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The Challenges of Sustainable Development on Facilities Management Outsourcing Services: An Investigation in Educational Facilities

Ka Leung Lok ^{1,*} , Andrew Smith ², Alex Opoku ³  and Charles Chen ⁴

¹ National Research Base of Intelligent Manufacturing Service, Chongqing Technology and Business University, Chongqing 400067, China

² School of Engineering & the Built Environment, Edinburgh Napier University, Edinburgh EH11 4BN, UK; a.smith7@napier.ac.uk

³ Bartlett School of Sustainable Construction, University College London, London WC1E 6BT, UK; alex.opoku@ucl.ac.uk

⁴ College of Business and Information Technology, University of Phoenix, Hawaii, HI 96707, USA; kalebiz@email.phoenix.edu

* Correspondence: k.l.lok@edu.salford.ac.uk

Abstract: (1) Background: Generally, firms are reluctant to report outsourcing failures, no matter what industry they operate within. To eliminate poor performance of outsourced service providers, it is necessary to establish a specific outsourcing relationship model for facilities management (FM). The purpose of this paper is to study the concept of outsourcing relationships in relation to FM and to investigate the design of the critical success factors on sustainable outsourcing strategies through a discussion of four dimensions (ownership of FM assets, control of FM assets, competitive position and long-term plan). (2) Methods: Based on two questionnaire surveys, data were collected from 38 clients and 34 service providers. The study evaluated the FM outsourcing strategies from critical success factors in educational facilities in Hong Kong. (3) Results: This study explains the impact of FM outsourcing strategies on Hong Kong's four commonly outsourced FM contracts including building maintenance, security, cleaning and catering from the clients' and service providers' point of view. (4) Conclusions: This is the outsourcing way forward in order to create a better working environment conducive for all the parties that would result in better sustainability of FM's future and thus impact the economic objectives of sustainable development, in parallel with adding social and environmental value.

Keywords: outsourcing services; outsourcing strategies; critical success factors



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1. Introduction

Although the construction industry has long been a powerful engine for Hong Kong's economic growth, the industry experienced a drastic reduction in workloads and a change in market structure following the Asian economic turmoil in 1997 [1]. It appears that regional FM outsourcing services for the built environment have become more common. For example, outsourcing services include computer-integrated FM, catering/vending, moves management, project management (for both major and minor works), services installation (i.e., mechanical, electrical) and cleaning or security services [2]. In the late 1990s in Hong Kong, in-house service costs became greater with the downward trend of rental incomes, and building proprietors outsourced many of these services [3,4]. It is common that many non-residential building owners selected to outsource operations and maintenance works, according to the outcomes of their feasibility studies for cost reduction. Despite the fact that the Tertiary Education Facilities Management Association [5] explains that more than 50% of its benchmark data belong in the facilities management services at the seven universities in Hong Kong—including energy consumption, maintenance

services, refurbishments and building operating costs, and especially the costs of security services, cleaning and waste management services—these costs of facilities management services still largely increase each year. However, the reasons for unsatisfactory outsourcing performance of FM service providers have yet to be explored.

The significance of outsourcing is to reduce costs in terms of scale and expenditure. In the past decade, many private and public commercial building owners have hired specialists or registered contractors through total or phased outsourcing to relieve the financial burdens [4]. Lai et al. [3] report that the amount of cost saving in outsourcing would be smaller than that of energy cost for commercial buildings. Nevertheless, a commercial building owner is still willing to outsource when there is an occurrence of a net benefit on an increase in rental income or a reduction in the O&M cost. Without doubt, both private organisations and post-secondary educational institutions in Hong Kong are also required to reduce costs in a severely competitive business environment. The latter need to have balanced budgets and may find opportunities to cut costs by outsourcing. The importance of FM as a means of encouraging learning has been emphasised by the majority of higher-education-related FM studies [6,7]. Kok et al. [8] contend that, from the FM perspective, facilities services have a critical, direct effect on academic performance, while other services (e.g., building design, physical layout, building fit-out, internal decoration, plants, catering) have an indirect influence on the educational process but have impact on staff and student satisfaction. There is also potential for facilities management and maintenance services to create value, especially for higher education institutions [8–10]. The organisations can improve their revenue by increasing user satisfaction with FM services, thus attracting more students [11].

The research question of this study is about how the critical success factors for FM outsourcing strategies affect the FM services of Hong Kong's higher education sector in four main kinds of outsourcing contracts, including building maintenance, security, cleaning and catering.

The purpose of this study is to analyse and improve sustainable FM outsourcing relationship management through an investigation into the design of the critical success factors of outsourcing strategies for educational facilities from the perspectives of clients and service providers. Though such value creation can potentially be greater than that created by the development of new innovative facilities, focusing on the reasons for unsatisfactory outsourcing performance of FM service providers has yet received little attention. The facilities management (FM) sector is engaging with the sustainable development agenda as the whole built environment continues to evolve, including with the development of outsourcing services. Sustainable FM can be incorporated into user perception, satisfaction and productivity. As a result, there is limited understanding of the outsourcing performance of FM service providers. In undertaking a comprehensive study to identify successful factors for achieving satisfactory FM outsourcing services, the present study has made a timely contribution to filling the gap. The current study proposes that sound FM outsourcing strategies can be derived by outsourcing success factors, and thus improve the FM outsourcing services, affecting profits and thus impacting the economic objectives of sustainable development, while adding social and environmental value. In addition, a tailor-made FM framework—Contingency Outsourcing Relationship (CORE) model—is introduced. This model is used to identify the relationship between a client and an FM service provider in the four categories (i.e., in-house, technical expertise, commitment and common goals) and to reflect the importance of the outsourcing category of an organisation.

2. Literature Review

The performance of service providers can affect the quality of FM services, which in turn can influence client satisfaction. Among the critical issues in relationships for successful outsourcing, there is a knowledge gap concerning the link between outsourcing arrangements and FM service provider performance [12–15]. Good relationship management, collaboration and trust-building activities are shown to be just as important

as delivering the agreed FM services [13,16]. The drive towards partnering and collaborative working practices continues to gain pace. For example, the PAS 11,000 standard for collaborative business relationship management was introduced as a formal British Standard in December 2010 [17] and is described as being “perfectly logical for the FM sector” [18]. Hence, examination of the critical success factors on outsourcing is necessary. Lok et al. [11] address that outsourcing practices have impact on the outsourcing relationship types and thus the profit equations of organisations. Clients openly and regularly review their FM relationships with service providers through the evaluation of critical success factors [19]. It is believed that FM service provider performance depends on the outsourcing arrangements [12–15].

