Building Construction Clients’ Design Consultant and Contractor Selection Criteria Versus Post-Occupancy Satisfaction Levels

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Abstract
In today’s competitive building construction markets, achieving clients’ satisfaction is of utmost importance. The choice of a design consultant and a contractor for a building project has a crucial influence on the post-occupancy satisfaction of the client. Hence, this study provides insights into private building construction clients’ perceptions of a set of criteria contributing to their selections of design consultant and contractor together with the resulting post-occupancy overall client satisfaction levels eventually reached, by presenting survey findings of 330 clients in North Cyprus construction market. Unlike previous studies, the current study combined all the interrelated and vital stages of design consultant and contractor selection with post-occupancy client satisfaction levels. A further contribution is differentiating among various types of client groups’ behaviors in each of the three specified stages. Clients in different categories had distinct approach differences in selection stages, and different post-occupancy satisfaction values indicating that firms may benefit from market segmentation. “Residential” and “<120,000£” type building clients were the least satisfied groups, while “project execution stage” and “functionality” emerged as major features creating dissatisfaction. The findings revealed the importance attached by the clients to “references about the firm” in the selection stages and low client satisfaction with the completed projects. Regression analysis findings revealed different design consultant and contractor selection factors predicting overall clients’ satisfaction while assigning high importance to the “cost-effectiveness approach of the firm” emerged as the only strong predictor of dissatisfaction. This study provides a guide for building construction clients to attain higher post-occupancy satisfaction and assists design consultants and contractors in adopting specific customer-focused strategies.

Keywords
clients’ satisfaction, post-occupancy satisfaction, factors predicting satisfaction, contractor selection, design consultant selection

Introduction
The assessment of success in construction traditionally focuses on only a finite number of performance elements, which are completing the project on time, within budget, and with the required quality. However, in the current challenging and competitive environment, the industry is dominated by client groups due to the increasing number of players competing for the same markets. Additionally, there is an increased awareness among clients, who are more informed, more aware, and more knowledgeable about what goes into the building process. (Egemen & Mohamed, 2006). Clients are demanding more in the products having an important economic effort (Fernandez et al., 2016). The clients want the best possible “value” from contractors, and they started to commission work because expertise is supported by a continued high level of attention to all of their specific needs. (Egemen & Mohamed, 2006). In dynamic market conditions, clients are the most important asset of any organization and it is crucially significant to perceive and satisfy their needs. Achieving client satisfaction adds value to the organization and has been identified as an effective tool for competitive advantage. The satisfaction of the clients is a key in procuring future projects (Durdyev et al., 2018). Hence, thoroughly
identifying clients’ hierarchy of needs and creating effective strategies accordingly is becoming a prerequisite for success in the construction industry. Firms failing to take this into account encounter the risk of losing their share in highly competitive markets.

North Cyprus’s construction market is very competitive with a critical role in the overall socio-economic development of the country. About 5.8% of the gross national product is shared by the construction industry and 7.9% of the working population is employed in this sector (State Planning Organization, 2019). Private building construction is a key economic issue in the country possessing a major share of the specified construction market. Although the need to develop a client-focused culture is generally accepted by the firms, the market has been typified by the fact that price has been the main basis for competition. Despite the current vital importance of the private building construction sector in the overall economy, it is still unknown how much the industry is satisfying the expectations of customers, who are the core of the overall process.

Over the years, numerous researchers conducted studies about the attributes used by building construction clients in selecting design consultants while other researchers focused on the selection process of contractor firms in separate studies. Furthermore, many researchers have highlighted the significance of applying client-focused strategies and analyzed the factors affecting post-occupancy overall satisfaction of clients in other studies. The choice of a design consultant and a contractor for a building project is of utmost importance that has a crucial influence on the outcome and hence the post-occupancy satisfaction of the client. Thus, design consultant selection followed by contractor selection decision processes and the resulting post-occupancy overall client satisfaction level regarding the building project completed are sequential, interrelated, and vital stages of a complex and important process for building construction clients.

The existing studies generally focused on only one of the three specified sequential stages. In order to bridge the gap in the literature, the contribution of the current study is proposing a combined and extensive analysis that provides an enhanced insight into the relationship between the selection of design consultants followed by the selection of contractors and the resulting post-occupancy overall satisfaction levels reached by the clients. Additionally, considering the possibly varying approaches of different types of clients to the issue, the current study also differentiates among various types of client groups’ behaviors in each of the three of the specified vital stages.

The chief concern for design consultants and contractors is to recognize clients’ priorities in selection processes and to present their organizations’ capabilities accordingly for achieving competitive advantage. However, the main concern for the clients is to make the correct decisions in the specified two selection processes to be able to attain the highest level of post-occupancy overall satisfaction. Therefore, this study also included regression analysis to provide the clients with the specific design consultant and contractor selection factors predicting post-occupancy overall client satisfaction.

The Relative Importance Index (RII) technique was used for the analysis of design consultant and contractor selection factors. Spearman Rank Correlation Coefficient (SRCC) test was performed on the pairs of ranks in the study to determine the correlation in the behaviors of varying types of respondents and Categorical Regression Analysis (CATREG) was applied to determine the consultant and contractor selection factors predicting client satisfaction. Multiple one-way analysis of variance (ANOVA) test was used to test the homogeneity of mean satisfaction values from different respondent groups.

In summary, this research elicited responses from the private building construction clients on their perceptions of the criteria that contribute to design consultant and contractor selection processes, with the post occupancy overall satisfaction of the clients as a result of the building projects completed by the design consultants and the contractors selected. The study provided findings that can assist design consultants and contractors while adapting customer-focused strategies to preserve or increase their market share. On the other hand, it may act as a guide for private building construction clients in attaining higher levels of post-occupancy overall satisfaction levels.

**Literature Review**

Satisfaction is the response to the difference between the two questions: “How much is there?” and “How much should there be?” (Wanous & Lawler, 1972). Customer satisfaction can be defined as a process of evaluation between what was received and what was expected, which has origins in the discrepancy theory (Porter, 1961). The descendant of this theory is the expectancy disconfirmation paradigm specifying that, if performance exceeds expectations, customers will be satisfied. On the other hand, if performance fails to meet expectations, customers will be dissatisfied. Researchers in this topic offer two main approaches to measure satisfaction. The first one assumes that customers evaluate this issue according to perceptions of the final outcome (Patterson, 1993). The second approach assumes that the specified evaluation process is made based on the perception of the outcome relative to pre-purchase expectations. In this approach, perceptions versus expectations are used for measuring customer satisfaction or dissatisfaction level (Oliver, 1977). In the current study, considering that construction is a service industry where customers are not regular market users, lack familiarity, and knowledge with the services provided, and should wait for the project to be completely delivered in order to see the final product, it was decided to measure post-occupancy overall satisfaction of respondents, who had been using their completed buildings for a minimum duration of 6 months.
Numerous researchers are concerned with the significance of applying client-focused strategies. Empirical studies regarding post-residential satisfaction of housing clients have increased worldwide in recent years. Other researchers have focused on evaluating the attributes used by construction clients in selecting design consultants and contractors for their projects, which are both major decisions affecting client satisfaction. Within the scope of the current research, a review of previous literature about the clients’ selection of design consultants and contractors along with clients’ satisfaction in the construction industry was carried out.

