

CUSTOMER SATISFACTION IN THE MANAGEMENT OF PUBLIC OFFICE BUILDINGS: EVIDENCE FROM MALAYSIA

Abstracts:

This paper presents findings on critical success factors (CSFs) and key performance indicators (KPIs) from the customer perspective in the management of public office buildings. The study applies the five dimensions under the Service Quality (SERVQUAL) model as the CSFs in achieving the property management strategy and property objectives of public organisations. The dimensions of tangibility, reliability, responsiveness, assurance, and empathy form the basis for the identification of KPIs.

The study focuses on in-house property management teams that managed their public office buildings as operational properties in the study area of Kuala Lumpur. The research employs multi cases study approach and applies personally administrated questionnaire surveys as data collection instrument. Descriptive statistics are employed to retrieve the inclination of the respondents to the subjected answers in the survey questionnaires and factor analysis technique is used to investigate the cluster of multivariate relationships that existed between KPIs in property management. The findings show that the staffs of the selected office buildings consider seven CSFs and 23 KPIs.

Key words: Property Management, Office Buildings, Performance Measurement, Service Quality (SERVQUAL) model, Critical Success Factors (CSFs), Key Performance Indicators (KPIs), Customer satisfaction.

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1.0 Introduction: Office Property Market in Malaysia

The office property market in Malaysia experienced tremendous expansion in the last decade in tandem with the overall performance of property market and country's economy. The number of purposed-built office buildings that entered the market grew by three folds from 694 units (1990) to 1,929 units (2002). The amount of office space that entered the market was hovering between 3.1 per cent and 3.8 per cent per annum since 1999 except in 2000, which was a 19.8 per cent increase. The existing supply of office space grew to 14.00 million square metres in the first half-year of 2005, as compared to 4.15 million square metres in 1990 and 7.59 million square metres prior to the 1997 financial crisis. More than 2.24 million square metres of office space would be entering the market in the next three years, as the space in the incoming supply completed construction (VPSD, 1991 & 1998, and NAPIC, 2003). This means that the office property market is anticipating a 16.0 percent growth during the period, thereby creating an enormous amount of office space with tremendous amount of asset value in the property market. In 2004, capital investment in the form of bank loans to the broad property sector including construction by commercial banks and finance companies stood at RM192.82 billion as compared to RM32.6 billion in 1990 (Bank Negara, 1991 and 2005).

Practitioners and academicians have long emphasised on the importance of effective and efficient management of property. Marbeck (1988); Gurjit Singh (1992 and 1996) and Sahari Mahadi (1998 and 1999) have called for the needs to manage public property more professionally. These properties are under managed, predominantly from the maintenance aspects. Therefore, suggests that the current emphasis of performance measurement in property management sector is a significant area that both the property academicians and practitioners need to examine. Most importantly, performance measurement has to focus towards effective and efficient delivery of property management services to meet the customers' satisfaction.

In view of this, there is a need for effective property management of public office buildings particularly from customers' perspective. The paper will present some of the findings from a study on performance measurement in the management of public office buildings in Malaysia. The purpose of the study is to identify critical success factors (CSFs) and key performance indicators (KPIs) as performance management tool for effective and efficient delivery of public property management services. This paper however, discusses findings from the customers' perspective, which specifically focused from the internal users' view point.

2.0 Strategy for Customer Satisfaction

The strategy for customer satisfaction is to provide excellent customer service to building users in the management of public office buildings. The performance measurement of property management seeks to provide answers to the given question of "How do the users of public office buildings assess the service delivery of the management team?" Hence, the performance measurement framework underscores three key issues in public property management i.e. the ability of property management team to provide quality services, effectiveness of their delivery, and overall customer service and satisfaction.

3.0 Critical Success Factors (CSFs)

CSFs are the performance criteria in performance measurement framework, which in this case focus towards customer expectation. The five dimensions of tangibles, reliability, responsiveness, assurance and empathy under SERVQUAL (Parasuraman, *et. al.*, 1985, 1988 and 1991), are considered as the CSFs from customer perspective in this study. Waterhouse *et. al.* (1999) use these dimensions as the basis of the provider (employees of organisations) and client questionnaires in their study on surveying firms. Murugavarotheyan and Coffey (2000) identify the dimensions as evaluation criteria in their study on performance indicators of professional services and Sharifuddin Zainuddin (1999) employs them in assessing service quality delivery in the public sector organisations.

This study adopts the five dimensions of tangibles, reliability, responsiveness, assurance, and empathy as the CSFs in achieving the property objectives and property management strategy of public organisations. The dimensions link specific service characteristics to the quality expectations among the users of public office buildings. If the expectation is not achieved, there would result to a decrease in customer satisfaction among these users. Table 1 below describes the CSFs together with their KPIs from the customers' perspective in this study.