Outsourcing can be defined as procuring services from external providers and this paper addresses the reasons to opt for outsourcing as an effective and efficient approach to the management of resources. It also provides insights into the future of outsourcing as the correct management of the outsourcing process ensures the delivery of positive outcomes. The following sections review the concept of outsourcing success in facilities management. It outlines various critical success factors relating to FM outsourcing, and explains why the design of FM outsourcing strategies must take critical success factors into account. It shows the importance of understanding these critical success factors in the context of Hong Kong’s most widely implemented current outsourcing arrangements for educational facilities [19]. This study is to test the hypothesis whether the critical success factors of outsourcing strategies of the four FM services such as building maintenance, security, cleaning and catering in the educational facilities are sustainably effective or not from clients’ and service providers’ perspectives. In statistical terms, this study is to test whether there is a difference or not among group means of the critical success factors on FM outsourcing strategies of the four kinds of outsourcing contracts. In order to test and analyse the hypothesis, a quantitative research approach is utilised in this study. The categorical independent variable is the four different groups of outsourcing contracts. The quantitative dependent variable is the importance of critical success factors regarding four FM outsourcing relationship dimensions for outsourcing strategies.

2.1. The Importance of Outsourcing Success

The success of outsourcing depends on the effective provision of services by service providers. Although outsourcing is gaining popularity, and clients expect satisfactory performance from service providers, the number of reported cases of failure is increasing [20–25]. Organisations should thus take care when deciding on outsourcing arrangements. To execute outsourcing processes effectively, FM professionals in client and service provider organisations should be skilled in negotiation, finance and interpersonal communication [26]. Two of the most important drivers of outsourcing decisions are cost efficiency and production reorganisation [27]. Companies should focus their efforts on core business, medium- or long-term targets and diversification opportunities [28–31]. This focus on core business may lead to organisations outsourcing non-core services such as FM.

The literature suggests that outsourcing strategies arise from the desire to focus on fewer, more manageable core activities, as Skinner [32] observes. Companies aim to improve their efficiency by outsourcing non-core activities to specialist providers [33]. This resonates with observations made by Prahalad et al. and Hendry [34,35]. Corporations, public sectors and nations are advised to formulate strategies for outsourcing to minimise the risk of long-term disadvantages due to the cumulative effect of poor outsourcing decisions, such as those identified by Bettis, Richard et al. [36].

2.2. Critical Analysis of the Facilities Management Outsourcing Models

The owner companies can have advantage of cost control from the outsourcing activities of the service providers who are familiar with the work environment and conditions of the installations [3]. FM outsourcing service providers are generally taking the management role in professional outsourcing judgment. However, the poor performance of

outsourced service providers still exists, and this may pose unpredicted barriers. Lok and Baldry [11] continue to debate the query of why so many outsourcing failures are reported if the professional mode establishes the optimal relationship between clients and service providers.

The problem is that there is no specific outsourcing relationship model for facilities management. Before construction of this kind of model, it is significant to discuss the various possible kinds of outsourcing failures. Baithélemy [37] addresses that one or more of seven problems are related to most failed outsourcing efforts, and that companies are generally reluctant to complain of outsourcing failures. Hätönen and Eriksson [38] claim that crucial managerial interest is the dynamic and management of outsourcing relationships. In addition, management of the outsourcing relationships with key suppliers likely becomes increasingly necessary [39]. The question of how the outsourcing process is carried out is related to the alignment of outsourcer and the provider. For instance, studying the process in an international context (and thus combining the questions of how and where outsourcing takes place) may shed new light on the outsourcing strategy. Harland et al. [33] observe that the management of outsourcing relationships, along with the outsourcing process itself, is one of the imperative topics of outsourcing research. However, in the business environment, from the perspective of outsourcing's hidden relationships, there is still insufficient focus on outsourcing failures [40,41]. Establishing a specific outsourcing relationship model for facilities management may not be the final answer, but it can at least help to explain and interpret the unseen and complicated scenarios involved, such as outsourcing failures [11,15,19,20,22].

In summary, five outsourcing models are introduced in various industries from logistics, IT, operations management and supply chain management, but each have their own limitations. For instance, in the field of IT, the outsourcing relationship management does not accommodate all of the relationships between clients and service providers at different stages of the model. In the field of logistics, prescriptive decision-making models are not accurately aligned with outsourcing practice. The four outsourced-outsourcer relationship type model does not reflect the evolution of outsourcing relationships [11].

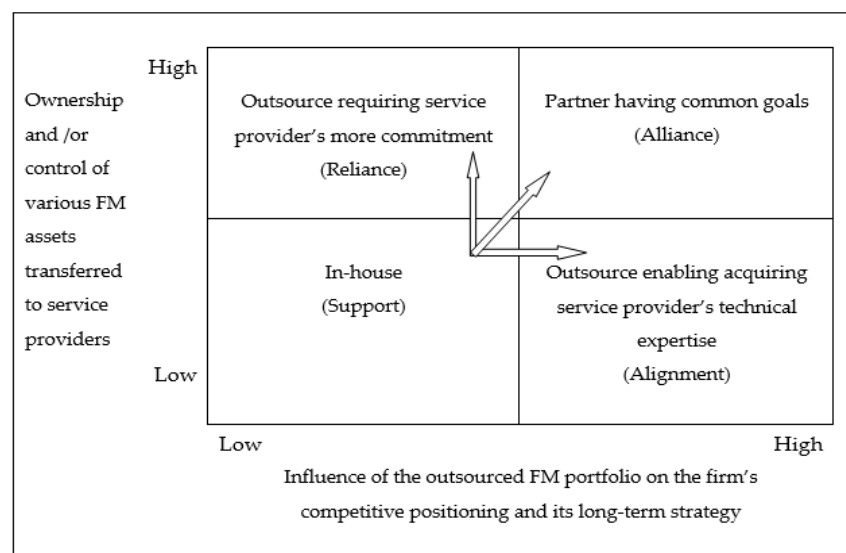
Consequently, a framework of four outsourcing relationship types (FORT) in the IT industry was proposed due to application of the most suitable model's rationale to the FM sector [11]. This FORT model is used to provide insight into the kinds of outsourcing relationships that exist between clients and service providers. The most critical attribute of this model is that it investigates the evolution of organisations' outsourcing relationships. Outsourcing relationships are dynamic; they are liable to change and evolve over time because of changes in the external environment and in clients' internal requirements [42]. Unlike the FORT model, other models are static in nature and do not explore the development of companies' outsourcing relationships. This FORT model is suitable and original because the proposed model covers the relationships between outsourcing types and outsourcing practices. Further arguments are provided to support the model of four outsourcing relationship types. Every outsourcing model has its own benefits, because of its particular characteristics and theoretical underpinnings, but also its own deficiencies. Considering which model is generally optimum, therefore, is a rather complicated decision. Lok and Finch [43] explain that the FORT model is specifically applicable to FM research on account of the specific characteristics. A limitation of the FORT framework is that the firms should have clear plans to consider the costs and difficulties of moving from one quadrant to another in the evolution process of the contingency model. The firms need to consider multiple movements from one cell to other cells in the matrix through selective outsourcing. Outsourcing should be considered more as a management of relationship with service providers rather than as a simple subcontract for commodities. In addition, the firms need to have a clear plan for their future movement within the FORT framework. Table 1 indicates the advantages and characteristics of the FORT framework corresponding to the outsourcing relationships in a FM contract.

