

Comparing Perception Concerning the Importance of Apartment Complex Components Between Consumers and Housing Providers

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Abstract

In the last several decades, the residential apartment housing market in South Korea was led by housing providers, not by consumers, which led to a seller's market. However, since the mid-2000s, the market has experienced a rapid transition to a buyer's market because of an oversupply of apartment units. This implies that housing providers require new strategies for appropriately responding to the rapidly changing market environment. We conducted a survey of 799 occupants of new apartment units to assess their evaluation of 13 pre-classified apartment complex components. In addition, we conducted a similar survey of 34 customer satisfaction (CS) experts representing housing providers. The results of a comparative analysis of consumers and CS experts indicate significant differences in their evaluation of each component. The results have important implications for housing providers interested in developing effective housing supply strategies and for improving design quality.

Keywords: apartment complex; consumer evaluation; CS expert; design quality

1. Introduction

In Korea, contracts for the purchase of residential apartment units are made before the completion of apartment complexes. That is, unlike in the case of manufactured products, the purchaser makes a decision to acquire a residential apartment unit without first assessing the quality of the finished product (i.e., the apartment unit). In addition, it is difficult to make a direct comparison between comparable units. Consequently, from the perspective of consumers, some purchasers may not be satisfied with their units. This paper defines consumers as residents, occupants, or apartment purchasers (buyers) and suppliers as housing providers (suppliers) or firms and uses these terms interchangeably.

There has been a shift in Koreans' perception of housing from a primary asset to a dwelling. This shift in their perception and the transition to a buyer's market suggests the increasing importance of customer satisfaction (CS) in the saturated market and indicates that such environments may lead to severe competition among housing suppliers. This also implies that the paradigm of the apartment market is shifting from a

mass supply to a quality-based market emphasizing CS. In this regard, understanding and determining the real customer requirements are essential for the sustainability of residential apartment business (Samarajeewa 2006). Customer satisfaction in housing can have societal implications far beyond those of standard consumer product experiences (James III 2009). Therefore, providers should be interested in a theoretically grounded method that provides information about the benefits and disadvantages people believe to exist in a residential development (Berndt 2004).

Based on the above discussion, the present study examines the perceptual differences between apartment consumers and suppliers. Specifically, the study considers 13 major components of apartment complexes and assesses the relative importance of each component for apartment complexes in the Seoul metropolitan area and provinces. In this context, we assessed the relative importance of each component by determining the extent to which purchasers were satisfied with each component (i.e., the level of CS).

On the other hand, in terms of providers' evaluation of the relative importance of apartment complexes and components, we considered CS experts' expectations or predictions based on their CS expertise and practical experiences. Specifically, we examined the expected effects of an increase in the level of finishing quality or the quality of a function on the level of CS.

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2. Theory and Literature Review

Under the premise of interrelationships between quality, CS, and customer loyalty (Samarajeeva 2006), this section provides a review of existing theories and previous researches relevant to this study.

The perceived quality involves consumers' perceptions and physical attributes of a product reflecting its objective quality. Rowley (1998) asserted that the perceived quality of a service is a behavioral pattern resulting from a comparison between expectations and outcomes.

Customer satisfaction is defined as a customer's overall evaluation of the performance of an offering to date (Gustafsson *et al.* 2005). Any effort to maximize CS first requires a clear definition of CS, followed by an in-depth understanding of the process of CS development and an accurate measurement of the level of CS. This should facilitate the development and implementation of effective strategies for managing and improving CS.

Some studies have examined the factors influencing CS in the housing context (Adriaanse 2007; Xiaoyu *et al.* 2007; Kim *et al.* 2009; Kim and Ohara 2010; Ornstein *et al.* 2011; Kährlik *et al.* 2012; Lee and Yeom 2012;). Kim and Yang (2001) asserted that the living environment has considerable influence on CS. They also suggested that the size of the housing unit (which is a user-focused attribute), the distance between apartment buildings, and a sense of openness (which can be classified as a planning element in site design) have considerable influence on CS.

The above discussion suggests that few studies have examined quality and CS in the context of apartments. In addition, Zadkarim *et al.* (2011) have provided an empirical analysis of the relationship between perceived quality and CS. Despite the market transition and changes in consumers' perception, few studies have provided a systematic analysis of consumers' satisfaction with apartment complexes.