Regarding design consultant selection decisions, many previous researchers carried out detailed studies. Ling (2003) presented a conceptual model for the selection of architects by project managers. Sporrong (2011) carried out a study about criteria in consultant selection and concluded that clients showed a high focus on price and easily measurable non-price criteria, while criteria related to design and execution of projects were less common. Ng (2004) introduced the Qualification-based selection (QBS) approach for consultant selection, which essentially consisted of prequalification and technical evaluation stages. Kersuliene and Turskis (2011) developed an integrated fuzzy multiple criteria decision-making model for architect selection. Cheung et al. (2002) conducted a questionnaire survey among real estate developer clients and identified the common criteria and their relative importance for an objective selection of design consultants. The authors developed a multi-criteria evaluation model to guide the developers in selecting design consultants. Oluwatayo et al. (2018) presented data on the factors that influence the satisfaction of clients with architectural services and found the specific areas that the clients are not satisfied with their architects.

Contractor selection is another major decision that needs to be analyzed within the overall framework of the client satisfaction issue. Holt (1998) presented a review of contractor evaluation and selection modeling methodologies. The previous and possible future applications of different methodologies are discussed. Wang et al. (2013) discuss the best value method for contractor selection and applies Analytical Hierarchy Process (AHP) to weigh the decision criteria for selecting the best value contractors. Egemen and Mohamed (2006) discussed the clients’ needs from contractors while Egemen and Mohamed (2005) focused on different approaches of clients and consultants in the contractor selection process. The study concluded that the expectations of clients and consultants from contractors varied significantly. Watt et al. (2010) found past project performance, technical expertise, and cost as the most important factors in contractor selection while El-Sayegh et al. (2019) focused on contractor selection criteria specifically for green construction projects and identified bid price, energy management, technical bid, proposed time, and water management as the top five criteria. Yang et al. (2016) proposed a model using data envelopment analysis for best value contractor selection. Zavadskas et al. (2008) present contractors’ assessment and selection based on multi-attribute methods in a competitive environment and discuss that the application of the model offered in their study could reduce the risk involved in the contractor selection process and help in eliminating unqualified contractors during the bidding process. Sheikh et al. (2019) evaluated key factors influencing process quality of building construction projects in Pakistan by using both the Relative Importance Index Technique and the Second Synthetic Grey Relational Analysis (SSGRA) model. The selection of an appropriate contractor was found as the most important factor in both of the applied methods. Martin et al. (2018) discuss that selecting a contractor is a very critical task since choosing the right contractor can mean the difference between project failure and success. The authors explored the Analytical Hierarchy Process and found that traditional AHP and weakly consistent AHP gave the same results regarding contractor selection for top-ranked contractors. Enshassi et al. (2013) adopted a questionnaire survey about contractor selection and found that financial evaluation of the bid was ranked in the first position with a total weight of 40.10% while all the remaining technical criteria weighted 59.90%. Rashid et al. (2018) determined 43 criteria under 7 categories focused on determining their significance in contractor selection. Cheaitou et al. (2019) proposed a decision-making framework for selection of the most appropriate contractor. The proposed decision-making framework used a combination of multi-criteria decision-making tools and fuzzy logic theory. Plebankiewics (2010) carried out a study among Polish clients and concluded that technical details about the contractors were assigned high emphasis by the private clients.

In addition to consultant and contractor selection literature, there exist other separate studies regarding client satisfaction in construction. Soetanto et al. (2001) studied the performance of construction contractors as perceived by clients and architects. Soetanto & Proverbs (2002b) developed multiple regression models while Soetanto and Proverbs (2004) developed artificial neural network models to predict several dimensions of client satisfaction resulting from contractor performance and found that long term relationships and the past performance of the contractor were the most important independent variables. Othman (2015) discussed that achieving customer satisfaction was the key to successful construction projects and conducted research about developing an international index for the satisfaction of construction customers. Dinc et al. (2014) focused on satisfying clients in state mass housing projects in Turkey. Zhang et al. (2018) examined the effect of housing conditions on residents’ satisfaction and suggested that the house-related characteristics have remarkable positive effects on clients’ satisfaction. Fakere et al. (2017) discussed that the goal of housing projects was to provide satisfactory environments for users and found a positive relationship between the client’s participation in design process and residential
satisfaction. Wang and Wang (2016) concluded that home and neighborhood activities have a major effect on residential satisfaction while Razia and Emami (2018) concluded that design principles, planning policies, and interaction with neighbors all had major effects on satisfaction. Jiboye (2012) carried out a study about the post-occupancy evaluation of residential satisfaction and concluded that physical characteristics of residences were significant parameters in residential satisfaction. Fellows (2014) discusses that despite the widely expressed objective of project participants to increase satisfaction, clients are disappointed with both process and product performance. Durdyev et al. (2018) developed a theoretical structural model to investigate the effect of service quality factors on client satisfaction. Nguyen et al. (2018) studied the satisfaction of residents living in affordable apartments while Nguyen et al. (2019) found that the characteristics of the houses like the number of balconies, the location, or the distance from schools were all major factors affecting residential satisfaction. Egemen (2020) carried out a study about house selection criteria and the overall satisfaction of clients’ in the speculative housebuilding market. Mohit and Mahfoud (2015) carried out a study in Malaysia and highlighted that that two housing designs and five neighborhood elements can enhance residents’ satisfaction. Azimi and Esmaeilzadeh (2017) investigated the relationship between house type and residential satisfaction via a survey using a questionnaire and found that a significant relationship existed between house type and residential satisfaction. Alshihre et al. (2020) identified five main factors that the project managers perceived to have a significant impact on clients’ satisfaction. These factors were effective financial management, use of advanced technology, having skilled workers, time management, and customer relation. Considering that satisfaction in construction is not limited to clients but contractor satisfaction is another major factor affecting project performance and hence client satisfaction, previous studies focused on contractor satisfaction as well. Soetanto and Proverbs (2002a) developed models for contractor satisfaction by an assessment of the performance of clients on 55 case projects as considered by contractors. Masrom et al. (2013) developed a contractor satisfaction model by identifying participant factors and their strength of relationship with contractor satisfaction. Xiong et al. (2014) discussed that previous satisfaction research in the construction industry was concerned more about client satisfaction, carried out a study in Malaysia, and proposed a contractor selection model based on structural education modeling. Skitmore et al. (2020) explored the role of contractor satisfaction in affecting contractor project management performance along with considering the external effects of other key participants. The study applied structural equation modeling techniques and found that it was insufficient to conclude contractor satisfaction influences project managerial performance or vice versa and satisfaction disaggregation was required. Other factors affecting project success and hence overall client satisfaction are also studied in the literature. Xia et al. (2016) examine the relationship between project definition and project success through a structural equation model while Hussain et. al. (2020) discuss that construction is a labor-intensive industry and propose a conceptual model in which workers of different skills affect overall project performance. Mahmoudi et al. (2020) discuss that selecting the best contract is always one of the most critical factors for project success and proposes a model to select appropriate contracts for construction projects.

Although the existing studies provide rich insights into such a crucial topic, they were all specific studies mainly dealing with only one of the three sequential and interrelated stages of design consultant selection, contractor selection, or clients’ post-occupancy satisfaction. Considering the effect of the performances of the design consultants and the contractors in achieving overall satisfaction of clients, a combined and extensive study providing an enhanced insight into the relationship between the selection of design consultants followed by the selection of contractors and the resulting post-occupancy overall satisfaction levels reached by the building construction clients is needed bridge the gap in the literature.

**Research Methodology**

**Data Collection**

For attaining a representative sample of private building construction clients, a questionnaire-based survey was employed. The research sample was drawn from private building construction clients, who had built at least one residential, commercial, or mixed residential/commercial building by using the traditional design-bid-build method in the last 7 years to ensure that they have the ability to reply to the questions in the survey accurately. Since most latent defects in the buildings appear during the occupancy stage (Chong & Low, 2006), it was decided to measure post-occupancy overall satisfaction of respondents, who had been using their completed buildings for a minimum duration of 6 months.

The study employed a multi-sampling technique with two stages, which were the selection of study neighborhood followed by the selection of buildings in the selected neighborhood. The study was conducted within the three most populous cities, which are Nicosia, Famagusta, and Kyrenia since the vast majority of the recently built houses in the country are within the specified cities.