4.0 Key Performance Indicators (KPIs)

Customers evaluate service on the outcome of a service together with the process of service delivery as part of customer satisfaction elements (Zeithaml *et. al.*, 1990). In this study, the KPIs for each of CSFs (as showed in Table 1 below) were identified through extensive literature reviews from various studies in both property and facilities management fields. They were based on the studies by Gupta (1995), Hinks and McNay (1999, p.47-50), Gibson and Hedley (1999, p.10), Amaratunga and Baldry (1999, p.51-52), Amaratunga *et. al.* (2000, p.67), Amaratunga (2000b, p.34), McColl-Kennedy and Schneider (2000, p. S891), and Murugavarotheyan and Coffey (2000). The indicators are process-related and outcome (or end-user satisfaction) dimensions. Most of these indicators are subjective.

5.0 Research Objective

The purpose of the study is to identify the CSFs and KPIs as the performance management tool for effective and efficient public property management to meet customers' expectation and satisfaction. The main research question of this study is "What are the CSFs and KPIs when assessing the property management service delivery of the management team from the users' perspective?" The customers for this study are the internal and external users of the buildings. However, this paper focuses on the internal users only.

Table 1: CSFs and KPIs from Customer Perspective

Critical Success Factors	Description	Key Performance Indicators
Tangibles	The physical facilities, equipment, and appearance of the office buildings, which is managed by property management unit/department to provide property management service to the buildings users.	<ul style="list-style-type: none"> ▪ Locations of office buildings in relation to their users. ▪ General environmental of the office buildings ▪ Condition of buildings and their services ▪ General facilities of the buildings ▪ Physical flexibility of space ▪ Suitability of the working environment ▪ Space utilisations ▪ Efficiency of space ▪ Equipment provided meets organisation functions
Reliability	The ability of property management team to perform the promised service dependably and accurately for the building users. This includes continuity of services provided.	<ul style="list-style-type: none"> ▪ Range of services offered, ▪ The cleanliness status of site, interior and exterior and fittings ▪ Safety and security service ▪ Frequency of building failures, ▪ Frequency of customer complaints ▪ Maintenance services ▪ Completeness of services ▪ Correction of faults to building's equipment
Responsiveness	The willingness of property management team to help customers, both internal and external buildings users and provides prompt service to them.	<ul style="list-style-type: none"> ▪ On-time delivery, ▪ Speed ▪ Timeliness of service ▪ Communications with affected parties ▪ Helpdesk call respond times ▪ Helpdesk target completion dates achieved
Assurance	Knowledge and courtesy of property management team and their ability to convey trust and confidence to internal and external buildings users.	<ul style="list-style-type: none"> ▪ Service quality provided by property management team ▪ Dependable, ▪ Functional suitability, ▪ Functional flexibility on space designed and used ▪ Process effectiveness ▪ Competence of property management team
Empathy	Caring and individualised attention provided by property management team to their customers, both internal and external buildings users	<ul style="list-style-type: none"> ▪ Understanding of customers ▪ Occupants' and visitors' satisfaction ▪ Satisfactory physical working conditions ▪ Quality of space and environment ▪ Professional approach of property management team

(Source: Adapted from Gupta, 1995, Hinks and McNay, 1999, p.47-50, Gibson and Hedley, 1999, p.10, Amaratunga and Baldry, 1999, p.51-52, Amaratunga et. al. 2000, p.67, Amaratunga, 2000b, p.34, McColl-Kennedy and Schneider, 2000, p. S891, Murugavarotheyan and Coffey 2000 and Author analysis, 2001

6.0 Research Methodology

The study employed multi-cases as a case study approach. This approach is suitable for a research area where knowledge building is in its formative stage with few prior studies to build on (Yin, 1994). Previous researchers such as Amaratunga (2000a and 2001b), Amaratunga and Baldry (1998 and 1999), and Gibson and Hedley (1999) used this approach to develop their performance measurement systems in facilities and property management.

Three public office buildings in Kuala Lumpur were identified and used as case studies. The buildings were labelled as CS1, CS2 and CS3. The focus was to assess the performance of the in-house property management teams in delivering their property management services to the internal users. The teams were the property management service providers in the case studies and the internal users were the customers of the buildings.

6.1 Data Collection

Dixon *et. al.* (1987) highlighted the need to determine an appropriate method of collecting information. This research employed personally administrated questionnaire surveys. The main objective of the survey was to explore the present state of performance measurement for property management of public office buildings, and what could be done to improve the practices. The purpose of the questionnaire survey was specifically, to identify the KPIs from the customers' perspective. The five dimensions of the SERVQUAL model of tangibles, reliability, responsiveness, assurance, and empathy formed the basis for CSFs within this perspective

The respondents for the questionnaire survey were the internal users, which were the staff of the public organisations that occupied the subject buildings to perform their public responsibilities. This study viewed employee participation as one of its dimension in performance measurement. The EFQM Business Excellence model in the public sector considered employee participation as one of the core values of the organisation (the UK Cabinet Office, 1999). The level of staff satisfaction is a key

indicator for the success of the overall improvement programme and, consequently, of the future organisational performance.