Table 1. Advantages and characteristics of the FORT framework (Source: [11]).

Advantages	Characteristics
Like an X-ray machine	Explains and interprets the invisible and complicated scenarios
Efficient differentiation of contracts	Interpret several kinds of FM contracts simultaneously according to the four relationship types
Easy to handle	Simultaneously check the degree of responsibility and the strategic effect on the service providers' outsourced portfolio
Effective	Check and update the outsourcing relationships
Versatile	Conveniently applied in different industries
User-friendly	Easy to understand and apply
Flexible	No time constraints on contracts required
Most reliable	Oldest of the 5 models/Commonly applied in the IT industry

2.3. The FORT Model in Facilities Management

In the context of the IT industry, the FORT framework is contingent in nature. Finch [44] explains that outsourcing relationships have increasingly come to entail processes of mutual support and nurturing. This may include the enhancement of customer relations, improved supplier relationships and the improvement of product or service offerings. Figure 1 indicates the FORT framework application to the FM industry. This tailor-made proposed FM framework is called the Contingency Outsourcing Relationship (CORE) model [45]. Lok et al. [45] explain the principle and application of the CORE model, which is capable of identifying the relationship between a client and FM service provider in the four categories (i.e., in-house, technical expertise, commitment and common goals). The rationale of the CORE model reflects the importance of the outsourcing category of an organisation.



Remarks:

(IT dimension): e.g. (Support)

FM dimension: e.g. In-house

Figure 1. The evolution of the CORE model from FORT framework.

This study examines the CORE model in the specific context of the FM industry. Lok et al. [45] explain a more detailed review of the dimensions of the CORE model from each axis—ownership, control, competitive positioning and long-term strategies.

The outsourcing category (In-house) of the ownership dimension is to transfer the use of various FM assets wholly to service providers, e.g., routine day-to-day operations, hardware (hard FM—the challenge of flexible facilities), software (soft FM—The challenge of flexible relationships in service provision) and physical infrastructure. The outsourcing category (technical expertise) of the control dimension is to transfer the management of various FM assets to service providers, e.g., managerial control and decision-making over operations, planning, development and implementation of facilities and replacement of in-house FM personnel. The outsourcing category (commitment) of the competitive positioning dimension is to influence the outsourced FM portfolio (managing multiple sites in various regions) on the market, e.g., competitive advantage, value points for leveraging the FM portfolio and business process improvement. The outsourcing category (common goals) of the long-term strategies dimension is to influence the outsourced FM portfolio of the firm, e.g., long-term competitiveness, a close partnership, strategic inter-organisational relationship and new revenue.

Regarding the working mechanism of the FORT model as below, this FORT model is relevant to the FM research context. In the case of support and alignment relationships, clients make little investment in service provider-specific assets when the level of service-provider involvement is low [42]. In such cases, client-provider relationships usually operate in the short term and are fairly specific to outsourced projects and services. Hence, there is little need for incentives and penalties to be specified in detail. However, when the level of service provider involvement is high, clients make large investments in service provider-specific assets. For example, clients become more committed to financing service providers' equipment, technology, systems and skills as part of reliance and alliance connections, which leads to a locked-in relationship. Williamson [46] describes this phenomenon as "small numbers opportunism". Within the alliance relationship, trust is an important mechanism for ensuring that service providers' interests coincide with users' interests [47,48].

2.4. The Critical Success Factors of Facilities Management Outsourcing Strategies in Sustainability

Outsourcing has become universal and facility managers use the most advanced contracting methods and truly optimise outsourced contractors. Both sustainability and security/emergency management have gained such an organisational tailwind that, if managed properly, can lead to them both being at the forefront of all facility managers' practices [49]. Nardelli and Rajala [50] introduce thinking on the subject of the understanding of business model innovation within supplier-client relationships through interorganisational collaboration and value creation in FM ecosystems. This section serves to analyse what the sustainable development in terms of facilities management is in this research and why this may be relevant to the facilities management outsourcing services.

Olawumi and Chan [51] investigated how recent studies in sustainability research focus mainly on various subject categories such as green and sustainable science technology, and construction and building technology. They discovered that the emerging worldwide research trends in sustainability research are sustainable urban development, sustainability indicators, environmental assessment and public policy, etc.

This research focuses on facilities management outsourcing services such as building maintenance, cleaning, security and catering. These FM outsourcing services are not only the main contract types that are outsourced by educational institutions in Hong Kong, but they also impact (or are impacted by) sustainable development objectives. With the possible exception of security, they each fit into environmental, social and economic strands.

This study defines the three sustainable development strands relevant to the built environment, according to Olawumi and Chan [51]. The following are the definitions of each strand of sustainable development. Environmental aspects are confining human activity within the carrying capacity of the ecosystem (such as materials, energy, land, water etc.) prevailing in the locality, placing emphasis on the quality of human life (air quality, human health). Economic aspects consider efficient use of resources to enhance

operational profit and maximise market value. These also deal with substituting natural for manmade resources, reuse and recycling. Social aspects focus on social wellbeing of the populace, balancing the need of an individual with the need for the group (equity), public awareness and cohesion and participation and utilisation of local labour and firms.

According to Table 2, the critical success factors are derived from the FM dimensions that are linked to ownership and control of FM assets. According to Table 3, the critical success factors are derived from the FM dimensions that are linked to competitive position and long-term plan. Both tables categorise the critical success factors in terms of each of the environmental, social and economic strands. The critical success factors regarding four FM outsourcing relationships dimensions such as ownership of various FM assets, control of various FM assets, outsourced FM portfolio on clients' competitive position and outsourced FM portfolio on clients' long-term plan for outsourcing strategies can be related to the three strands in sustainable development relevant to the built environment.

Table 2. Critical success factors of ownership and control of various FM assets transferred for outsourcing strategies in terms of sustainable development strands.

FM Drivers	Specific FM Areas	Critical Success Factors of Various FM Assets Transferred for Outsourcing Strategies				Sustainable Development Strands Relevant to the Built Environment		
		Ownership		Control		Environmental	Economic	Social
		To Service Providers	By Clients	To Service Providers	By Clients			
Adequacy	Resources: Procurement strategies	Equipment/machinery					*	
Competent support from the service provider	Specific FM competence		Professional knowledge/ Infrastructure technology/ Computing system/ Efficiency of equipment		Infrastructure/ Equipment		*	
			Communication systems		Human resources/Daily routine operations		*	*
Coordination of service	FM practice and whole life cycle processes	Professional knowledge/Completion on request/ Capability					*	
	Resource sharing on people, budgets, systems, information and organisation structure	Resources					*	
	Coordination between the manager and functional units on operational level			Professional knowledge/Finishing on time	Deadlines/ Expenses		*	
			Coordination meetings	Coordination meetings/ Jobs		*	*	

Remarks: The blank grey area indicates no need to measure of the FM outsourcing strategies by the FM drivers. * means the specific FM key drivers relating to the corresponding sustainable development strands.