In selecting the sample, the cities’ districts including a majority of the new buildings were considered. A random selection of different districts was made and in each selected district, 15 clients were randomly selected. A questionnaire was employed to assess the perceptions of the clients and 330 participants completed the questionnaire. Even though it is not possible to list all the attributes regarding such an extensive process, a comprehensive list of factors was
included by using the studies in the literature. (Cheung et al., 2002; Enshassi et al., 2013; Jiboye, 2012; Ling, 2003; Ng, 2004; Oluwatayo et al., 2018; Othman, 2015; Plebankiewics, 2010; Sporrong, 2011; Watt et al., 2010). The preliminary consultation with experts in the market and the previous studies formed the basis of the questionnaire. To increase the reliability and the validity of the study, semi-structured in-depth interviews were carried out with 10 different construction professionals having more than 15 years of experience in the building construction industry and 5 experienced clients who procured construction works from the industry more than three times. Furthermore, a pilot study was implemented to pre-test the research instrument and allow the respondents to evaluate the factors in the questionnaire for clarity, specificity, and representativeness before the main survey began. Based on the recommendations of the pilot study, necessary changes were incorporated and the questionnaire was finalized. Cronbach’s alpha value reliability test was conducted, which yielded results higher than .70. Different private building construction client categories were selected to determine their possibly varying approaches. The respondents were initially briefed about the methodology. The anonymity of the respondents participating in the survey was assured to prevent the possibility of the respondents withholding information.

The questionnaire comprised three sections. Section 1 of the questionnaire requested background information about the respondents and was designed to classify the responding clients according to pre-defined categories. Section 2 was designed to uncover the approach of the responding clients concerning both design consultant and contractor selection processes. This section was about the criteria used by the responding clients in making the selection decision of the design consultant and the contractor for their specific building projects. The responding clients were asked for their perception of significance assigned to the provided list of criteria during selection processes of the design consultant and the contractor separately. In the third section of the questionnaire, the responding clients were required to indicate their overall satisfaction and satisfaction regarding different features of the project by considering the extent their expectations are met with the completed building project. The responses were analyzed separately with respect to the two interrelated major sections that are Sections 2 and 3. The categories in Section 1 were also used in the detailed analysis to differentiate among the behaviors of different building construction client groups.

About 59.1% of the responding clients were male while 40.9% were female. About 8.5% of the respondents were below 30 years old, 27% between 30 and 44, 35.2% between 45 and 59, and 29.4% was 60 years old or older. About 44.2% of the respondents were university graduate, while 37.9% was high school graduate, and 17.9% did not have a high school education. Further details about the sample of respondents are presented in Table 1. The categories according to “type of the building” and “value of the building” are decided as a result of the semi-structured interviews carried out with 10 different construction professionals before the main survey began.

### Research Methods

The data in the questionnaire were analyzed by the RII technique, which has been commonly used for measuring attitude. (Aslam et al., 2020; Gudiene et al., 2013; Gunduz et al., 2013; Kometa et al., 1994; Othman, 2015; Sambasivan & Soon, 2007; Shash, 1993; Sheikh et al., 2019). RII best fitted the aim, which was determining the relative importance of criteria regarding both the design consultant and the contractor selection processes. An ordinal scale was used for measuring variables and the responding clients were required to assign the level of importance from 1 to 5 for each factor, 1 showing “very low importance,” 3 showing “medium importance,” and 5 showing “very high importance.” Data from the questionnaires were extracted to determine RII values for all the listed factors, which were rank-ordered according to their calculated RII values. For each one of the listed factors, the magnitude of RII was calculated by using the formula:

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RII = \frac{\Sigma W}{(M*N)}
\]

\(W\) is the weighting assigned to each factor by responding clients; \(M\) is the maximum scale value (5 in the current study); and \(N\) is the total number of responding clients. Applying the specified formula resulted in an RII value ranging from 0.2 to 1, where 0.2 revealed “the minimum importance” and 1 revealed “the maximum importance.” The calculated RII values were used in ranking the factors according to their importance.

In order to differentiate among the variations in approaches of different types of clients available in the population, various categories within the sample of clients were defined and

| Variable | Category 1 | Category 2 | Category 3 |
|----------|------------|------------|------------|
| Type of the building | Residential (39.1%) | Commercial (35.5%) | Mixed residential and commercial (25.5%) |
| Value of the building (in GBP (£)) | <120,000 (44.2%) | 120,000–180,000 (31.8%) | 180,000+ (23.9%) |

Table 1. Statistics About Responding Clients’ Characteristics.
analyzed. Furthermore, the SRCC test was applied on the rank pairs, obtained for different categories of responding clients to determine the correlation in the behaviors of varying types of respondents. Spearman’s Correlation Coefficient is a non-parametric measure of correlation that uses ranks and measures statistically the strength of a monotonic relationship between paired data. Since it does not require the assumption of normality, the SRCC test was used to study the correlation of the rankings. Spearman’s coefficient $\rho$ was calculated by using the formula:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

where $d_i =$ difference of the ranks of corresponding values; $n =$ the total number of pairs of rank. The formula for Spearman’s coefficient gives a value from $-1$ to 1.

In the analysis of post-occupancy satisfaction levels, an ordinal scale was used for measuring post overall satisfaction, satisfaction with project execution stage, satisfaction with quality, functionality, and esthetics of the completed building project. Satisfaction can be measured using an interval scale which assumes that satisfaction is a matter of degree, not at all, or none property (Soetanto & Proverbs, 2002b). Hence, an interval using a nine-point scale (i.e., scale 1–9) was selected and the responding clients were asked to assign an overall perceived level of satisfaction score. (1 = Highest dissatisfaction, 5 = the neutral case, 9 = the highest satisfaction.) Building Construction Clients Satisfaction Score (BCCSS) was calculated for the responding clients, which gave a value ranging from 0.111 to 1. (1 = The highest satisfaction, 0.111 = the highest dissatisfaction, and 0.544 = the neutral case.) BCCSS value was found by using the formula:

$$BCCSS = \frac{\sum W}{MN}$$

where $W =$ weighting assigned to each criteria by responding clients (1–9); $M =$ the maximum scale value (9 in the current study); and $N =$ total number of responding clients.

To identify the design consultant selection factors and contractor selection factors predicting post-occupancy overall satisfaction in private building construction clients, categorical regression analysis (CATREG) was applied by using SPSS-20 software. The fact that CATREG was a non-parametric multiple regression analysis that could be applied when the independent variables and the dependent variable were all categorical or both numeric and categorical was the reason behind this selection.

Multiple one-way analyses of variance (ANOVA) test was applied to test the homogeneity of overall client satisfaction mean values from different categories of responding clients. The mean satisfaction values of clients categorized according to “type of project” and “size of project” were analyzed by ANOVA to examine whether there were statistically significant differences in satisfaction values among different types of clients.

**Results and Discussion**

**Design Consultant and Contractor Selection Criteria (Aggregated Response)**

The first part of the analysis investigated how potential private building construction clients in the market prioritize the criteria in the selection processes of design consultants and contractors for their building construction projects. Thus, the main objective was to uncover the perception of clients regarding different factors in the specified two selection processes. Table 2 shows the distinct variation of RII values and ranks among the design consultant and contractor selection processes and the SRCC test revealed a moderate correlation between the two with a value of .545.