Prior to performing field surveys on the internal users, semi-structured interview surveys were carried out with the senior management of the identified office buildings. The main concern of the interviews was to prioritise the CSFs in property management service delivery.

6.2 Questionnaire Design

The survey questionnaire contained three types of questions of closed-ended questions with unique answers; closed-ended questions with scale answers; and open-ended questions of a textual type. Hence, the choices of possible answers to questions were both qualitative and quantitative data. The survey questionnaire was divided into three sections. Section A was aimed to gather background information of the respondents and the organisation. Section B was to collect data to identify the CSFs and KPIs, which contained a series of questions to capture the ability of the organisation to provide quality services, the effectiveness of their delivery, and overall customer service and satisfaction. Finally, Section C was to collect information related to other issues on property management particularly pertaining to performance measurement. This section comprised a series of questions that analyse the degree of knowledge, interest and enthusiasm that the customers had for property management functions in the management of public office buildings, which included the customer perceptions of the standards of office accommodation. The survey questionnaires had to be translated into Bahasa Melayu before they were distributed to the prospective respondents. This was because of the limitation on the command and understanding of the English language among the respondents. Table 2 shows the respondents for the survey questionnaires in the case studies.

Table 2: The Respondent Rates for the Survey Questionnaires

Case Study	Population	Sample size	Returned forms	Response rates as per sample (%)	Response rates as per population (%)
CS 1	626	150	84	56.0	13.4
CS 2	350	100	42	42.0	12.0
CS 3	700	200	106	53.0	15.1

(Source: Author analysis, 2002, and 2003)

6.3 Pilot Test

Oppenheim (1992) highlights the importance of pilot test in a research. It is the whole process of designing and testing questions and procedures. Prior to the actual interview and survey works, a pilot test of the survey schedules was performed in one of the public organisations in Kuala Lumpur. The respondents were the staff of the said organisation and they were identifying the KPIs of the property management service delivery of the in-house property management team. As a result of the pilot test, it was discovered that very minimum explanation of terms and clarification of the objectives of these questions were needed.

6.4 Data Analysis:

Descriptive statistics were employed to retrieve the inclination of the respondents to the subjected answers in the survey questionnaires. Factor analysis technique was used to investigate the cluster of multivariate relationships that existed between KPIs in property management.

The survey questionnaire listed 31 questions of which 23 of them provided opinions on the indicators for effective property management on a five-point Likert-type scale. This research used factor analysis to analyse the scale measure for these questions to determine the strength of relationship among the variables based on anti-image correlation. Most of the findings discussed in the following paragraphs were deduced from factor analysis using descriptive correlation matrix, Kaiser-Meyer-Olkin (KMO), and Bartlett's Test of Sphericity. The factor analysis using extraction was used to analyse correlation matrix and extract Eigenvalues more than one (1) for factor reduction, and rotation using orthogonal Varimax rotation method to group the variables within the reduced factors. On the other hand, descriptive statistics are used to analyse the other set of questions that applied nominal measures. Most of the analysis using descriptive statistics concentrated on frequencies tables for percentage score of the variables, the number of respondents (*N values*), the means, and the ranges. The variables in the internal users' questionnaire, their code for, and mode of analysis of this research are as follows:

Table 3: The Variables in the Internal Users Questionnaire, their Code, and Mode of Analysis

No.	Variables/Indicators	Code for analysis	Mode of analysis
<i>Background</i>			
1	The building management of the subject property	B_MANAGE	Descriptive
<i>Tangible: Physical facilities, equipment and appearance of the building</i>			
2	The location of the office building in relation to residence	LOCATION	Descriptive
3	The general environment of the office building	GEN_ENVI	Descriptive
4	The condition of the office building and its services	B_CONDIT	Reliability analysis
5	The suitability of the office for working environment	W_ENVIRO	Factor analysis
6	Facilities and services of the building		
	The lift facility of the building	F_FACILI	
	The parking facility	PARKING	
	The wash area facility	WASH_ARE	
	The water supply of the building	WATER_SP	
	The power supply	POWER_SP	
	The internet line service	INTERNET	
	The telephone service	T_PHONE	
<i>Reliability: the ability of the property management team to perform the promised service dependably & accurately</i>			
7	The cleanliness status of the building site	CLE_SITE	Descriptive
8	The cleanliness status of the interior and exterior of the office building	CLE_INTE	Reliability
9	The safety service of the building	SAFETY_S	Factor analysis
10	The maintenance service of the building	MAINTEN	
11	Experience of building failures per year		Descriptive
	Number of lift failure	N_LIFT_Y	
	Number of water supply failure	N_WATERY	
	Number of power supply failure	N-POWERY	
	Number of internet line failure	N-NET_Y	
12	Number of complaints on building failure to property unit annually		
	Lifts	NC_LIFTY	
	Security services	NCSECURY	
	Cleaning services	NCCLEANY	
	Internet services	NC_NETY	
	Power supply	NCPOWERY	
	Water supply	NCWATERY	
<i>Responsiveness: the willingness of the property management team to help building users</i>			
13	On time delivery of services	ON_TIME	Descriptive
14	Speed property services	SPEED_SE	Reliability
15	Timeliness property services	TIMELINE	Factor analysis
16	Communicate directly with property management team pertaining to property service problems	COMM_DI	Descriptive
<i>Assurance: the knowledge and courtesy of the property management team and their ability</i>			
17	Ranking of the service quality of the building	SERVICE_Q	Descriptive Reliability
18	Dependable service quality	EXPECT_Q	Factor analysis
19	Competency in delivering their services	COMPETE	
<i>Empathy: the caring attitude of the property management team</i>			
20	The management of the building understand the users' needs	UNDER_US	Descriptive
21	Satisfy with the building services of the building	SATIS_SE	Reliability
22	Satisfy with the office space and physical working environment	SATIS_SP	Factor analysis
23	The professional approach of property management team	PRO_APP	