Compared to prior researches, this study explored the perceptions of both residents and providers regarding the elements of large apartment complexes which have diverse design elements. In this regard, the results of this study, which provides a systematic and quantitative analysis, have important practical implications for both suppliers and consumers. For suppliers, the results provide valuable guidelines for developing and implementing effective strategies in apartment complex design, and for consumers, the results are expected to facilitate increased CS because of suppliers' efforts to meet consumers' needs. Table 1. shows the method for classifying apartment complexes according to the provisions specified in the housing law. In South Korea, the classification scheme is generally accepted as a standard by architects, housing providers and researchers.

Table 1. Classification of Apartment Complexes

Category	Specific components
Individual unit	Indoor porch, Living room, Bedroom, Kitchen, Balcony, Bathroom, Other unit-specific feature [*]
Shared facility	Building entrance, Stairs/elevator
Support facility	Underground parking, Outdoor environment, ^{**} Landscape features, ^{***} Other support features

^{*} Represents space or features that are not specified under the individual units

^{**} Represents the layout of the apartment complex, the view, and various esthetic characteristics, among others

^{***} Includes security offices, sports centers, management offices, senior centers, and other facilities for residents.

3. Hypotheses Development

In addition to assessing the perceptual differences between buyers and providers of apartment units, this study tests two hypotheses based on existing theories and previous studies. Taylor and Baker (1994) conducted an empirical analysis of customer satisfaction and concluded that service quality has considerable influence on CS. In addition, perceived service quality has been found to have a positive relationship with CS (Park 2003). Kara (2005) introduced the concept of optimal quality, which can facilitate the maximization of both CS and profits. Kara verified that quality is an effective way to achieve a high level of CS from the perspective of customers and that it can be a superior tool for achieving specific goals such as increased profitability. On the other hand, in the Korean housing market, apartment providers apply different levels of finishing quality, normally 3 to 5 levels, according to the project-basis, locations, the level of competition, specialization of specific apartment elements and the trend of the housing market. The above factors are considered to have a critical impact on the finishing quality of individual elements and, in turn, the finishing quality influences the customers' satisfaction level.

Based on existing theories, previous research, and industry practices, perceived quality may have a positive effect on CS (Berndt 2003). Therefore, we propose the following hypothesis about the relationship between the quality of an apartment component and CS.

H1: The level of finishing quality has a positive relationship with customer satisfaction.

Kim and Kang (2005) asserted that a key success factor is the firm's delivery of superior customer value in a competitive market. To deliver such value, firms must have an in-depth understanding of their customers' needs and preferences because these are closely related to the market segmentation strategy and the selection of target market. They also stated that clearly understanding the benefits that consumers expect from products is a prerequisite for effective marketing. This implies that identifying consumers'

needs and preferences accurately and then providing effective responses represent an important marketing strategy. These arguments and assertions can be stated in another way: If there is an efficient supply-demand relationship in the market, then suppliers can respond to changes in consumers' preferences in a timely manner. On the other hand, as discussed in an earlier section, housing providers can increase CS by providing a wide range of services, addressing consumers' needs in a timely manner, and conducting surveys after the completion of apartment complexes, among others. Based on the above discussion on market efficiency and housing providers' efforts to increase CS, we propose the following hypothesis:

H2: In the evaluation of the relative importance of apartment components, there is no difference in assessments between buyers and providers.

4. Customers' Evaluation of the Importance of Apartment Components

4.1 Measurement Method for the Level of Customer Satisfaction and Sample Characteristics

The survey of consumers was conducted by Gallop Korea, a firm specializing in surveys and social research. Adopting the systematic sampling technique, the sample size (i.e., 799), which is considered to be enough for representing the population, is predetermined. Representatives from Gallop Korea conducted a face-to-face survey, and a total of 799 responses (11.9%) were collected from 6,710 new apartment units between 2006 and 2008.