As expected, extremely high importance scores were assigned to “price offered” with RII scores of 0.951 and 0.970 demonstrating the emphasis assigned to price for both of the specified selection processes. Since investing in a residential or a commercial building is of paramount importance or even a lifetime investment for private clients, the main focus should be achieving the best possible value from these projects. Although choosing the right design consultant and contractor can be the difference between project success and failure, “price offered” still emerged as the leading factor while “firm’s approach to the cost-effectiveness of the project” and also “payment conditions proposed” received remarkably high scores in the specified market. Considering the importance of clients’ satisfaction in the competitive building construction market and the crucially high emphasis assigned to price-related factors, it seems that both design consultants and the contractors are facing the difficulty of offering “correct prices” that are competitive enough and also find ways to offer services that satisfy the private customers’ needs.

The fact that construction clients highly appreciate the experience of consultant or contractor firms was reflected in the high RII scores. Of specific interest, “overall experience of the firm” tends to be more important for contractor selection decision (RII=0.915) while “previous experience with similar projects” was assigned more significance in the design consultant selection process (RII=0.932). This is an interesting finding indicating that the design consultants should consider market segmentation and focus on the building projects in specific segments so that their successfully completed previous projects will help them in receiving future projects within the same market segment.

It is apparent from the findings that “overall image and identity of the firm” was assigned a high emphasis (RII=0.919) and ranked third in consultant selection while it was given
substantially lower importance in contractor selection. Further, “reputation in the specific area of need” was assigned a remarkably higher importance score (RII = 0.850) and rank for the consultant selection process. Both of these findings provide a strong indication that the design consultant firms should focus on promotional activities to present their firm’s distinctive features in the language of clients and secure an overall positive image, identity in the market, or reputation in the specific segment. Another finding was about “references about the firm,” which was found to be important and ranked fourth in both of the selection processes, with RII scores of 0.893 and 0.884. In such competitive markets, the vital importance of satisfying clients for obtaining possible future projects with their positive references is also demonstrated by this remarkable finding. Thus, in the private building construction market, customers’ satisfaction should always be the primary consideration to secure both the consultant and the contractor firms’ future in the market. “Availability of innovative and creative solutions” was assigned a notably high importance value (RII = 0.864) in the consultant selection process while “financial capability and stability of the firm” and “overall contract conditions” were assigned higher ranks for the contractor selection process, with RII values of 0.801 and 0.782 respectively. Since the design consultant’s work requires more creativity and the contractor’s part of the project needs a higher value of monetary payment by the client and hence higher financial risk, these findings are expected. “Individual experience of key project personnel” was perceived more significantly by respondents in consultant selection decision (RII = 0.756) while “availability of technical competence and qualification” and “availability of qualified staff and resources” were assigned higher significance in the contractor selection process, with RII scores of 0.703 and 0.764, respectively. These findings reveal the fact that clients assign high importance to the specific project personnel in the consultant firm who work for their specific projects. However, for the contractor selection process, clients place more importance on the firm’s overall technical and staff qualifications. Since “effective communication skills” was also assigned high importance in consultant selection (RII = 0.788), it is clear that design consultant firms should place importance on making the correct decision of assigning the right specific personnel to the appropriate customer and make sure that their personnel possesses effective communication skills as well as creative design alternatives.

When the results about consultant selection are compared with the previous studies’ findings, similarities are observed. In previous studies, high significance was assigned to price

| ID No. | Design consultant selection | Contractor selection |
|-------|-----------------------------|----------------------|
|       | RII  | Rank | RII  | Rank |
| 1     | 0.951 | 1    | 0.970 | 1    |
| 2     | 0.802 | 9    | 0.832 | 6    |
| 3     | 0.875 | 5    | 0.912 | 3    |
| 4     | 0.919 | 3    | 0.768 | 9    |
| 5     | 0.893 | 4    | 0.884 | 4    |
| 6     | 0.788 | 10   | 0.533 | 18   |
| 7     | 0.850 | 7    | 0.600 | 16   |
| 8     | 0.831 | 8    | 0.915 | 2    |
| 9     | 0.932 | 2    | 0.858 | 5    |
| 10    | 0.463 | 21   | 0.506 | 19   |
| 11    | 0.756 | 12   | 0.465 | 20   |
| 12    | 0.494 | 20   | 0.801 | 7    |
| 13    | 0.582 | 18   | 0.623 | 15   |
| 14    | 0.604 | 17   | 0.703 | 13   |
| 15    | 0.726 | 13   | 0.764 | 10   |
| 16    | 0.498 | 19   | 0.689 | 14   |
| 17    | 0.672 | 16   | 0.588 | 17   |
| 18    | 0.370 | 22   | 0.412 | 22   |
| 19    | 0.785 | 11   | 0.733 | 11   |
| 20    | 0.681 | 15   | 0.726 | 12   |
| 21    | 0.704 | 14   | 0.780 | 8    |
| 22    | 0.864 | 6    | 0.438 | 21   |

Note. Correlation is significant at 1% level.

*aSpearman Rank Correlation Coefficient (r_s) between design consultant selection and contractor selection factors is .545."
(Oluwatayo et al., 2018; Sporrong, 2011), previous performance (Ng, 2004; Oluwatayo et al., 2018), being creative and innovative (Ling, 2003), and reputation (Ling, 2003; Oluwatayo et al., 2018). In contractor selection, high importance was assigned to past experience (Enshassi et al., 2013; Plebankiewics, 2010; Watt et al., 2010), price (Enshassi et al., 2013; Watt et al., 2010) which were all similar to the current study’s findings. On the other hand, technical expertise and contractor’s reputation were not assigned high significance in the current study while they were found important by the previous studies (Enshassi et al., 2013; Plebankiewics, 2010; Watt et al., 2010).

**Design Consultant and Contractor Selection Criteria (Subgroups)**

After analyzing the overall results, RII values and ranks for various categories of clients are displayed in Tables 3 and 4 to reveal the varying approaches of different categories of private building construction clients. The findings in Table 3 confirm that there is a variation of RII values and ranks among groups of clients categorized according to the value of the building project. Despite the existing differences in rankings of different client groups, the SRCC test revealed a correlation. The lowest correlation was between Groups 1 and 3, which had the highest difference between project values in both design consultant and contractor selection processes. These findings indicate that the clients involved in projects having closer values had more similar importance priorities in the two selection processes. Considering the existing competition in today’s markets with these findings, it seems that both design consultant and contractor firms should consider specializing in certain sizes or values of building projects since a remarkable potential for competitive advantage could be awaiting them.

The findings in Table 3 show that “price offered” is the leading factor in all the subgroups except for Group 3 of the design consultant selection process. Although the clients in Group 3 with the highest building value category ranked this factor second for the design consultant selection process, the same factor was ranked first for the contractor selection process that involves more monetary value. In addition, it can be observed that “payment conditions proposed” and “firm’s approach to the cost-effectiveness of the project” were assigned notably more emphasis by clients having smaller-sized projects in both of the selection processes. This can be explained by the fact that the higher value projects are probably carried out by clients possessing a better financial position. Thus, this finding indicates the need for the firms to offer better payment conditions and cost-effectiveness especially for clients in the lower value buildings segment of the market. “Overall image and identity of the firm” was perceived more importantly by responding to clients in the higher value projects segment in both of the selection processes. Group 3 clients ranked this factor first with an importance value of 0.933 in the consultant selection process. These findings reveal the fact that is it of great importance for design consultant firms specializing in high-value building projects to do effective promotion to build a positive image and identity and have a reputation in the market.

Of specific interest, “references about the firm” was assigned more significance by Group 1 and Group 2 clients while “reputation in the area of need” was perceived more importantly by Group 3 clients in both of the selection processes. These findings suggest that both consultant and contractor firms aiming for the potential clients in the smaller value buildings segment should focus all of their efforts on clients’ satisfaction to have possible future projects with positive references of previous highly satisfied customers. On the other hand, firms aiming for the potential customers of higher value building projects should assign high importance to effective promotion and specialization in a specific market segment.