(Source: Author analysis, 2002)

6.5 Results

The 23 questions in the questionnaire were subjected to factor analysis for descriptive correlation matrix including KMO, Bartlett's Test of Sphericity, Anti-Image Correlation, and Measure of Sampling Adequacy (MSA). In addition, data from the surveys were analysed using factor analysis with principle component and Varimax rotation method for factor extraction. The KMO is the value on the strength of the relationships among the variables based on anti-image correlation, while the Bartlett's Test of Sphericity is a statistical test for the presence of correlations among the variables (Hair *et. al.*, 1998, p.88). Table 4 shows the values of KMO and Bartlett's Test of Sphericity for the case studies based on anti-image correlation.

Table 4: The Values from Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity for the Case Studies from Internal Users Surveys

Results	CS1	CS2	CS3
Kaiser-Meyer-Olkin (KMO)	0.793	0.622	0.834
Bartlett's Test of Sphericity	1083.843	643.667	1437.156
Degree of Freedom	253	253	276
Significance level (p)	0.000	0.000	0.000

(Source: Author analysis, 2003)

The value from the Bartlett's Test of Sphericity has to be large and the associated significance level is small ($p = 0.0000$) so that the population correlation matrix is not an identity matrix and no need to eliminate any variable for principle components analysis (Akintoye, 1998). Consequently, the value of the KMO statistics has to be large for factor analysis. In the case studies, the values from the Bartlett's Test of Sphericity were from 0.622 to 0.834. These values were large and the associated significance levels were small ($p = 0.0000$). Similarly, the values of the KMO statistics i.e. from 0.622 to 0.834 were satisfactory for further factor analysis. Subsequent data analysis computed the values of MSA for each of the variables ranged from 0.610 to 0.872 for CS1, 0.519 to 0.758 for CS2, and 0.648 to 0.907 for CS3. The values of MSA for either the entire matrix or an individual variable indicate appropriateness (Hair *et. al.* 1998, p.89). This implied that the MSA values for individual variable in the case studies were reasonably high for good factor analysis and suggested that there were no need to eliminate any variable from analysis. Table 5 in Appendix A illustrates the value

of MSA of individual variables from the users' survey for all the case studies. In the later analysis, these variables represented the KPIs from the customers' perspective.

6.5.1 Critical Success Factors (CSFs)

Data from the surveys was analysed using factor analysis with principle component and Varimax Rotation method. The principle component analysis for CS1 and CS2 produced seven factors solution at 73.5 and 77.9 percent variance respectively, while CS3 produced five factors solution at 64.105 percents variance. Orthogonal factor rotation of principal component analysis was used to interpret these factors. (Orthogonal is mathematical independence – no correlation of factor axes to each other. Factor rotation is where the factors are extracted so that their axes are maintained at 90 degrees. Each factor is independent of, or orthogonal to, all other factors (refer to Hair *et. al.*, 1998, p.87 - 138).) An un-rotated component matrix using principal component analysis indicated only the relationship between individual factors and the variables. In this case, it was difficult to interpret the pattern. Hence, this analysis used Varimax rotation method (which is one of the most common orthogonal factor rotation methods, Hair *et. al.*, 1998, p.90) to transform the factor matrix produced from un-rotated component matrix into one, which was easier to interpret. The factor groupings based on Varimax Rotation method for each of the case studies are shown in Table 6 to Table 8 in Appendix B, Appendix C and Appendix D respectively.

Each of the variables was weighted heavily on to only one of the factors and the loading on each factor exceeded 0.5 except for two variables. These variables were 'F-LIFT' (lift facility) in CS1, and 'SAFETY_S' (safety service) in CS2. Although the values were less than 0.5, these variables were maintained within the extracted factors because they were recognised in the other case studies. Apart from this, they were identified in the literature as KPIs in the effective property management. (Note: Duckworth (1993, p.501) considers service and operational performance as condition for customer satisfaction, while Belcher (1997) identifies safety as working environment support systems for performance indicators for higher education property.) On contrary, the value for variable 'W_ENVIRO' (the suitability of the office for working environment) in

CS2 was low to be included in any of the seven factors. Thus, the variable was excluded from factor analysis, as its value was inappropriate for further analysis.