Table 3. Critical success factors regarding influence of outsourced FM portfolio on clients' competitive position and long-term plan for outsourcing strategies in terms of sustainable development strands.

FM Drivers	Specific FM Areas	Critical Success Factors Regarding Influence of Outsourced FM Portfolio for Outsourcing Strategies				Sustainable Development Strands Relevant to the Built Environment		
		Clients' Competitive Position		Clients' Long-Term Plan		Environmental	Economic	Social
		By Service Providers	By Clients	By Service Providers	By Clients			
Adequacy	Procurement strategies	Financial capability		Competing job			*	
		Human resources					*	*
	Allocation of human resources	Assistance						*
		Capability					*	
Competent support from the service provider	Specific FM competence		Competence				*	
	Measurement on performance	Accuracy/Productivity/Technical competence		Policy/Plan			*	
		Environmental protection				*		
	Core skills of managers	Focus/Understanding						*
Coordination of service	Between the manager and functional units on operational level	Courteous/Conduct					*	*
		Responsibility				*	*	*
		Time	Timeframe				*	
Quality of performance	Value of customers satisfaction	Service	Comprehensive service				*	*
		Quality/Satisfaction/Expectation					*	*
				Value-added services				*
	Cost effectiveness				Social responsibility		*	*
					Work/Administration		*	
					Human resources/Quality		*	*
			Safety and health		*	*	*	

Remarks: The blank grey area indicates no need to measure of the FM outsourcing strategies by the FM drivers. * means the specific FM key drivers relating to the corresponding sustainable development strands.

In the design of the parts for the service providers and the staff in clients, FM outsourcing relationships of the specific outsourcing service provider can be evaluated through four FM outsourcing relationships dimensions aligned with the agreed critical success factors for outsourcing manoeuvres/strategies: FM drivers such as adequacy, competence, coordination and quality.

According to the Delphi survey on identification of the critical success factors for outsourcing strategies in the four FM dimensions, the outcome is that the FM service providers unanimously identified nine factors [19]. In summary, there are two critical success factors in adequacy, two critical success factors in competence, three critical success factors in coordination and two critical success factors in quality. The clients unanimously identified four factors. In summary, there are two critical success factors in competence, one critical success factor in coordination and one critical success factor in quality [19].

3. Methodology

The choice of a research methodology is guided by the researcher's philosophical assumptions, convictions and beliefs [52]. Lok and Baldry [11] state that in researching the field of management, a researcher needs to adopt many strategies. Yin [53] claims that a research strategy should be chosen as a function of the research situation. This study adopted a quantitative research approach, which is epistemologically guided by positivistic assumptions [54]. The use of the quantitative method is aimed at capturing reality through an objective approach. In this study, the selected number of FM professionals from the local industry in the questionnaire surveys are the sample to be taken as representative of the whole population.

Two questionnaire surveys to clients and service providers (Appendices A and B) were carried out with experienced industry practitioners in Hong Kong. Both questionnaires included the same four parts of relationship dimensions, but the number and content of the questions are different with respect to the perspectives of clients and service providers. To review the FM outsourcing relationships dimensions, this section has been divided into four sub-sections. FM outsourcing relationships of the clients and service provider can be evaluated through four FM outsourcing relationship dimensions aligned with the agreed critical success factors for outsourcing strategies: adequacy, competence, coordination and quality [19]. According to the Delphi result on identification of the critical success factors for outsourcing strategies in the four FM dimensions [19], the outcome is that the clients unanimously identified four factors. In summary, there are two critical success factors in competence, one critical success factor in coordination and one critical success factor in quality. The FM service providers unanimously identified nine factors. In summary, there are two critical success factors in adequacy, two critical success factors in competence, three critical success factors in coordination and two critical success factors in quality.

In the design of the client questionnaire survey, there are five questions in the ownership dimension, eight questions in the control dimension, six questions in the competitive positioning dimension and eight questions in the long-term strategies dimension with reference to the Delphi result. However, in the design of the service providers' questionnaire survey, there are five questions in the ownership dimension, three questions in the control dimension, seventeen questions in the competitive positioning dimension and eleven questions in the long-term strategies dimension with reference to the Delphi result. The importance of critical success factors for FM outsourcing strategies of the four kinds of FM outsourcing contracts (i.e., building maintenance, security, cleaning and catering) were rated by the respondents. The responses were measured using a 5-point Likert-scale with 1 being "Very bad", 2 "Bad", 3 "Neutral", 4 "Good" and 5 "Very good". The prospective respondents were located from different sources including public academic institutes, private organisations, quasigovernment associations and FM professional institutes. Next, the electronic questionnaires were distributed to suitable respondents including those with three years or more of FM-related working experience in professions of facilities and property management and general FM services contracts. Random sampling of the survey

was carried out through the connection of four local facilities and property management professional institutes and four tertiary academic working environments. There was also an enclosed letter giving a brief introduction to the project and description of the expected contributions. In total, 175 electronic questionnaires were sent: 92 to clients and 83 to service providers. On the clients' side, 38 respondents returned the completed questionnaires, representing a 41.3% response rate. On the service providers' side, there were 34 respondents returning the completed questionnaires, representing a 40.9% response rate. Together, these represent an overall response rate of 41.1%.

This research applied the questionnaire survey for data collection regarding outsourcing strategies from the perspectives of clients and service providers. The profile of respondents of FM clients and service providers are classified into three main areas such as years of FM-related working experience, professions and types of FM contracts. In the questionnaire survey of clients, 38 of each respondent indicated more than one current FM outsourcing contract, with a total number of 83 contracts. However, 34 respondents in the questionnaire survey of service providers of each respondent also indicated more than one current FM outsourcing contract, with a total number of 59 contracts. Again, all respondents are local or overseas experienced FM practitioners.

3.1. Facilities Management Experience

About 60% of client respondents and 70% of service provider respondents have three years or more of FM-related experience. However, below 10% of client respondents and service provider respondents have less than three years of FM-related experience.

3.2. Professions

With regard to clients' FM professions, 18% are chartered builders and 10% are chartered surveyors and chartered building services engineers, among others. With regard to service providers' FM professions, 15% are chartered builders and chartered surveyors, and 18% are others. Regarding registered professional housing managers and certified facility managers, these two professions accounted for 12% of respondents.

3.3. Facilities Management Services Contracts

According to the clients' findings, building maintenance, security and cleaning contracts are at 31%, 28% and 25%, respectively, whilst 9% of FM contracts cover catering. As for the service providers' findings, building maintenance and security contracts awarded from clients are at 39% and 25%, respectively, whilst 17% of FM contracts are cleaning and catering. The other categories according to types of outsourcing contracts of clients and service providers include capital projects, IT, landscaping, horticulture and high-risk waste management, representing from 1% to 3%.