These 6,710 units represented 11 apartment complexes. In terms of the sample, 3 apartment complexes (306 units, 38.3%) were located in the Seoul metropolitan area, whereas 8 (493 units, 61.7%) were in the provinces. The respondent's satisfaction with each apartment component is measured using a five-point Likert-type scale ranging from lowest (1) to highest (5). More specifically, the individual respondent is asked to assess the satisfaction level he/she perceived for the 13 individual components. The overall satisfaction level for the apartment complex and that for subgroups are estimated in the following way. For example, the respondents' overall satisfaction concerning the apartment complex is the dependent variable y_i , which is a function of the 13 components. Specifically, the respondent's response regarding each component is multiplied by 20 points in order to convert the response value into a 100-point scale and then divide the sum of 13 elements' points by 13 (the total number of components). Each subgroup's satisfaction level is estimated by applying the identical method described above. The respondents' evaluation ranged from 36.6 to 100, and the mean and the median were 63.4 and 71.5, respectively.

In terms of the level of finishing quality for the 11 apartment complexes, the level of the final finishing quality for each of the 13 components was determined based on the cost report and the applied design index. In this study, Level 3 was the standard level. Levels 4 and 5 were higher-quality levels, whereas Levels 1 and 2 were lower-quality levels. Thus, a total of five levels were considered for each component. A frequency analysis was conducted to examine the demographic characteristics of the respondents. More than half of the respondents (590, 73.8%) resided in large cities (a population exceeding 500,000). A majority of the respondents (471, 58.9%) lived in medium-sized (130-162m²) units, and 349 (43.6%) were younger than 40.

4.2 Location Effects on Customer Satisfaction

This section focuses on the effect of each independent variable on the level of CS based on the location of the respondents: the Seoul metropolitan area vs. provinces. The above classification is made considering the apartment providers' marketing strategy according to the locations (e.g., quality of finishing materials and unit sales price) and characteristics of the two locations (e.g., land use efficiency and the level of household income). This framework can be expressed as follows:

$$y_{ij} = \mu + \alpha_i + \beta_j + \varepsilon_{ij} \quad \dots\dots\dots \text{Eq. (1)}$$

where $i = 1, 2$; $j = 1, 2, 3$; and μ , α_i , β_j , and ε_{ij} represent the grand mean, the location effect, three types of components (i.e., individual units, shared facilities, and support facilities) and error terms, respectively.

The results indicate significant differences in CS between the two locations and between the three types of components at the 0.05 level. The estimated value of type III SS for α was 8,896.75 (df=1, Pr. < 0.0001), and that of β was 292,784.77 (df =2, Pr. < 0.0001). In addition to the overall evaluation, we employed Duncan's multiple comparison procedure for a more detailed analysis. The results indicate that the level of CS for provinces (estimated mean value = 66.467) was higher than that for the Seoul metropolitan area (estimated mean value = 62.504). This implies that for the same level of finishing quality, those respondents in the provinces were more likely to be satisfied than their counterparts in the Seoul metropolitan area.

The authors considered two regression models with 13 elements as the independent variables for the two locations and found that both were valid at the 0.05 level.

According to the analysis result (Table 2.), for the same level of finishing quality, those respondents in the Seoul metropolitan area were more likely to be satisfied with the bedroom, the building entrance, stairs/elevators, underground parking, and landscape features whereas those in the provinces were more likely to be satisfied with the indoor porch, the

Table 2. Parameter Estimates for Two Locations

Variable	Seoul metro- politan area Parameter estimate	Provinces		
		Pr.> t	Parameter estimate	Pr.> t
Intercept	0.201	0.7349	-0.572	0.172
Indoor porch	1.549	<0.0001	1.629	<0.0001
Living room	1.676	<0.0001	1.681	<0.0001
Bedroom	1.829	<0.0001	1.682	<0.0001
Kitchen	1.850	<0.0001	1.805	<0.0001
Balcony	1.692	<0.0001	1.768	<0.0001
Bathroom	1.596	<0.0001	1.641	<0.0001
Other unit features	1.703	<0.0001	1.919	<0.0001
Building entrance	0.544	<0.0001	0.276	<0.0001
Stairs/elevator	0.184	0.2519	0.062	0.3406
Underground parking	2.104	<0.0001	1.958	<0.0001
Outdoor environment	2.200	<0.0001	2.233	<0.0001
Landscape features	1.769	<0.0001	1.666	<0.0001
Other support features	1.827	<0.0001	1.996	<0.0001

balcony, the bathroom, other unit features, and other support features. On the other hand, the analysis results indicate similar levels of CS for the living room, the kitchen, and the outdoor environment for both locations. Finally, the level of CS was higher for the provinces than for the Seoul metropolitan area for individual units and support facilities, whereas the opposite was true for shared facilities. This implies that apartment providers should focus more on individual units and support facilities than on shared facilities when planning apartment complexes in the provinces.