Therefore, this study reduced the variables used in the analysis between five and seven factors named as Factor 1 to Factor 7. These factors represented the CSFs in the management of public office buildings as shown in Table 9. The Eigenvalue in the analysis represents the amount of variance accounted for by a factor (Hair *et. al.*, 1998, p.89).

Table 9: The CSFs from the Customers' Surveys

Critical Success Factor (CSFs)	Case Study 1	Case Study 2	Case Study 3
1	The knowledge and caring attitude of the property management team	The willingness and competence of the property management team	The dependable service quality and the ability and professional approach of the property management team
2	The ability of the property management team to perform	General environment, physical quality and condition of the building	The general facilities and services of the building
3	The general facilities of the office building	The ability and professional approach of the property management team	The knowledge and willingness of the property management team
4	The willingness of the property management team	Lift and parking facilities and service quality of the building	Physical appearance and suitability of the building
5	Parking facility and internet lines	Safety service of the building	The caring attitude of the property management team
6	The general environment of the building and its condition and services	Physical working environment and dependable service quality of the team	
7	Suitability of the subject building for working environment	The wash area facilities	

(Source: Author analysis, 2003)

6.5.2 Key Performance Indicators (KPIs)

This research defined KPIs as the criterion underlying successful property management functions and considered the identification of KPIs as corresponded to the classification of CSFs attributes. From the factor analysis, CS1 and CS2 grouped the

indicators into seven factors, while the CS3 categorised five factors as shown in Table 10, Table 11 and Table 12 in Appendix E, Appendix F and Appendix G respectively.

Among these indicators, CS1 and CS2 identified three KPIs such as “satisfy with the building services of the building”, “the property management team as competence in delivering their service”, and “the management of the building understand the users’ needs” as Factor 1. Apart from this, CS1 and CS3 recognised two KPIs such as “dependable service quality” and “the professional approach of the team”. Further, the case studies identified the other eight KPIs individually. CS1 named “service quality of the building”, while CS2 noted three KPIs of “timeliness property service”, “speed property service” and “on time delivery of the service” into this category. CS3 regarded four KPIs of “cleanliness of the building site”, “cleanliness of the interior and exterior of the building”, “safety service”, and “maintenance service”.

For the second factor, CS2 and CS3 considered two KPIs of “the power supply” and “the water supply”. The case studies considered the other 11 KPIs separately. CS1 identified four KPIs such as “the cleanliness of the building’s site”, “the cleanliness of the interior and exterior of the building”, “the safety”, and “maintenance services of the building”. Further, CS2 noted “the general environment of the building”, and “the condition of the building and its services” into this category, while CS3 names the general facilities of “the lift”, “parking”, “wash area”, “internet lines”, and “telephone lines”.

In view of the third CSF, CS2 and CS3 labelled “internet services”. The case studies identified the other 13 KPIs separately. CS1 grouped four KPIs i.e. “lift facilities”, “wash area”, “water supply” and “power supply” into this category. CS2 noted four KPIs such as “the professional approach of the team”, “cleanliness of the building site”, “cleanliness of the interior and exterior of the building” and “maintenance service of the building”. CS3 forwarded five KPIs of “telephone services”, “speed property service”, “timeliness property service”, “on time delivery of service”, and “the team competence in delivering their service”

CS2 and CS3 identified “service quality of the building” as the fourth CSF. Further, the case studies name the other eight KPIs separately. The indicators were made up of “on time delivery of the service”, “speed property service”, “timeliness property service”, “general environment of the office building”, “condition of the building”, “suitability of the office for working environment”, and “general facilities of lift and parking”.

The case studies categorised six KPIs separately as the fifth CSF. They were “the management of the building understand the users’ needs”, “satisfy with the building services of the building”, “satisfy with the office space and physical working environment”, “safety service”, “internet line”, and “the parking facilities”.

Finally, CS1 and CS2 identified separately four and two KPIs for the sixth and seventh CSFs respectively. The sixth factor comprised “general environment of the office building”, “general condition of the building and its services”, “satisfy with the physical working environment”, and “dependable service”. The seventh factor consisted of “suitability of the building for working environment”, and “wash area facilities”

7.0 Findings

In determining the CSFs of effective and efficient delivery of property management services, the senior management of the case studies placed different priority on the five dimensions of “tangibles”, “reliability”, “responsiveness”, “assurance”, and “empathy”. CS2 prioritises the importance of the five dimensions but CS1 and CS3 ignored the significance of “empathy” as a critical factor. CS3 disregarded the factors of “courtesy” and “ability of the team to perform their services” under “assurance” factor, but accepted another factor of “the knowledge of the team” as a critical factor for effective property management.