4. Results of Sustainable FM Outsourcing Strategies

This section presents the analysis of the quantitative research data. The critical success factors for outsourcing strategies have been discussed in more detail in terms of features and criticisms. The CORE model described four outsourcing relationship dimensions [11]. As mentioned earlier, the four dimensions (i.e., ownership of FM assets, control of FM assets, competitive position and long-term plan) have been employed to measure the critical success factors. In this study, the respondents were asked to provide opinions on and evaluate the four outsourcing relationship dimensions for the strategies. The descriptive statistics of the items in each category are discussed in the following paragraphs. Besides the statistical test, it is imperative to note that frequency distributions were used in this study. They were obtained for all the personal data or classification variables. They have been used to summarise the responses of each question and to produce descriptive information on the data collected such as means, standard deviations and frequencies of the responses. The mean (μ) is the sum divided by the total number (N) of the scores. However, standard deviation (SD) is used to find out the extent to which the values of a

variable differ from the mean. Thus, SD is a measure of how well the mean represents the data. Field [55] has pointed out that a small SD indicates that data points are close to the mean, while a large SD indicates that the data points are distant from the mean (i.e., the mean is not an accurate representation of the data). These statistical summaries are displayed in tabular form.

On the first aspect of the ownership and control of various FM assets transferred by clients to service providers, the selection of critical success factors for outsourcing strategies is discussed. For the second aspect of influence of the outsourced FM portfolio on clients' competitive position by clients and by service providers, the selection of critical success factors for outsourcing strategies is investigated. Finally, for the aspect of influence of the outsourced FM portfolio on clients' long-term plan by clients and by service providers, the selection of critical success factors for outsourcing strategies is also explored.

4.1. Ownership of Various FM Assets

4.1.1. Transferred by Clients

It can be seen from the results presented in Table 4 that the means of respondents range from 3.16 to 3.66 on the various items relating to ownership of various FM assets transferred by clients. In other words, the study sample has similar perceptions towards the statements relating to ownership of various FM assets. A comparison of means revealed that the ownership of various FM assets does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing building maintenance contract regarding the item "Efficiency of equipment" (Mean = 3.85), while the lowest mean was indicated by the FM outsourcing security contract regarding the item "Computing system (Mean = 3.22)."

Table 4. Selection of critical success factors regarding ownership of various FM assets transferred to service providers and by clients for outsourcing strategies.

Types of FM Outsourcing Contracts		Transferred to Service Providers (a)–(e)					Transferred by Clients (f)–(j)				
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
(i) Building Maintenance Clients: N = 26 Service providers: N = 23	Mean	3.54	3.96	4.04	4.08	3.58	3.73	3.69	3.38	3.62	3.85
	Std. Deviation	0.58	0.77	0.6	0.89	0.7	0.87	0.93	1.02	0.9	0.97
(ii) Security Clients: N = 23 Service providers: N = 15	Mean	3.53	4	4.07	3.93	3.73	3.61	3.52	3.22	3.39	3.57
	Std. Deviation	0.83	0.76	0.7	1.03	0.7	0.78	0.95	1.09	0.84	0.84
(iii) Cleaning Clients: N = 21 Service providers: N = 10	Mean	3.5	4	4.3	4	3.7	3.67	3.67	3.24	3.33	3.62
	Std. Deviation	0.71	0.82	0.67	1.25	0.67	0.73	0.91	1.18	0.97	0.8
(iv) Catering Clients: N = 8 Service providers: N = 10	Mean	3.6	4.1	4.3	4.2	3.8	3.25	3.5	3.25	3.38	3.13
	Std. Deviation	0.84	0.88	0.67	1.23	0.63	0.89	1.07	1.16	0.92	0.99
[(i) + (ii) + (iii) + (iv) + others] Clients: Total N = 83 Service providers: N = 59	Mean	3.62	4.06	4.12	4.09	3.65	3.66	3.53	3.16	3.39	3.66
	Std. Deviation	0.7	0.74	0.64	0.87	0.69	0.81	0.86	0.97	0.92	0.94

Remarks: (a) Equipment or machinery; (b) Professional knowledge; (c) Completion on request; (d) Capability; (e) Resources; (f) Professional knowledge; (g) Infrastructure technology; (h) Computing system; (i) Communication system; (j) Efficiency of equipment.

4.1.2. Transferred to Service Providers

The results presented in Table 4 show that the means of respondents range from 3.62 to 4.12 on the various items relating to ownership of various FM assets transferred to service providers. In other words, the study sample has similar perceptions towards the statements relating to ownership of various FM assets transferred to service providers. A comparison of means revealed that the ownership of various FM assets transferred to service providers does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing cleaning and catering contract regarding the item "Completion on request" (Mean = 4.3), while the lowest mean was indicated by the FM outsourcing cleaning contract regarding the item "Equipment or machinery" (Mean = 3.5).

4.2. Control of Various FM Assets

4.2.1. Transferred by Clients

With regards to FM assets transferred by clients, the results presented in Table 5 indicate that the means of respondents range from 3.34 to 3.82 on the various items relating to control of various FM assets transferred by clients. In other words, the study sample has similar perceptions towards the statements relating to control of various FM assets. A comparison of means revealed that the control of various FM assets does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing building maintenance contract regarding the item “Daily routine operation” (Mean = 3.77), while the lowest mean was indicated by the FM outsourcing catering contract regarding the item “Deadlines (Mean = 3)”.

Table 5. Selection of critical success factors regarding control of various FM assets transferred to service providers and by clients for outsourcing strategies.

Types of FM Outsourcing Contracts		Transferred to Service Providers					Transferred by Clients (d)–(k)					
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
(i) Building Maintenance Clients: N = 26 Service providers: N = 23	Mean	4.08	3.92	4.08	3.5	3.5	3.35	3.77	3.5	3.38	3.62	3.19
	Std. Deviation	0.69	0.84	0.89	1.07	0.91	1.06	1.07	0.95	1.24	1.13	1.13
(ii) Security Clients: N = 23 Service providers: N = 15	Mean	4.07	3.93	3.93	3.35	3.35	3.26	3.57	3.39	3.35	3.52	3.3
	Std. Deviation	0.8	0.88	0.8	0.98	0.78	0.96	0.99	0.89	1.11	1.16	1.18
(iii) Cleaning Clients: N = 21 Service providers: N = 10	Mean	4.1	4.2	4.3	3.48	3.43	3.38	3.67	3.48	3.38	3.62	3.43
	Std. Deviation	0.88	0.79	0.67	1.03	0.81	0.86	0.86	0.75	0.97	1.07	1.16
(iv) Catering Clients: N = 8 Service providers: N = 10	Mean	4.2	4.2	4.2	3.38	3.25	3.25	3.5	3.38	3	3.5	2.88
	Std. Deviation	0.92	0.63	0.63	0.92	0.71	1.04	0.76	0.74	0.93	0.93	0.99
[(i) + (ii) + (iii) + (iv) + others] Clients: Total N = 83 Service providers: N = 59	Mean	4.12	3.97	4.09	3.5	3.5	3.34	3.82	3.55	3.45	3.68	3.34
	Std. Deviation	0.69	0.8	0.83	0.98	0.86	0.94	0.95	0.83	1.11	1.07	1.07

Remarks: (a) Professional knowledge; (b) Finishing on time; (c) Coordination meetings; (d) Infrastructure; (e) Equipment; (f) Human resources; (g) Daily routine operation; (h) Job; (i) Deadlines; (j) Coordination meetings; (k) Expense.