4.3 Assessment of Relative Weights

This section examines the results of Duncan's multiple comparison procedure for relative weights for three types of components. All else being equal, the mean weights were 73.74, 71.75, and 49.36 for support facilities, individual units, and shared facilities, respectively. This indicates that the respondents tended to value environmental factors, amenities, and unit features more than shared facilities. The significant low weight for the shared facility compared to the other two groups may be explained by considering the limited utility functions it provides; building entrance and stairs/elevator provide only passage and transportation functions.

We assessed the relative weights for components of individual units through a multiple regression analysis. All else being equal, every one-level increase in finishing quality improves the CS by 4.313 for other unit features, 2.839 for the bedroom, 2.639 for the balcony, 2.280 for the kitchen, 2.127 for the indoor porch, 1.776 for the living room, and 1.764 for the bathroom. All the parameter estimates were significant at the 0.01 level. The results for components of shared facilities are not presented because the model was not valid. Finally, the results for components of

support facilities indicate no significant differences in parameter estimates.

4.4 Overall Assessment of 13 Components

To examine the respondents' overall assessment of all 13 components, we considered a regression model by employing forward selection, backward elimination, and stepwise regression methods. We conducted a multiple regression analysis by using the SAS programming method. The results indicate that the 13 components were significant and that the model was valid. According to the parameter estimates, every one-level increase in finishing quality improves the CS by 2.250 for the outdoor environment, followed by other support features (1.975), and underground parking (1.973), other unit features (1.861), the kitchen (1.809), the balcony (1.747), the bedroom (1.675), landscape features (1.654), the indoor porch (1.644), and the bathroom (1.622). On the other hand, the relative weights for the building entrance (0.294) and stairs/elevators (0.019) were much lower than those for the others. All the parameter estimates were significant at the 0.01 level except for stairs/elevators (Pr.=0.752). In sum, the analysis outcomes for the overall assessment of 13 components indicate that weights vary across the components, implying that the success of apartment sales may depend on the components emphasized by the apartment provider.

5. CS Experts' Perception of the Importance of Apartment Components

This section focuses on the results for CS experts' evaluation of the relative importance of apartment components. CS experts play a key role in apartment design and decision-making processes regarding the specialization of specific components. For CS experts, we designed a questionnaire similar to that for buyers. The respondents were asked to respond to each item on a nine-point scale ranging from lowest (1) to highest (9). We distributed the questionnaire to 95 CS experts and obtained a total of 85 responses (a response rate of 89.47%), but only 34 satisfied the requirements for the analysis. For the analysis, we employed the analytic hierarchy process (AHP), which is widely used for this type of analysis.

Overall, the inconsistency index was 0.048 that satisfies the requirement (< 0.1) and thus allows for interpretations. According to the three types of components comparison, the respondents valued individual units the most (0.587), followed by shared facilities (0.219) and support facilities (0.194). These results are inconsistent with those for buyers and imply that providers' perception of components differed from that of buyers. This also implies that housing providers failed to appropriately address changes in consumers' needs during this period. That is, housing providers focused on individual units in the planning and construction of apartment complexes, whereas buyers are more interested in matters other than individual unit components.

In terms of the components of individual units, the respondents emphasized the kitchen (0.263) the most, followed by the living room (0.262), the bedroom (0.166), the bathroom (0.152), the indoor porch (0.066), other unit features (0.048), and the balcony (0.043), in that order. In terms of the components of shared facilities, the respondents emphasized the building entrance (0.619) the most, followed by stairs/elevators (0.381). This can be explained by recent trends in construction practices for high-rise apartment buildings and the increased elevator speed. The primary purpose of an elevator is to reduce waiting times for residents, and thus, they may consider the elevator's speed to be more important than the quality of its finishing materials. Instead, residents may be more interested in having distinctive features and esthetic elements for the building entrance, which can be realized through the use of high-quality materials and diverse colors.