From the customers’ perspective, through cross-cases analysis, the findings showed that they identified seven factors as CSFs, which comprised of:

CSF 1	The knowledge, and caring attitude of the team
CSF 2	The ability of the team to provide cleaning and maintenance services, and power and water supplies of the building
CSF 3	The lift and communication facilities of the building, and the willingness of the team to help users
CSF 4	Service quality of the building
CSF 5	Safety services and parking facilities of the building
CSF 6	General environment of the office building and the condition of the building and its services
CSF 7	The suitability of the building for working environment and its wash area facilities

From these CSFs, the customers identified 24 KPIs. CSF 1 comprised six KPIs related to the knowledge and caring attitudes of the property management team. CSF 2 consisted of five KPIs pertaining to the abilities of the team to perform property management services and the main utility services of power and water supply of the building. CSF 3 comprised six KPIs where the internet line services were identified by CS2 and CS3 and the others were determined individually by any one of the case studies. The KPIs were related to lift facilities and willingness of the team to respond to the needs of the building users. For CSF 4, the service quality formed its KPI. In the remaining CSF 5, CSF 6, and CSF 7, the KPIs were identified individually by the case studies. Each of these factors had two KPIs. CSF 5 had “safety service and parking facilities of the building” as KPIs. CSF 6 had “general environment of the building together with its condition” and CSF 7 had “suitability of the building as working environment” and “wash area facilities as their KPIs. These CSFs and KPIs are presented in Table 13 of Appendix H.

8.0 Conclusions and Recommendations

In the customer perspective, the property management teams are the service provider of property management services. In delivering the property management services, the internal users, as the customers stressed upon the importance of property management team to be knowledgeable personnel and have caring attitude towards

their clients. This was evident from CSF 1 of the study i.e. “the knowledge, and caring attitude of the team” as well as the KPIs of “the property management team as competence in delivering their service”, “the management of the building understand the users’ needs”, “the professional approach of property management team”, and “dependable service”. In addition, CSF 2 and CSF 3 were divided between the ability of the team and the main utility services of the buildings. Thus, the findings indicate that the key areas in the effectiveness and efficiency of property management services delivery are the knowledge and ability of the property management team and the main utility services of the office buildings. The findings are aligned with the government’s effort to improve delivery system in the public sector to meet the customers’ needs. This, therefore suggests the needs to carry out similar internal users’ surveys in other public office buildings across the country. The purpose of the surveys is to add in the intensity of the CSFs and KPIs of property management services delivery.

Following this, any future work in the area should address further on the knowledge and ability of the property management team particularly in the public sector. The issue on who should manage office buildings has long been debated in the property industry. Perhaps the findings could instigate the needs for property management team to be property-based and professionally trained personnel.

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APPENDIX A

Table 5: The Value of Measure Sampling Adequacy (MSA) of Individual Variable from the Customer Surveys

No.	Variables/Indicators	Code for variables	Measurement of Sampling Adequacy (MSA)		
			CS1	CS2	CS3
1	The general environment of the office building	GEN_ENVI	0.610	0.545	0.828
2	The condition of the office building and its services	B_CONDIT	0.728	0.574	0.814
3	The suitability of the office for working environment	W_ENVIRO	0.716	0.519	0.821
	Facilities and services of the building				
4	The lift facility of the building	F_FACILI	0.825	0.563	0.754
5	The parking facility	PARKING	0.737	0.656	0.812
6	The wash area facility	WASH_ARE	0.844	0.520	0.833
7	The water supply of the building	WATER_SP	0.800	0.639	0.802
8	The power supply	POWER_SP	0.838	0.643	0.834
9	The internet line service	INTERNET	0.724	0.706	0.648
Add	The telephone service	T_PHONE			0.851
10	The cleanliness status of the building site	CLE_SITE	0.730	0.556	0.791
11	The cleanliness status of the interior and exterior of the office building	CLE_INTE	0.790	0.671	0.824
12	The safety service of the building	SAFETY_S	0.826	0.601	0.901
13	The maintenance service of the building	MAINTEN	0.854	0.637	0.907
14	On time delivery of services	ON_TIME	0.811	0.635	0.881
15	Speed property services	SPEED_SE	0.662	0.617	0.791
16	Timeliness property services	TIMELINE	0.669	0.618	0.792
17	The service quality of the building	SERVICE_Q	0.805	0.567	0.869
18	Dependable service quality	EXPECT_Q	0.872	0.646	0.867
19	The property management team as competence in delivering their service	COMPETE	0.855	0.648	0.846
20	The management of the building understand the users' needs	UNDER_US	0.844	0.725	0.855
21	Satisfy with the building services of the building	SATIS_SE	0.800	0.758	0.781
22	Satisfy with the office space and physical working environment	SATIS_SP	0.832	0.540	0.843
23	The professional approach of property management team	PRO_APP	0.797	0.555	0.874

(Source: Author analysis, 2002 and 2003)