4.2.2. Transferred to Service Providers

However, it can be seen from the results presented in Table 5 that the means of respondents range from 3.97 to 4.12 on the various items relating to control of various FM assets transferred to service providers. In other words, the study sample has similar perceptions towards the statements relating to control of various FM assets transferred to service providers. A comparison of means revealed that the control of various FM assets transferred to service providers does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing cleaning contract regarding the item “Coordination meetings” (Mean = 4.3), while the lowest mean was indicated by the FM outsourcing building maintenance contract regarding the item “Finishing on time” (Mean = 3.92).

4.3. Influence of the Outsourced FM Portfolio on Clients’ Competitive Position

4.3.1. Clients

The results presented in Table 6 show that the means of respondents range from 3.26 to 3.68 on the various items relating to influence of the outsourced FM portfolio on clients’ competitive position. This means that the study sample has similar perceptions towards the statements relating to influence of the outsourced FM portfolio on clients’ competitive position. A comparison of means revealed that the influence of the outsourced FM portfolio on clients’ competitive position does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing

building maintenance contract regarding the item “Productivity” (Mean = 3.62), while the lowest mean was indicated by the FM outsourcing catering contract regarding the item “Competence” (Mean = 2.75).

Table 6. Selection of critical success factors regarding influence of the outsourced FM portfolio on clients’ competitive position by clients for outsourcing strategies.

Types of FM Outsourcing Contracts		Influence of the Outsourced FM Portfolio on Clients’ Competitive Position					
		(a)	(b)	(c)	(d)	(e)	(f)
(i) Building Maintenance N = 26	Mean	3.31	3.38	3.62	3.35	3.5	3.38
	Std. Deviation	1.05	1.17	1.1	1.09	1.21	1.2
(ii) Security N = 23	Mean	3.09	3.22	3.48	3.35	3.35	3.35
	Std. Deviation	0.9	1.04	0.99	1.07	1.15	1.15
(iii) Cleaning N = 21	Mean	3.1	3.29	3.52	3.38	3.38	3.33
	Std. Deviation	0.89	1.06	0.98	1.07	1.16	1.11
(iv) Catering N = 8	Mean	2.75	3	3.13	2.88	3	2.75
	Std. Deviation	1.04	1.2	0.99	0.99	1.07	1.28
[(i) + (ii) + (iii) + (iv) + others] Total N = 83	Mean	3.26	3.45	3.68	3.5	3.63	3.53
	Std. Deviation	0.92	1.01	0.96	1.06	1.08	1.06

Remarks: (a) Competence; (b) Accuracy; (c) Productivity; (d) Technical competence; (e) Comprehensive service; (f) Time frame.

4.3.2. Service Providers

It can be seen from the results presented in Table 7 that the means of respondents range from 3.74 to 4.18 on the various items relating to influence of the outsourced FM portfolio on clients’ competitive position (a–h). In other words, the study sample has similar perceptions towards the statements relating to influence of the outsourced FM portfolio on clients’ competitive position (a–h). A comparison of means revealed that the influence of the outsourced FM portfolio on clients’ competitive position (a–h) does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing catering contract regarding the item “Focus” (Mean = 4.3), while the lowest mean was indicated by the FM outsourcing cleaning and catering contract regarding the item “Financial capability” (Mean = 3.6).

Table 7. Selection of critical success factors regarding influence of the outsourced FM portfolio on clients’ competitive position by service providers for outsourcing strategies.

Types of FM Outsourcing Contracts		Influence of the Outsourced FM Portfolio on Clients’ Competitive Position																
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
(i) Building Maintenance N = 23	Mean	3.81	3.69	4	3.92	3.88	3.81	3.65	4.12	4	4.04	4.04	4.08	3.77	3.85	3.88	3.96	3.92
	Std. D.	0.69	0.68	0.8	0.74	0.82	0.63	0.63	0.86	0.69	0.53	0.72	0.69	0.71	0.67	0.71	0.6	0.56
(ii) Security N = 15	Mean	3.87	3.93	4	4	4	3.93	3.67	4.07	4.07	4	4.07	4.2	3.93	3.8	3.93	4.07	4
	Std. D.	0.64	0.7	0.85	0.76	0.85	0.7	0.82	0.88	0.59	0.65	0.7	0.56	0.7	0.68	0.7	0.59	0.65
(iii) Cleaning N = 10	Mean	3.6	3.9	4.2	3.9	4	4.1	3.7	4.1	4.1	3.9	4.1	4.1	4	3.9	4.2	3.9	4
	Std. D.	0.52	0.57	0.92	0.88	0.82	0.57	0.67	1.1	0.74	0.88	0.74	0.74	0.67	0.74	0.63	0.74	0.67
(iv) Catering N = 10	Mean	3.6	4	4.2	4.1	3.9	4.1	3.7	4.3	4.1	4	4.2	4.3	4.3	4.1	4.3	4.1	4
	Std. D.	0.52	0.47	0.92	0.88	0.88	0.57	0.67	1.06	0.74	0.67	0.63	0.67	0.48	0.57	0.67	0.74	0.67
[(i) + (ii) + (iii) + (iv) + others] Total N = 59	Mean	3.88	3.76	4.12	4	3.88	3.85	3.74	4.18	3.97	3.94	4.06	4.12	3.82	3.88	3.94	4	3.94
	Std. D.	0.69	0.65	0.81	0.78	0.77	0.61	0.71	0.83	0.72	0.65	0.74	0.69	0.72	0.73	0.74	0.65	0.6

Remarks: (a) Financial capability; (b) Human resources; (c) Assistance; (d) Capability; (e) Accuracy; (f) Productivity; (g) Technical competence; (h) Focus; (i) Responsibility; (j) Conduct; (k) Courteous; (l) Understanding; (m) Service; (n) Time; (o) Quality; (p) Satisfaction; (q) Expectation.

However, the results presented in Table 7 indicate that the means of respondents range from 3.82 to 4.12 on the various items relating to influence of the outsourced FM portfolio on clients’ competitive position (i–q). In other words, the study sample has similar perceptions towards the statements relating to influence of the outsourced FM portfolio on clients’ competitive position (i–q). A comparison of means revealed that the influence of

the outsourced FM portfolio on clients' competitive position (i–q) does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing catering contract regarding the item "Understanding, Time and Quality" (Mean = 4.3), while the lowest mean was indicated by the FM outsourcing building and maintenance contract regarding the item "Service" (Mean = 3.77).