In terms of the components of support facilities, respondents emphasized landscape features (0.375) the most, followed by the outdoor environment (0.333), other support features (0.153), and underground parking (0.139). Overall, the relative weight for 13 components are: kitchen (0.167), living room (0.165), building entrance (0.111), bedroom (0.107), bathroom (0.095), stairs/elevator (0.075), landscape features (0.066), outdoor environment (0.061), indoor porch (0.041), other support features (0.031), other unit features (0.030), balcony (0.027), and underground parking (0.024), in that order.

6. Perceptual Differences Between CS Experts and Buyers and Suggestions for Improving Apartment Components

6.1 Results for Perceptual Differences

This section compares CS experts and buyers in terms of their perception of the importance of the 13 apartment components based on the results discussed in previous sections. According to the result, there were some differences in their perceptions. Shared facilities showed a small difference (CS specialists; 21.9 vs. buyers; 25.33), whereas individual units (CS specialists; 58.7 vs. buyers; 36.82) and support facilities (CS specialists; 19.4 vs. buyers; 37.85) showed significant differences.

These results are consistent with those of a survey conducted by a city government in 2011. The city collected 200 responses from six apartment complexes and found that, in terms of outdoor environments, the residents emphasized the parking area the most (37%), followed by service/exercise facilities (23%) and building layouts (13%). On the other hand, they ranked environment-friendly elements/green construction (38%) first in terms of planning new apartments. This suggests that apartment providers should pay more attention to these elements to increase the level of CS.

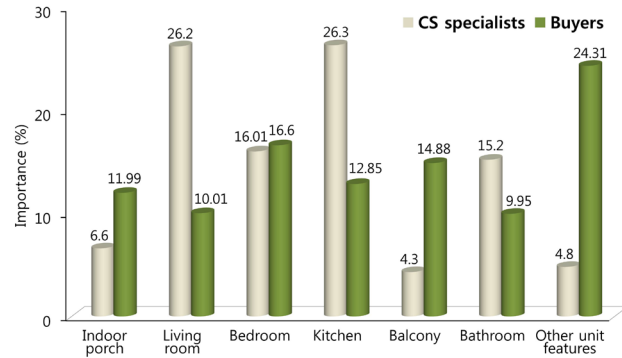


Fig. 1. Perceptual Differences for the Individual Unit

In terms of components of individual units, CS experts emphasized the kitchen (26.3%) the most, whereas buyers emphasized other unit features (24.31%). Fig. 1. shows the results.

Except in the case of the bedroom, there were significant differences in perceptions. In particular, CS experts emphasized the living room, the kitchen, and the bathroom, whereas buyers emphasized the balcony, other unit features, and the indoor porch. This implies that CS experts expected buyers to emphasize frequently used and highly visible components. Such expectations might have been reflected in their planning/design process and thus the quality of various components. On the other hand, buyers emphasized other unit specific features. In addition, they also emphasized the balcony, which can be merged with other unit components such as the bedroom or the living room. Expanding the bedroom or the living room by extending it to include the balcony provides more space. It turned out that residents tend to prefer the integration of balcony with other spaces (Seong and Kim 2011). In general, buyers' evaluation (except for other unit features) ranged from 9.95 to 16.01, whereas CS experts' evaluation varied widely across components.

In terms of shared facilities, both CS experts and buyers emphasized the building entrance the most but were least likely to emphasize stairs/elevators. In terms of support facilities, CS experts emphasized landscaped features (37.5%) and the outdoor environment (33.3%), whereas buyers emphasized underground parking (29.83%) and other support features (20.33%). This may be due to the aggressive adoption of differentiation strategies for the construction of environment-friendly communities through the maximization of landscaped areas, the strict regulation of the surface parking area, and the consolidation of underground parking for several apartment buildings. In addition, the results for CS experts are consistent with housing providers' tendency to focus on exercise facilities/equipment to upgrade the image of apartment complexes.