APPENDIX B

Table 6: CS1 – Rotated Factor Matrix (Loading) for KPIs from the Customers' Perspective

Variables/Indicators	Code For Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Satisfy with the building services of the building	SATIS_SE	0.873						
Competency in delivering their service	COMPETE	0.781						
The management of the building understand the users' needs	UNDER_US	0.765						
Dependable service quality	EXPECT_Q	0.691						
Ranking of the service quality of the building	SERVICE_Q	0.624						
The professional approach of property management team	PRO_APP	0.590						
Satisfy with the office space and physical working environment	SATIS_SP	0.566						
The cleanliness status of the interior and exterior of the office building	CLE_INTE		0.829					
The cleanliness status of the building site	CLE_SITE		0.799					
The safety service of the building	SAFETY_S		0.791					
The maintenance service of the building	MAINTEN		0.762					
The wash area facility	WASH_ARE			0.813				
The power supply	POWER_SP			0.606				
The water supply of the building	WATER_SP			0.727				
The lift facility of the building	F_FACILI			0.496				
Speed property services	SPEED_SE				0.897			
Timeliness property services	TIMELINE				0.888			
On time delivery of services	ON_TIME				0.544			
The parking facility	PARKING					0.750		
The internet line service	INTERNET					0.678		
The condition of the office building and its services	B_CONDITION						0.815	
The general environment of the office building	GEN_ENVI						0.698	
The suitability of the office for working environment	W_ENVIRO							0.764
Eigenvalue		7.647	2.476	2.181	1.441	1.119	1.0791	0.960
Percentage of variance		33.765	10.765	9.483	6.264	4.865	4.693	4.176

(Source: Author analysis, 2002)

APPENDIX C

Table 7: CS2 – Rotated Factor Matrix (Loading) for KPIs from the Customers' Perspective

No.	Variables/Indicators	Code For Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
	Timeliness property services	TIMELINE	0.873						
	Competency in delivering their service	COMPETE	0.838						
	Speed property services	SPEED_SE	0.820						
	On time delivery of services	ON_TIME	0.750						
	Satisfy with the building services of the building	SATIS_SE	0.730						
	The management of the building understand the users' needs	UNDER_US	0.566						
	The power supply	POWER_SP		0.845					
	The general environment of the office building	GEN_ENVI		0.803					
	The water supply of the building	WATER_SP		0.796					
	The condition of the office building and its services	B_CONDITION		0.699					
	The cleanliness status of the interior and exterior of the office building	CLE_INTE			0.874				
	The cleanliness status of the building site	CLE_SITE			0.760				
	The maintenance service of the building	MAINTEN			0.749				
	The professional approach of property management team	PRO_APP			0.618				
	The internet line service	INTERNET			0.567				
	The lift facility of the building	F_FACILI				0.873			
	The parking facility	PARKING				0.755			
	Ranking of the service quality of the building	SERVICE_Q				0.620			
	The safety service of the building	SAFETY_S					0.496		
	Satisfy with the office space and physical working environment	SATIS_SP						0.805	
	Dependable service quality	EXPECT_Q						0.621	
	The wash area facility	WASH_ARE							0.757
	<i>The suitability of the office for working environment</i>	<i>W_ENVIRO</i>							
	Initial Eigenvalue		5.936	3.287	2.703	2.077	1.604	1.271	1.050
	Percentage of variance		25.810	14.290	11.752	9.030	6.975	5.528	4.563

(Source: Author analysis, 2003)

APPENDIX D

Table 8: CS3 – Rotated Factor Matrix (Loading) for KPIs from the Customers' Perspective

No.	Variables/Indicators	Code for variables	Factors 1	Factor 2	Factor 3	Factor 4	Factor 5
	The cleanliness status of the interior and exterior of the office building	CLE_INTE	0.788				
	The maintenance service of the building	MAINTEN	0.736				
	The cleanliness status of the building site	CLE_SITE	0.710				
	The safety service of the building	SAFETY_S	0.635				
	Ranking of the service quality of the building	SERVICE_Q	0.525				
	The professional approach of property management team	PRO_APP	0.522				
	The lift facility of the building	F_LIFT		0.640			
	The parking facility	PARKING		0.536			
	The wash area facility	WASH_ARE		0.599			
	The water supply of the building	WATER_SP		0.632			
	The power supply	POWER_SP		0.599			
	The internet line service	INTERNET		0.689			
	Telephone	T_PHONE		0.699			
	Speed property services	SPEED_SE			0.889		
	Timeliness property services	TIMELINE			0.846		
	On time delivery of services	ON_TIME			0.680		
	Competency in delivering their service	COMPETE			0.633		
	Ranking of the service quality of the building	SERVICE_Q			0.531		
	The condition of the office building and its services	B_CONDIT				0.836	
	The suitability of the office for working environment	W_ENVIRO				0.812	
	The general environment of the office building	GEN_ENVI				0.723	
	The management of the building understand the users' needs	UNDER_US					0.735
	Satisfy with the building services of the building	SATIS_SE					0.712
	Satisfy with the office space and physical working environment	SATIS_SP					0.543
	Eigenvalue		8.471	2.669	1.760	1.370	1.116
	Percentage of variance		35.294	11.119	7.334	5.709	4.648