“Previous experience with similar projects” was assigned very high importance by Group 1 and Group 2 clients in the consultant selection process, with RII scores of 0.940 and 0.935 respectively. On the contrary, the same factor was assigned a higher rank by Group 3 clients in the contractor selection process with an RII score of 0.931. This is another important indication that both the design consultants and the contractor firms should do market segmentation and focus on the projects in specific segments differentiated according to building project values. “Financial capability and the stability of the firm” was given more importance (RII=0.859) by Group 1 clients in the contractor selection process. Considering the possible financial risk that may be encountered by the client in case of financial problems of the contractor during the project execution, the findings reveal that clients with possibly limited financial budgets lend more significance to this issue. Group 3 clients assigned remarkably high significance to “availability of innovative/creative solutions” (RII=0.924) and ranked this factor third in the consultant selection process while the assigned importance value decreased with decreasing project values. This finding reveals that Group 3 clients’ expectations regarding creativity are higher than the clients having smaller value projects with possibly limited budgets. In consultant selection, “Availability of qualified staff/resources” and “availability of quality assurance and control system” were assigned higher ranks by Group 3 clients with RII scores of 0.798 and 0.773 respectively, indicating higher expectations of clients in this specific segment regarding quality.

For only selected factors with striking findings in the comparisons, rank variations are presented in Figures 1 and 2 for design consultant selection and contractor selection processes respectively. Selected factors’ identification numbers are shown on x-axis, the corresponding ranks on y-axis and differing client groups according to the values of building projects are shown in different colors.
### Table 3. Design Consultant and Contractor Selection Criteria by the Value of the Building.

| ID No. | Design consultant selection | Contractor selection |
|-------|----------------------------|----------------------|
|       | <120,000£ (Group 1) | 120,000£–180,000£ (Group 2) | 180,000£+ (Group 3) | <120,000£ (Group 1) | 120,000£–180,000£ (Group 2) | 180,000£+ (Group 3) |
|       | RII Rank | RII Rank | RII Rank | RII Rank | RII Rank | RII Rank |
| 1     | Price offered 0.960 1 | 0.953 1 | 0.932 2 | 0.976 1 | 0.964 1 | 0.967 1 |
| 2     | Payment conditions proposed 0.887 6 | 0.752 12 | 0.712 14 | 0.901 5 | 0.811 6,5 | 0.733 11 |
| 3     | Firm's approach to cost-effectiveness of the project 0.906 3 | 0.858 7 | 0.840 6 | 0.957 2 | 0.920 3 | 0.818 5 |
| 4     | Overall image and identity of the firm 0.902 4 | 0.932 3 | 0.933 1 | 0.706 11 | 0.811 6,5 | 0.825 4 |
| 5     | References about the firm 0.901 5 | 0.93 4 | 0.829 8 | 0.923 4 | 0.891 4 | 0.803 8 |
| 6     | Effective communication skills 0.824 9 | 0.778 10 | 0.735 13 | 0.560 16 | 0.525 18 | 0.494 20 |
| 7     | Reputation in specific area of need 0.798 10 | 0.870 8 | 0.919 4 | 0.539 18 | 0.528 17 | 0.809 6 |
| 8     | Overall experience of the firm 0.842 7 | 0.822 8 | 0.823 9 | 0.936 3 | 0.928 2 | 0.859 3 |
| 9     | Previous experience with similar projects 0.940 2 | 0.935 2 | 0.913 5 | 0.825 7 | 0.849 5 | 0.931 2 |
| 10    | Previous records of major problems or disputes 0.452 21 | 0.482 20 | 0.458 21 | 0.488 19 | 0.509 19 | 0.535 19 |
| 11    | Individual experience of key project personnel 0.749 12 | 0.763 11 | 0.760 11 | 0.470 20 | 0.46 20 | 0.462 21 |
| 12    | Financial capacity and stability of the firm 0.515 19 | 0.439 21 | 0.529 19 | 0.859 6 | 0.779 8,5 | 0.723 13 |
| 13    | Availability of managerial capacity 0.579 18 | 0.586 18 | 0.582 17 | 0.601 15 | 0.625 15 | 0.661 16 |
| 14    | Availability of technical competence and qualification 0.620 17 | 0.601 17 | 0.578 18 | 0.738 9 | 0.751 12 | 0.574 18 |
| 15    | Availability of qualified staff and resources 0.690 14 | 0.722 13 | 0.798 10 | 0.736 10 | 0.775 10 | 0.801 10 |
| 16    | Current workload and availability 0.496 20 | 0.509 19 | 0.487 20 | 0.667 14 | 0.689 14 | 0.730 12 |
| 17    | Availability of quality assurance and control system 0.654 16 | 0.648 16 | 0.737 12 | 0.559 17 | 0.597 16 | 0.630 17 |
| 18    | Availability of health and safety management system 0.325 22 | 0.412 22 | 0.397 22 | 0.416 21 | 0.414 22 | 0.402 22 |
| 19    | Availability of action plan for project execution 0.765 11 | 0.779 9 | 0.830 7 | 0.700 13 | 0.727 13 | 0.802 9 |
| 20    | Time of delivery of the project 0.689 15 | 0.680 14 | 0.668 16 | 0.705 12 | 0.771 11 | 0.705 15 |
| 21    | Overall contract conditions 0.735 13 | 0.676 15 | 0.684 15 | 0.771 8 | 0.779 8,5 | 0.806 7 |
| 22    | Availability of innovative and creative solutions 0.826 8 | 0.872 5 | 0.924 3 | 0.301 22 | 0.419 21 | 0.716 14 |

Note. Correlation is significant at 1% level for all.
Spearman Rank Correlation Coefficient ($r_s$) for consultant selection between groups 1 and 2 = .945; 1 and 3 = .866; 2 and 3 = .947; for contractor selection the values between groups 1 and 2 = .970; 1 and 3 = .705; 2 and 3 = .815.
Table 4. Design Consultant and Contractor Selection Criteria by the Type of the Building.