4.4. Influence of the Outsourced FM Portfolio on Clients' Long-Term Plan

4.4.1. Clients

It can be seen from the results presented in Table 8 that the means of respondents range from 3.34 to 3.53 on the various items relating to influence of the outsourced FM portfolio on clients' long-term plan. The results mean that the study sample has similar perceptions towards the statements relating to influence of the outsourced FM portfolio on clients' long-term plan. A comparison of means revealed that the influence of the outsourced FM portfolio on clients' long-term plan does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing building maintenance contract regarding the item "Plan" (Mean = 3.46), while the lowest mean was indicated by the FM outsourcing catering contract regarding the item "Policy, Plan and Environmental protection" (Mean = 2.63).

Table 8. Selection of critical success factors regarding influence of the outsourced FM portfolio on clients' long-term plan by clients for outsourcing strategies.

Types of FM Outsourcing Contracts		Influence of the Outsourced FM Portfolio on Clients' Long-Term Plan							
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(i) Building Maintenance N = 26	Mean	3.35	3.46	3.23	3.5	3.35	3.27	3.31	3.31
	Std. Deviation	1.09	1.14	0.95	1.14	0.98	0.96	1.29	1.12
(ii) Security N = 23	Mean	3.22	3.26	3.26	3.3	3.17	3.35	3.22	3.09
	Std. Deviation	1.04	1.1	0.96	1.11	0.94	0.98	1.13	1
(iii) Cleaning N = 21	Mean	3.24	3.29	3.29	3.29	3.24	3.38	3.24	3.1
	Std. Deviation	1.04	1.1	0.96	1.1	0.94	0.97	1.14	1
(iv) Catering N = 8	Mean	2.63	2.63	2.75	2.75	3	2.88	2.75	2.63
	Std. Deviation	1.06	1.06	1.04	0.89	0.93	0.99	1.04	0.92
[(i) + (ii) + (iii) + (iv) + others] Total N = 83	Mean	3.45	3.53	3.37	3.5	3.39	3.39	3.45	3.34
	Std. Deviation	1.01	1.03	0.88	1.01	0.86	0.89	1.11	0.97

Remarks: (a) Policy; (b) Plan; (c) Work; (d) Safety and health; (e) Human resources; (f) Administration; (g) Quality; (h) Environmental protection.

4.4.2. Service Providers

It can be seen from the results presented in Table 9 that the means of respondents range from 3.65 to 4.06 on the various items relating to influence of the outsourced FM portfolio on clients' long-term plan (a–f). In other words, the study sample has similar perceptions towards the statements relating to influence of the outsourced FM portfolio on clients' long-term plan (a–f). A comparison of means revealed that the influence of the outsourced FM portfolio on clients' long-term plan (a–f) does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing catering contract regarding the item "Safety and health" (Mean = 4.3), while the lowest mean was indicated by the FM outsourcing building and maintenance contract regarding the item "Policy" (Mean = 3.62).

Table 9. Selection of critical success factors regarding influence of the outsourced FM portfolio on clients' long-term plan by Service Providers for outsourcing strategies.

Types of FM Outsourcing Contracts		Influence of the Outsourced FM Portfolio on Clients' Long-Term Plan										
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
(i) Building Maintenance N = 23	Mean	4.08	3.62	3.85	3.88	3.92	3.77	3.85	4	3.88	4	3.85
	Std. D.	0.8	0.75	0.73	0.65	0.89	0.59	0.61	0.75	0.95	0.8	0.92
(ii) Security N = 15	Mean	3.93	3.73	3.87	4	3.93	3.8	4	4.2	3.93	4.2	4
	Std. D.	0.7	0.88	0.74	0.76	0.96	0.56	0.65	0.77	1.1	0.68	0.85
(iii) Cleaning N = 10	Mean	3.9	3.7	3.9	3.9	4.2	4	4.1	4.2	4.1	4.3	4.1
	Std. D.	0.57	0.95	0.74	0.88	0.92	0.47	0.57	0.79	0.99	0.67	0.74
(iv) Catering N = 10	Mean	4.1	3.9	4	3.9	4.3	4	4.1	4.3	4.1	4.3	4.3
	Std. D.	0.57	0.88	0.67	0.88	0.95	0.47	0.57	0.67	1.1	0.67	0.67
[(i) + (ii) + (iii) + (iv)+ others] Total N = 59	Mean	4.06	3.65	3.82	3.94	4	3.76	3.88	4	3.91	4.12	3.97
	Std. D.	0.78	0.73	0.72	0.65	0.85	0.55	0.59	0.74	0.9	0.77	0.87

Remarks: (a) Competing job; (b) Policy; (c) Plan; (d) Work; (e) Safety and health; (f) Human resources; (g) Administration; (h) Quality; (i) Social responsibility; (j) Value-added services; (k) Environmental protection.

The results presented in Table 9 show that the means of respondents range from 3.88 to 4 on the various items relating to influence of the outsourced FM portfolio on clients' long-term plan (g–k). In other words, the study sample has similar perceptions towards the statements relating to influence of the outsourced FM portfolio on clients' long-term plan (g–k). A comparison of means revealed that the influence of the outsourced FM portfolio on clients' long-term plan (g–k) does not differ among different kinds of FM outsourcing contracts. However, the highest mean was indicated by the FM outsourcing cleaning and catering contract regarding the item "Value-added services" (Mean = 4.3), while the lowest mean was indicated by the FM outsourcing building and maintenance contract regarding the item "Administration" and "Environmental protection" (Mean = 3.85).

4.5. Statistical Analysis Using One-Way ANOVA

ANOVA (Analysis of Variance) is a parametric statistical test used to analyse the difference between the means of more than two groups and likely to find a true significant effect. On using one-way ANOVA, this study tests the effect of four different groups of outsourcing contracts as a categorical independent variable on the importance of critical success factors for outsourcing strategies as a quantitative dependent variable. In this part as a one-way ANOVA, the independent variable is the type of outsourcing contract, and the collected data on (1) building maintenance, (2) security, (3) cleaning and (4) catering is used to establish whether there is a difference in the importance for outsourcing strategies. The data in this study (dependent groups of this study such as critical success factors regarding four FM outsourcing relationships dimensions such as ownership of various FM assets, control of various FM assets, outsourced FM portfolio on clients' competitive position and outsourced FM portfolio on clients' long-term plan for outsourcing strategies) are assumed to have been drawn from a normal distribution, and are used in a parametric test. ANOVA indicates if the dependent variable changes according to the group of the independent variable. The null hypothesis (H₀) of ANOVA is that there is no difference among group means. The alternate hypothesis (H_a) is that at least one group differs significantly from the overall mean of the dependent variable.