(Source: Author analysis, 2003)

APPENDIX E

Table 10: CS1 – Factor Analysis Grouping Using Varimax Orthogonal Rotation Method for KPIs from the Customers' Perspective

KPIs	Principle Components/CSFs						
	Factor 1 The knowledge and caring attitude of the property management team	Factor 2 The ability of the property management team	Factor 3 The general facilities of the building	Factor 4 The willingness of the property management team	Factor 5 Parking facility and internet lines	Factor 6 The general environment the building and its condition and services	Factor 7 Suitability of the subject building for working environment
1	Satisfy with the building services of the building	Cleanliness of the building site	Wash area facility	On time delivery of the service	Parking facility	The general condition of the building & its service	The suitability of the building for working environment
2	The property management team as competence in delivering their service	Cleanliness of the interior and exterior of the building	Water supply	Speed property service	Internet line	General environment of the office building	
3	The management of the building understand the users' needs	Safety service	Power supply	Timeliness property service			
4	Dependable service quality	Maintenance service	Lift facility				
5	Satisfy with the office space and physical working environment						
6	Service quality of the building						
7	The professional approach of property management team						

(Source: Author analysis, 2002)

APPENDIX F

Table 11: CS2 – Factor Analysis Grouping Using Varimax Orthogonal Rotation Method for KPIs from the Customers' Perspective

KPIs	Principle Components/CSFs						
	Factor 1 The willingness and competence of the team	Factor 2 General environment, physical quality and condition of the building	Factor 3 The ability and professional approach of the team	Factor 4 Lift and parking facilities and service quality of the building	Factor 5 Safety service of the building	Factor 6 Physical working environment and dependable service quality of the team	Factor 7 The wash area facilities
1	Timeliness property service	Power supply	Cleanliness of the building site	Lift facility	Safety service	Satisfy with the physical working environment	Wash area facility
2	The property management team as competence in delivering their service	Water supply	Cleanliness of the interior and exterior of the building	Parking facility		Dependable service	
3	Speed property service	General environment of the office building	Maintenance service	Service quality of the building			
4	On time delivery of the service	The general condition of the building & its service	The professional approach of property management team				
5	Satisfy with the building services of the building		Internet line				
6	The management of the building understand the users' needs						

(Source: Author analysis, 2003)

APPENDIX G

Table 12: CS3 – Factor Analysis Grouping Using Varimax Orthogonal Rotation Method for KPIs from the Customers' Perspective

KPIs	Principle Components/CSFs				
	Factor 1: The dependable service quality and the ability and professional approach of the property management team	Factor2: The general facilities and services of the building	Factor 3: The knowledge and willingness of the property management team	Factor 4: Physical appearance and suitability of the building	Factor 5: The caring attitude of the property management team
1	The cleanliness status of the interior and exterior of the office building	The lift facility of the building	Speed property services	The condition of the office building and its services	The management of the building understand the users' needs
2	The maintenance service of the building	The parking facility	Timeliness property services	The suitability of the office for working environment	Satisfy with the building services of the building
3	The cleanliness status of the building site	The wash area facility	On time delivery of services	The general environment of the office building	Satisfy with the office space and physical working environment
4	The safety service of the building	The water supply of the building	The property management team as competence in delivering their service		
5	Dependable service quality	The power supply	Ranking of the service quality of the building		
6	The professional approach of property management team	The internet line service			
7		Telephone			

(Source: Author analysis, 2003)

APPENDIX H

Table 13: Findings From Cross Case Analysis of the Case Studies – Determining CSFs and Identifying KPIs from the Customers' Perspective

KPIs	Principle Components/CSFs						
	Factor 1 Knowledge and Caring attitude of the team	Factor 2 Ability of the team to provide cleaning and maintenance services and power and water supplies of the building	Factor 3 Communication and lift facilities of the building, and the willingness of the team to help users	Factor 4 Service quality of the building	Factor 5 Safety services and parking facilities of the building	Factor 6 The general environment and the condition of the building and its services	Factor 7 The suitability of the building for working environment and its wash area
1	Satisfy with the building services	Power supply	Internet line	Service quality of the building			
2	Satisfy with the office space and physical working environment	The water supply of the building			Safety service of the building	The condition of the building & its service	
3	The property management team as competence in delivering their service		Telephone service		Parking facilities	General environment of the office building	Wash area facilities
4	The management of the building understand the users' needs	Cleanliness of the building site	Lift facilities				
5	Dependable service	Cleanliness of the interior and exterior of the building	Speed property services				
6	The professional approach of property management team	Maintenance service of the building	Timeliness property services				
7			On time delivery of services				

(Source: Author analysis, 2003)