stage	
During the Construction Stage	
After Completion	

2. What is the most single factor for choosing this apartment? Select the closest answer in the following list or write your own answer

Convenience	
Not much interested in building a house	
Cheaper than building a house in Colombo	
Security and Safety	
Possibility of immediate acquisition	
Modern Facilities	
Status	

3. What is the feature in this apartment you like most?

.....  
 .....

4. What is the feature in this apartment you dislike most?

.....  
 .....

5. Have you faced any of the following problems during your stay in this apartment? (Please tick)

Wall cracks	
Cracks in floor	
Floor not level	
Water seeps through walls	
Too Dusty/Too Dark	
Water Leaks through ceiling or roof	
Noisy	

Other (Please Specify) .....

6. If there is any thing that you would like to change in your apartment what would that be?  
 (Eg. Reduce or increase space allocation, add additional rooms, change location of the Units, etc.

.....  
 .....  
 .....  
 .....

7. If you are owner, how far would you agree with the following statements.

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral /Do not know</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
The designer should have had a better understanding of user requirements					
I have got the right building which satisfied my wishes, needs and requirements					
I have received value for my money when I bought this apartment					
My requirements were considered during design stage of the building.					

8. Have you faced any specification (finishes) changes by the developer after you reserved the apartment? (applicable only if you are the owner)

Yes	
No	

What type of changes? (please specify) .....

9. Have you faced any delays in handing over of the apartment? (applicable only if you are the owner)

Yes	
No	

How many months? (please specify) .....

10. Have you faced any cost increases for the agreed price of the apartment? (applicable only if you are the owner)

Yes	
No	

How much Rupees? (please specify) .....

11. Finally, if you have any further comments (whether negative or positive) feel free to add them.

.....  
 .....

Thank you very much for your cooperation!