| ID No. | Design consultant selection | Contractor selection | Mixed residential and commercial (Group 3) |
|--------|-----------------------------|---------------------|-------------------------------------------|
|        | Residential (Group 1) | Commercial (Group 2) | RII Rank | Residential (Group 1) | Commercial (Group 2) | RII Rank | Mixed residential and commercial (Group 3) | RII Rank |
| 1      | Price offered              |                      |          |                      |                      |          |                                      |          |
| 0.981  | 1                           | 0.945               | 2        | 0.913               | 3                    |          | 0.989                                | 1        |
| 2      | Payment conditions proposed |                      |          |                      |                      |          | 0.964                                | 1        |
| 0.862  | 6                           | 0.769               | 11       | 0.756               | 13                   |          | 0.836                                | 7        |
| 3      | Firm's approach to cost-effectiveness of the project |          |          |                      |                      |          | 0.887                                | 4        |
| 0.886  | 5                           | 0.870               | 7        | 0.865               | 6                    |          | 0.815                                | 3        |
| 4      | Overall image and identity of the firm |          |          |                      |                      |          | 0.658                                | 8        |
| 0.902  | 4                           | 0.919               | 3        | 0.945               | 1                    |          | 0.830                                | 5        |
| 5      | References about the firm   |                      |          |                      |                      |          | 0.912                                | 4        |
| 0.920  | 2                           | 0.887               | 6        | 0.860               | 7                    |          | 0.882                                | 5        |
| 6      | Effective communication skills |                      |          |                      |                      |          | 0.912                                | 4        |
| 0.812  | 9                           | 0.763               | 12       | 0.786               | 12                   |          | 0.844                                | 7        |
| 7      | Reputation in specific area of need |          |          |                      |                      |          | 0.520                                | 17       |
| 0.769  | 10                          | 0.889               | 5        | 0.920               | 2                    |          | 0.462                                | 20       |
| 8      | Overall experience of the firm |                      |          |                      |                      |          | 0.731                                | 17       |
| 0.858  | 7                           | 0.822               | 8        | 0.802               | 10                   |          | 0.889                                | 4        |
| 9      | Previous experience with similar projects |          |          |                      |                      |          | 0.763                                | 7        |
| 0.914  | 3                           | 0.969               | 1        | 0.908               | 4                    |          | 0.888                                | 2        |
| 10     | Previous records of major problems or disputes |          |          |                      |                      |          | 0.456                                | 20       |
| 0.420  | 21                          | 0.501               | 21       | 0.476               | 20                   |          | 0.496                                | 18       |
| 11     | Individual experience of key project personnel |          |          |                      |                      |          | 0.501                                | 22       |
| 0.702  | 13                          | 0.779               | 10       | 0.807               | 8                    |          | 0.495                                | 20       |
| 12     | Financial capacity and stability of the firm |          |          |                      |                      |          | 0.825                                | 6        |
| 0.505  | 19                          | 0.509               | 20       | 0.456               | 21                   |          | 0.794                                | 9        |
| 13     | Availability of managerial capacity |          |          |                      |                      |          | 0.592                                | 13       |
| 0.569  | 18                          | 0.586               | 18       | 0.596               | 18                   |          | 0.632                                | 15       |
| 14     | Availability of technical competence and qualification |          |          |                      |                      |          | 0.699                                | 14       |
| 0.616  | 17                          | 0.589               | 17       | 0.607               | 17                   |          | 0.709                                | 15       |
| 15     | Availability of qualified staff and resources |          |          |                      |                      |          | 0.752                                | 12       |
| 0.691  | 14                          | 0.713               | 13       | 0.798               | 11                   |          | 0.784                                | 12       |
| 16     | Current workload and availability |          |          |                      |                      |          | 0.572                                | 13       |
| 0.429  | 20                          | 0.526               | 19       | 0.565               | 19                   |          | 0.813                                | 10       |
| 17     | Availability of quality assurance and control system |          |          |                      |                      |          | 0.572                                | 16       |
| 0.662  | 15                          | 0.683               | 15       | 0.672               | 16                   |          | 0.729                                | 13       |
| 18     | Availability of health and safety management system |          |          |                      |                      |          | 0.589                                | 19       |
| 0.385  | 22                          | 0.362               | 22       | 0.358               | 22                   |          | 0.586                                | 16       |
| 19     | Availability of action plan for project execution |          |          |                      |                      |          | 0.398                                | 22       |
| 0.767  | 11                          | 0.790               | 9        | 0.806               | 9                    |          | 0.406                                | 21       |
| 20     | Time of delivery of the project |          |          |                      |                      |          | 0.657                                | 11       |
| 0.630  | 16                          | 0.703               | 14       | 0.729               | 14                   |          | 0.768                                | 11       |
| 21     | Overall contract conditions |          |          |                      |                      |          | 0.588                                | 10       |
| 0.733  | 12                          | 0.662               | 16       | 0.718               | 15                   |          | 0.792                                | 10       |
| 22     | Availability of innovative and creative solutions |          |          |                      |                      |          | 0.700                                | 6        |
| 0.832  | 8                           | 0.892               | 4        | 0.874               | 5                    |          | 0.837                                | 6        |
|        |                              |                      |          |                      |                      |          | 0.831                                | 9        |
|        |                              |                      |          |                      |                      |          | 0.401                                | 21       |
|        |                              |                      |          |                      |                      |          | 0.463                                | 19       |
|        |                              |                      |          |                      |                      |          | 0.460                                | 21       |

Note. Correlation is significant at 1% level for all.

*Spearman Rank Correlation Coefficient ($r_s$) for consultant selection between groups 1 and 2 = .922; 1 and 3 = .866; 2 and 3 = .974; for contractor selection the values between groups 1 and 2 = .906; 1 and 3 = .710; 2 and 3 = .874.*
The findings presented in Table 4 reveal the differing approaches of clients categorized by the type of building projects. SRCC test showed that the minimum correlation among ranks was between Groups 1 and 3 for both of the decision processes indicating the differences in approaches of clients of “residential projects” and clients of “mixed residential and commercial projects.” Although the price is an extremely important factor as expected, it was not ranked first by Group 2 and Group 3 clients at least for the design consultant selection process. However, in the contractor selection process, which includes much more financial investment by the client, “price offered” was the leading factor in all the categories defined. The highest ranks for “the payment conditions proposed” were assigned by residential building clients, which may be explained by the fact that commercial or mixed residential and commercial projects are probably carried out by clients possessing a better financial position. Hence, this finding reveals the need for the firms to focus on strategies to offer advantageous payment conditions to clients specifically in the residential buildings segment of the market.

“Reputation in the specific area of need” was perceived more important by Group 3 clients followed by Group 2 clients in consultant selection. On the other hand, moderately high importance (RII = 0.836) was placed on the specified factor only by Group 3 clients in contractor selection. Compared to the standard residential building projects, mixed residential and commercial, or commercial building projects might require more expertise in the specific area of the field, therefore the clients in these categories seem to assign substantially higher significance to this specific factor. In contractor selection, “overall experience of the firm” was perceived as very important by all three categories and assigned an extremely high importance value of 0.974 by Group 1 clients.

Hence, possessing extensive overall experience and promoting it with an effective marketing strategy is of crucial importance for the contractors. In consultant selection, even though “overall experience of the firm” was perceived as moderately
“previous experience with similar projects” was ranked first by commercial type building clients and third and fourth by the clients in the other two categories. In contractor selection, the same factor was assigned high importance values of 0.941 and 0.888 by Commercial and Mixed Residential Commercial clients respectively. These findings reveal that in addition to the overall experience, clients place very high emphasis to experience with similar types of projects. Thus, contractors in “Commercial” or “Mixed Residential and Commercial” segments of the market should focus on presenting their expertise with similar previous projects within their overall marketing strategies. Both “individual experience of key project personnel” and “availability of innovative/creative solutions” had fairly higher ranks assigned by Group 2 and Group 3 clients in consultant selection indicating the higher expectations of these groups of clients regarding the key project personnel and creative solutions.

In contractor selection decision, “financial capacity and the stability of the firm” was assigned remarkably higher emphasis (RII = 0.825) by residential building project clients, indicating that residential building project clients with possibly limited financial budgets compared to the other two categories, lend more significance on this issue to minimize a possible financial risk that may be encountered due to contractor’s financial problems during project execution. Both “current workload and availability” and “time of delivery of the project” were assigned moderately high ranks by group 3 and group 2 clients in contractor selection. Considering the fact that the building projects in the specified two categories will be used for conducting business, it seems that the effect of any delay in these projects will be remarkably more.

For only selected factors with striking findings in the comparisons, rank variations are presented in Figures 3 and 4 for design consultant and contractor selection processes.
respectively. Selected factors’ identification numbers are shown on x-axis, the corresponding ranks on y-axis, and differing client groups according to the types of building projects are shown in different colors.

**Post Occupancy Client’s Satisfaction**

Table 5 presents “Building Construction Clients Satisfaction Score (BCCSS)” that measures the clients’ post-occupancy overall satisfaction levels considering the building projects completed by the design consultant and the contractor firms previously selected. Post-occupancy overall satisfaction score was found as 0.524, which was much smaller than the maximum possible satisfaction value and even smaller than the neutral case value of 0.544.

Today’s construction markets require achieving clients’ satisfaction, which is a key measure for success and is an important means of achieving a competitive advantage. However, despite the widely expressed objective of project participants to satisfy the client, this finding reveals an overall dissatisfaction of the clients with the building projects completed.