Fig.2. compares CS experts and buyers in terms of their perception of the importance of the 13 components. Buyers emphasized the outdoor environment the most (11.12%), whereas CS experts considered the kitchen to be the most important component (16.7%). Buyers might have valued the outdoor environment because of the coordinated organization of the apartment complex and thus its external appearance received considerable attention from potential buyers during the study period. This suggests that buyers view such components as essential features for a better residential environment and thus that these components have considerable influence on the price of apartment units. The results for CS experts indicate that they emphasized distinctive kitchens by providing diverse functions and high-quality finishing materials.

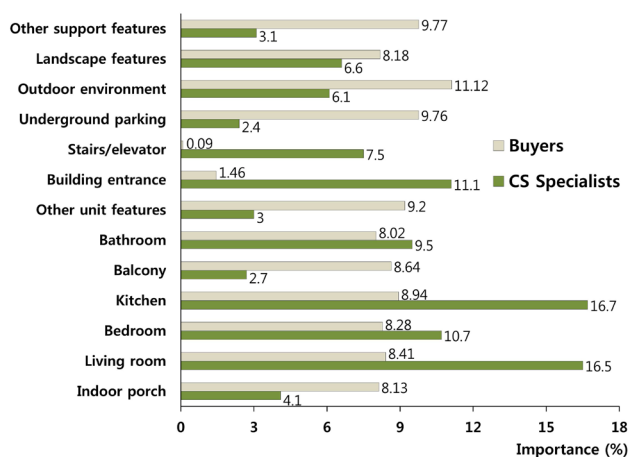


Fig.2. Overall Perceptual Differences for 13 Components

It is important to understand the differences between CS experts and buyers in terms of their perceptions, particularly for those components that were highly valued by buyers but received little attention from CS experts (e.g., the outdoor environment, underground parking, other support features, and landscape features).

In general, the outdoor environment is organized based on the layout of apartment buildings and the way the space is used for various support facilities. Thus, the outdoor environment is typically composed of a number of elements and can reflect numerous configurations depending on the way such criteria are combined. In this regard, the perceptual differences may be due to stronger laws regarding environment-friendly apartment complexes and the introduction of grade-based evaluation systems for residential units. This may explain the dramatic transition observed around the analysis period. Such laws and evaluation systems have emphasized the planning, ecological worth, and creation of optimal residential environments, and ecological environments have become critical elements in assessing the grade and

quality of apartment complexes. Before these laws and systems, such elements received little attention from both buyers and housing providers. Accordingly, buyers' interest in the outdoor environment and landscape features (which reflect a major part of the outdoor environment) is likely to increase in the future. This suggests that housing providers should make more efforts to reduce the perceptual gap between themselves and buyers and enhance CS by addressing their needs more aggressively.

6.2 Hypothesis Testing

We tested the hypotheses based on the results. The results provide partial support for *H1*, that is, the level of finishing quality generally had a positive relationship with CS for all apartment components except for the building entrance and the balcony.

We tested *H2* as follows: Although a normal distribution can be assumed for two groups based on their sizes, it is not possible to compute a common ratio because different measurement scales are applied to each group. This restriction leads to the use of confidence intervals. We tested *H2* by comparing the ratios between CS experts and buyers. Specifically, we estimated the ratio for each group and calculated the difference between the two groups. We then determined whether the difference fell within the confidence interval. For instance, if the difference was not included in the confidence interval, then we assumed a significant difference between the two groups. We first estimated the standard error (*Z*) that is used in the estimation of confidence interval. The equation for estimating stand error is as follows:

$$Z = \frac{\hat{p}_1 - \hat{p}_2 - (p_1 - p_2)}{\sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2}}} \quad \dots\dots\dots \text{Eq. (2)}$$

where \hat{p}_1 , \hat{p}_2 , n_1 , and n_2 indicate the ratio for buyers, the ratio of CS experts, the buyer sample, and the CS expert sample, respectively.