Positive word-of-mouth has been traditionally known as crucially important in the building construction market of North Cyprus. The findings also showed that “references about the firm” was assigned high emphasis by the clients in both design consultant and the contractor selection processes. A high correlation exists between clients’ satisfaction and eagerness to recommend the firm to others. Hence, these results indicate the need for both design consultants and contractor firms to determine and apply client-focused strategies in an effort to increase overall clients’ satisfaction. The low overall client satisfaction score suggests that there is room for improvement for the firms to increase their market share through positive references from previously satisfied customers.

When the post-occupancy overall satisfaction values for different categories of clients are investigated, the satisfaction levels reached by the different subgroups seemed to vary significantly. Even though none of the categories of clients seemed to have high satisfaction, clients having project values 180,000+ were more satisfied (BCCSS = 0.601) than the client groups having smaller valued projects. The category 120,000–180,000 had the lowest satisfaction score of 0.462, while the category 120,000 to 180,000 had achieved a satisfaction value of 0.552 that is just above the neutral value. The clients in the “<120,000” category, who assigned more significance to “payment conditions proposed,” “the firm’s approach to cost-effectiveness, less significance” to “overall image, and identity of the firm,” and “reputation in the specific area of need” in both consultant and contractor selection processes, less significance to “previous experience with similar projects” in contractor selection and less significance to “availability of innovative/creative solutions” in design consultant selection were found as the most dissatisfied group. The low BCCSS value found for the <120,000 category indicates the potential awaiting the firms specifically in this segment of the market. Hence design consultant firms and contractor firms should develop effective strategies based on customers’ expectations of this specific market segment.

Multiple one-way analysis of variance (ANOVA) test was applied to test the homogeneity of mean “post-occupancy overall satisfaction” values from different categories of responding clients. ANOVA results for the client groups categorized according to “type of the project” revealed a statistically significant difference in mean values of the different groups (F (2, 327) = 4.503, p = .012). Tukey’s HSD Test for multiple comparisons found that the mean overall satisfaction value was significantly different between “Residential” and “Commercial” (p = .043, 95% CI [−0.8947, −0.0117], Mean Difference = -0.4532) and between “Residential” and “Mixed Residential and Commercial” categories (p = .023, 95% CI [−1.0305, −0.0609], Mean Difference = -0.5457). No statistically significant difference was found between “Commercial” and “Mixed Residential and Commercial” mean values (p = .899). ANOVA results for the client groups categorized according to “size of the project” also revealed a

## Table 5. Building Construction Clients Satisfaction Score (BCCSS) for Different Categories of Clients.

| Type of building | Value of building (in £) |
|------------------|-------------------------|
|                  | Overall (All) | Residential (Group 1) | Commercial (Group 2) | Mixed residential and commercial (Group 3) |
|------------------|----------------|----------------------|---------------------|--------------------------------------------|
| Post-occupancy overall satisfaction | 0.524 | 0.491 | 0.541 | 0.551 | 0.462 | 0.552 | 0.601 |
| Satisfaction with project execution stage | 0.493 | 0.485 | 0.504 | 0.490 | 0.488 | 0.495 | 0.500 |
| Satisfaction with the quality | 0.549 | 0.512 | 0.570 | 0.576 | 0.483 | 0.584 | 0.624 |
| Satisfaction with the functionality | 0.498 | 0.456 | 0.522 | 0.529 | 0.423 | 0.530 | 0.594 |
| Satisfaction with the esthetics | 0.508 | 0.465 | 0.532 | 0.540 | 0.435 | 0.542 | 0.597 |
The overall BCCSS value of 0.601 found for Group 3 clients showed a substantial increase with increasing project values. The findings show the increasing satisfaction of clients in all the satisfaction categories. Even though the lowest BCCSS scores are investigated, it is observed that the “residential” type of clients had the highest BCCSS score of 0.624 for satisfaction with quality, while the lowest score was obtained for the project execution stage. For Group 3 clients, the highest BCCSS score of 0.624 was obtained for satisfaction with quality while the lowest score of 0.500 was found regarding the project execution stage.

In an effort to explore and identify the factors in the design consultant and contractor selection processes that predict post-occupancy overall satisfaction of the respondents, Categorical Regression Analysis (CATREG) was conducted. In order to include only the major factors with high importance values that significantly affect these two selection decisions, only the first half of the total list of factors (11 factors) with the highest RII and hence ranks were included in the regression analysis for each of the two specified decision processes. Post occupancy overall satisfaction value was entered as the dependent variable while the 11 highest ranked selection criteria for each of the two decision processes were used as independent variables in the regression analysis.

The findings of the regression analysis displayed in Table 6 reveal that five major factors used in design consultant selection predict post-occupancy overall client satisfaction. The overall satisfaction value was the only post-occupancy overall satisfaction value, which was remarkably higher than the neutral value of 0.544. Although all satisfaction values within Group 1 clients were low, the lowest value was found regarding the functionality of the project followed by the esthetics of the project. When the results about Group 2 clients are investigated, the only BCCSS value above the neutral value was 0.584 regarding quality, while the lowest score was obtained for the project execution stage. For Group 3 clients, the highest BCCSS score of 0.624 was obtained for satisfaction with quality while the lowest score of 0.500 was found regarding the project execution stage.

When the satisfaction results of “residential,” “commercial,” and “mixed residential and commercial” type clients are investigated, it is observed that the “residential” type of clients has the lowest satisfaction in all the defined satisfaction categories. Even though the lowest BCCSS scores for different groups of clients vary, the highest satisfaction score for all the three categories of clients was obtained for “satisfaction with the quality.” The findings regarding the “value of building” categories reveal the obvious dissatisfaction of the “<120,000” type of clients in all the satisfaction categories defined. The findings show the increasing satisfaction of clients with increasing project value. In both the overall and the other four features of satisfaction categories, BCCSS scores showed a substantial increase with increasing project values.

The overall BCCSS value of 0.601 found for Group 3 clients was the only post-occupancy overall satisfaction value, which was remarkably higher than the neutral value of 0.544.
experience specifically with similar type of projects. “Overall image and identity of the firm” also emerged as a strong predictor of overall satisfaction indicating the clients to give priority to design consultant firms with a positive overall identity and image in the market. The high effect of “availability of innovative and creative solutions” in predicting post-occupancy overall satisfaction was another remarkable finding that should be taken into consideration by the clients. Hence, clients should give priority to design consultants having innovative and creative solutions during the consultant selection process.

CATREG results displayed in Table 7 reveal that five different factors used in contractor selection predict post-occupancy overall client satisfaction. ($R^2 = .763$, $F = 30.798$, and $p = .000$). “Firm’s approach to the cost-effectiveness of the project” was found as the only factor affecting client satisfaction negatively or predicting client dissatisfaction. Hence, clients should not assign high significance to the “firm’s approach to the cost-effectiveness of the project” in contractor selection decisions to increase their post-occupancy overall satisfaction. Interestingly, unlike the consultant selection process, “overall experience of the firm” also emerged as a strong predictor of satisfaction in the contractor selection process. Both “overall experience of the firm” and “previous experience with similar projects” emerged as strong indicators of satisfaction revealing the definite need for the clients to assign high importance to both overall and specific experience of the contractor firm in the selection process to

### Table 6. Design Consultant Selection Factors Predicting Post-Occupancy Overall Satisfaction.

| Coefficients | Standardized coefficients |
|--------------|---------------------------|
| Price offered | $-0.091$ | $0.069$ | 2 | $1.723$ | $0.181$ |
| Previous experience with similar projects | $0.198$ | $0.055$ | 1 | $13.199$ | $0.000$ |
| Overall image and identity of the firm | $0.133$ | $0.044$ | 3 | $9.187$ | $0.000$ |
| References about the firm | $-0.044$ | $0.057$ | 1 | $0.596$ | $0.441$ |
| Firm’s approach to cost-effectiveness of the project | $-0.372$ | $0.124$ | 2 | $8.965$ | $0.000$ |
| Availability of innovative and creative solutions | $0.191$ | $0.054$ | 3 | $12.470$ | $0.000$ |