On the other hand, we estimated the confidence interval as follows:

$$(\hat{p}_1 - \hat{p}_2) \pm z_{\alpha/2} \times \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}} \quad \dots\dots \text{Eq. (3)}$$

H2 predicted that there would be no difference in perceptions between buyers and CS experts. The results indicate no differences for indoor porch, living room, bedroom, kitchen, bathroom, building entrance, stairs/elevator, outdoor environment, and landscaped feature. However, they indicate significant differences for the balcony, other unit features, underground parking, and other support features. Thus, these results provide partial support for *H2*. In addition, buyers and CS experts showed substantial differences in terms of their ranking of the 13 components. Buyers considered the outdoor environment to be the most important,

followed by other support features, underground parking, other unit features, kitchen, balcony, living room, bedroom, landscape features, indoor porch, bathroom, building entrance, and stairs/elevator, in that order. However, CS experts emphasized the kitchen the most, followed by living room, building entrance, bedroom, bathroom, stairs/elevator, landscape features, outdoor environment, indoor porch, other support features, other unit features, balcony, and underground parking.

6.3 Discussions

The results have important implications for reducing the perceptual gap between housing providers and buyers. Housing providers should make efforts to reduce this gap and thus improve CS by developing and implementing effective action plans. First, from a strategic perspective, housing providers should formulate systematic CS management systems that can effectively address various needs of consumers. Specifically, housing providers should conduct in-depth analyses by considering a full range of customer segments, including potential buyers of apartment units. Then they should develop new products that closely reflect the specific needs of their customers. In addition, in designing apartment units and planning layouts of apartment complexes, housing providers should focus on offering composite products that are not only functional but also address convenience and aesthetics.

The existing apartment-planning process tends to focus on pre-contract stages to increase sales and to minimize complaints. Housing providers typically respond passively to buyers' requests for upgrading the level of finishing quality for limited parts of components after the signing of contracts. Thus, this process, which is led by providers, can be reformed through various considerations. Specifically, housing providers should develop an accurate understanding of the needs of their customers by segmenting such needs and responding in a timely manner according to geographic locations, demographic characteristics, and other factors. As is evidenced by the outcome of location effect analysis, there might be other factors that can have significant influence on CS. In addition, they should provide customers with a wide range of options subject to an additional charge to increase the level of CS.

In addition, housing providers can secure new sources of competitive advantage in the residential housing market by developing and implementing differentiation strategies, which can include the application of information technology/state-of-the-art construction technologies, the pursuit of diversity in planning, and the active adaptation of various features that are environmentally friendly and related to well-being, among others.

Second, the results suggest that housing providers should reduce the perceptual gap between themselves

and their customers in terms of their perception of the relative importance of apartment components by engaging in an in-depth examination on the causes of such perceptual gap. In particular, in selecting areas for further improvement, they should prioritize those components that are valued more by buyers than by providers.

7. Conclusions

The key findings are summarized as follows: Overall, CS experts focused on components of individual units (e.g., the kitchen, the living room, the bedroom, and the bathroom). By contrast, buyers emphasized underground parking, the outdoor environment, landscape features, other support features, the balcony, other unit specific features, and the indoor porch. In addition to these differences, CS experts and buyers showed some significant differences in their ranking of the 13 components.

Among CS experts, the kitchen ranked first, whereas underground parking ranked last, and among buyers, the outdoor environment ranked first, whereas stairs/elevators ranked last. In terms of location effects, given the same level of finishing quality, the level of CS was higher for the provinces than for the Seoul metropolitan area for individual units and other support facilities. This suggests that housing providers should vary their supply strategies according to market characteristics and environments.

In conclusion, housing providers should clearly recognize their customers' needs by segmenting those needs and addressing them in a timely manner because their customers' preferences continue to change. In addition, housing providers should reduce the perceptual gap between themselves and their customers. In particular, they should focus on improving those components showing large supplier-buyer gaps.

The limitations of the current study are three-fold. First, the surveys for CS experts are implemented for the top 10 firms, implying that the sample of the current study may not represent the overall population of housing providers. Second, classifying an apartment complex into 13 elements precludes further analysis at the more detailed level. Third, the questionnaire survey for apartment residents is confined to a large apartment complex. The medium and small-sized apartment residents may show different responses compared to those of residents in a large apartment complex. The above research limitations should be addressed in the following researches in order to promote effective apartment supply by housing providers, as well as to improve residents' satisfaction level.

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