Note. Dependent variable: Post-occupancy overall satisfaction

### Table 7. Contractor Selection Factors Predicting Post-Occupancy Overall Satisfaction.

| Coefficients | Standardized coefficients |
|--------------|---------------------------|
| Price offered | $-0.071$ | $0.044$ | 2 | $2.584$ | $0.078$ |
| Overall experience of the firm | $0.270$ | $0.083$ | 3 | $10.483$ | $0.000$ |
| Firm’s approach to cost-effectiveness of the project | $-0.173$ | $0.057$ | 1 | $9.146$ | $0.003$ |
| References about the firm | $0.298$ | $0.110$ | 3 | $7.355$ | $0.000$ |
| Previous experience with similar projects | $0.148$ | $0.041$ | 4 | $13.025$ | $0.000$ |
| Payment conditions proposed | $-0.075$ | $0.054$ | 1 | $1.951$ | $0.164$ |
| Financial capacity and stability of the firm | $0.064$ | $0.062$ | 1 | $1.038$ | $0.356$ |
| Overall contract conditions | $-0.065$ | $0.040$ | 2 | $2.678$ | $0.071$ |
| Overall image and identity of the firm | $0.165$ | $0.097$ | 1 | $2.896$ | $0.090$ |
| Availability of qualified staff and resources | $0.071$ | $0.070$ | 2 | $1.032$ | $0.358$ |
| Availability of action plan for project execution | $0.233$ | $0.069$ | 3 | $11.224$ | $0.000$ |

Note. Dependent variable: Post-occupancy overall satisfaction.
increase post-occupancy overall satisfaction. “Availability of action plan for project execution” was found as another major predictor of client satisfaction indicating the importance of giving priority to contractors with clearly defined action plans about the project execution. “References about the firm” also emerged as a strong predictor of satisfaction for clients in the contractor selection process, even though it was not a predictor of satisfaction in the design consultant process. Hence, the findings suggest that private building construction clients should lend more emphasis to “references about the firm” specifically in the contractor selection process to increase their post-occupancy satisfaction levels.

When the results about client satisfaction are compared with the previous studies’ findings, many similarities exist. In the previous studies, cost management was identified as a factor with high significance on client satisfaction (Alshihre et al., 2020; Soetanto et al., 2001). The same factor was identified as one of the major factors predicting post-occupancy overall satisfaction in the current study as well. Past performance of the contractor was another factor affecting client satisfaction both in previous studies (Soetanto & Proverbs, 2002b; Soetanto & Proverbs, 2004) and the current study. Azimi and Esmaeilzadeh (2017) found that the factors regarding residential satisfaction were not the same for all types of houses which was another similarity with the current study. Jiboye (2012) found that both design and construction related factors affect residential satisfaction significantly and Mohit and Mahfoud (2015) revealed that housing design elements can enhance client satisfaction, which were all similar to the current study’s findings.

Conclusions

Considering the fact that a private residential or commercial building project may usually be a lifetime investment for a private building construction client, design consultant selection followed by contractor selection and the resulting post-occupancy overall client satisfaction after the specified two selection decisions are sequential, interrelated, and vital stages of a complex and important process. In order to uncover the main attributes that characterize all three stages of this process, this study proposed an enhanced insight to contribute to the related literature. Unlike previous studies which focused on only one of the specified stages, the primary contribution of the current study is including all three stages in a complete manner. A further contribution is differentiating among various categories of clients’ behaviors in each of the three specified stages.

Although choosing the right design consultant and contractor can be the difference between project success and failure, “price offered” still emerged as the leading factor and “firm’s approach to cost effectiveness” received remarkably high scores in the specified selection decision processes. Considering the importance of clients’ satisfaction in the competitive building construction market and the high emphasis assigned to cost-related factors, it becomes apparent that both design consultants and the contractors should offer “correct prices,” that are competitive enough and also find ways to offer services that satisfy the private customers’ needs. Further, it was found clients belonging to different categories have remarkably different importance priorities in the two specified selection stages. This is an indication that it may not be possible for the design consultants and the contractors to offer services meeting the differing needs of various types of clients. Hence, these results suggest that the design consultant and the contractor firms may benefit from market segmentation, before building their overall strategies. This will help them in focusing only on the selection criteria of the specific segment’s clients, differentiate their firms from their competitors and apply specific strategies accordingly. Moreover, the findings of this study showed that a major dissatisfaction existed among clients while “references about the firm” was assigned high importance by the clients both in consultant and contractor selection stages. There exists a high correlation between clients’ overall satisfaction and eagerness to recommend the firm to others. In order to gain a competitive advantage, the construction firms should focus on achieving full client satisfaction in the current projects and aim to have future jobs in the market with their clients’ positive recommendations.

Although an overall dissatisfaction exists among clients within almost all the categories, “residential” and “<120,000£” type clients were found to have the highest dissatisfaction. Furthermore, the satisfaction values vary remarkably among different client categories and statistically significant differences exist among the mean satisfaction values of different client groups. Considering also the wide gap in approaches of different client groups in the selection processes of design consultants and contractors, these findings may be a guide for the clients regarding prioritizing selection criteria. To increase their market share, both design consultants and contractors should apply customer-focused strategies, specifically for client categories having low satisfaction levels to gain a competitive advantage. These findings may actually be the market differentiator and set a firm apart from others offering similar services in the market. Additionally, when the satisfaction values regarding four different features of the completed building projects are investigated, the lowest satisfaction score was obtained for “the project execution stage” category followed by the “functionality of the project” category. Hence, these findings suggest that the design consultants should focus their improvement efforts on the “functionality” of the buildings to increase the clients’ overall satisfaction. Considering the unfamiliarity of clients with this issue in the design stage, effective communication of design consultants with the clients stands out as a major factor in determining the overall satisfaction of clients at the project completion.

Regression analysis results reveal that private building construction clients should not select either design consultants or
contractors by assigning high emphasis to “firm’s approach to the cost-effectiveness of the project” to minimize the possible dissatisfaction at the end of the projects. Instead, they should give priority to design consultants with a positive overall image and identity in the market, possessing reputation and previous experience specifically with similar types of projects and having innovative, creative ideas with solutions. For contractor selection decisions, priority should be given to contractors possessing both overall experience and specific experience with previous similar projects, having positive references, and available action plans for project execution to improve post-occupancy overall satisfaction.

In summary, this research presents a comprehensive study combining different client groups’ design consultant and contractor selection preferences with the post-occupancy overall satisfaction levels. Hence, it contributes to extending our understanding of the key aspects of this complex issue. In determining the factors that should be given priority in the two selection stages for attaining higher levels of post-occupancy overall satisfaction, the findings of this research provide a guide for different types of private building construction clients. Moreover, the design consultants and the contractors in the relevant sectors can use the findings of this research in recognizing the market demand in a more detailed manner, identifying the areas to focus on for improving performance, ensuring better project implementations with high client satisfaction and formulating their future strategies accordingly.

Despite the accomplishments, the current study has some limitations. The study was based solely on the projects of private building construction clients and their respective consultants and contractors. In the future, this study can be extended to include data from both private and public construction clients to be able to analyze the differences between the two. Additionally, the sample was limited to the North Cyprus construction market. Future research can include construction markets from different countries to be able to make comparisons. Although this study differentiated among private building construction clients by “Type of the building” and “Value of the building” only, it could be extended to include more types of clients to investigate possible differences.

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