4.5.1. Reliability Analysis

In order to ensure the instrument is producing the same results on clients' and service providers' evaluation each time it is administered to the same person in the same setting, reliability analysis can be applied. The coefficient alpha or Cronbach's alpha (α) is used to measure the internal consistency of the instrument. Before conducting the internal consistency estimates of reliability, it is important to ensure that all items use the same metric (response scale for all items is 1 = very dissatisfied to 5 = very satisfied) and whether

any items have to be reverse-scaled. The value of Cronbach's alpha (α) is between 0 and 1. The larger the value of alpha is, the more consistency for the respondents will be in the test.

Table 10 shows the Cronbach alphas for measurement scales in four outsourcing relationship dimensions from clients' and service providers' perspectives. From the table, it can be seen that the variables scales have a range of coefficients of Cronbach alphas between 0.969 and 0.979, which are considered as reasonable [56]. This means that the respondents of clients and service providers are consistent on testing regarding four outsourcing relationship dimensions.

Table 10. Reliability analysis in four outsourcing relationship dimensions from clients' and service providers' perspectives.

Respondent	Variable	Number of Items in the Corresponding Questionnaire						Total	Cronbach's Alpha
		(A)	(B)	(1)	(2)	(3)	(4)		
Clients	Types of FM Contract	1		5	8	6	8	28	0.969
	FM Profession		1	5	8	6	8	28	0.975
Service provider	Types of FM Contract	1		5	3	17	11	37	0.972
	FM Profession		1	5	3	17	11	37	0.979

Remarks: (A)—Types of FM Contract; (B)—FM Profession; (1)—Ownership of various FM assets; (2)—Control of various FM assets; (3)—Competitive position; (4)—Long-term plan.

4.5.2. Post-Hoc Testing

To find how the treatment levels differ from one another, this section also performs a Tukey HSD (Tukey's Honestly Significant Difference) post-hoc test. The Tukey test runs pairwise comparisons among each of the groups and uses a conservative error estimate to find the groups which are statistically different from one another. Under the "outsourcing contract type" section, there is the mean difference between each outsourcing contract's treatment ("diff"), the lower and upper bounds of the 95% confidence interval (the 95% confidence interval is a range of values that it can be 95% confident contains the true mean of the population; because the true population mean is unknown, this range describes possible values that the mean could be) ("lwr" and "upr"), and the p -value, adjusted for multiple pairwise comparisons.

4.5.3. Reporting the Results of ANOVA

Because the p -values of the independent variable on both clients' and service providers' outsourcing contracts are insignificant ($p > 0.05$), it is likely that outsourcing contracts type does not have a significant effect on the average importance of the success factors of outsourcing strategies, as shown in Tables 11 and 12.

Table 11. One-way ANOVA model summary from clients.

Importance of Critical Success Factors	Sq. Mean	df	Mean Sq.	F	Pr (>F)
Outsourcing Contract Types	4.508	3	1.503	1.940	0.123
Residuals	238.589	308	0.775		
Total	243.097	311			

Table 12. One-way ANOVA model summary from service providers.

Importance of Critical Success Factors	Sq. Mean	df	Mean Sq.	F	Pr (>F)
Outsourcing Contract Types	1.182	3	0.394	1.102	0.349
Residuals	85.785	240	0.357		
Total	86.967	243			

On client results, the pairwise comparisons nearly show that outsourcing contract type 1 (building maintenance) has a significantly higher mean importance of success factors of outsourcing strategies of outsourcing contracts than outsourcing contract 4 (catering), but the difference between the mean importance of success factors of outsourcing strategies of outsourcing contracts 1 (building maintenance), 2 (security), 3 (cleaning) and 4 (catering) is not statistically significant. A Tukey post-hoc test revealed nearly significant pairwise differences between outsourcing contract types 1 (building maintenance) and 4 (catering), with an average difference of 0.42 importance ($p = 0.082$), as shown in Table 13.

Table 13. Tukey multiple comparisons of means (95% family-wise confidence level) from clients.

(I) Outsourcing Contract Type	(J) Outsourcing Contract Type	diff (I–J)	P adj	95% Confidence Level lwr	upr
Building maintenance	Security	0.12751	0.742	−0.1979	0.4529
	Cleaning	0.08077	0.924	−0.2527	0.4143
	Catering	0.42452	0.082	−0.0351	0.8841
Security	Cleaning	−0.04674	0.985	−0.3898	0.2964
	Catering	0.29701	0.355	−0.1696	0.7636
Catering	Cleaning	−0.34375	0.239	−0.8160	0.1285

Dependent factor: Importance of critical success factors (Tukey HSD).

However, in the service provider results, the pairwise comparisons show that all of the differences between the mean importance of success factors of outsourcing strategies of outsourcing contracts 1 (building maintenance), 2 (security), 3 (cleaning) and 4 (catering) is also not statistically significant, as presented in Table 14.

Table 14. Tukey multiple comparisons of means (95% family-wise confidence level) from service providers.

(I) Outsourcing Contract Type	(J) Outsourcing Contract Type	diff (I–J)	P adj	95% Confidence Level lwr	upr
Building maintenance	Security	−0.02866	0.991	−0.2794	0.2221
	Cleaning	−0.11658	0.721	−0.4044	0.1712
	Catering	−0.18483	0.346	−0.4726	0.1029
Security	Cleaning	−0.08792	0.889	−0.4036	0.2278
	Catering	−0.15617	0.577	−0.4719	0.1596
Catering	Cleaning	0.06825	0.957	−0.2776	0.4141

Dependent factor: Importance of critical success factors (Tukey HSD).

5. Discussion

According to the results, the critical success factors of outsourcing strategies in the FM contracts in terms of sustainable development strands generally do not promise the success of outsourcing contract types from which FM client and service provider strategists determine outsourcing relationships. The design of successful factors of outsourcing strategies on achieving satisfactory FM outsourcing services for the four outsourcing contracts are essential, but the outsourcing strategies are not the dominant factors in achieving successful outsourcing performance of the service providers.

5.1. FM Client Survey Results

Regarding the positive factors influencing the outsourcing strategies, ownership of FM assets transferred by clients indicated professional knowledge and efficiency of equipment in the economic strand. Control of FM assets transferred by clients suggested daily routine operation in the economic strand. Outsourced FM portfolios on clients'

competitive positions indicated productivity, and outsourced FM portfolios on clients' long-term planning indicated planning in the economic strand, as well.

Regarding the neutral factors influencing the outsourcing strategies, ownership of FM assets transferred by clients suggested computing systems in the economic strand. Control of FM assets transferred by clients indicated deadlines in the economic strand, outsourced FM portfolios on clients' competitive positions specified competence in the economic strand, and outsourced FM portfolios on clients' long-term planning noted environmental protection in the environmental strand.

The research suggests that professional knowledge, efficiency of equipment, daily routine operation, productivity and planning all play important roles as critical success factors for outsourcing strategies. The factor "Our service provider can support our daily routine operation" received the highest degree of experience among the factors related to daily routine operation with a score of 3.82, which suggests that daily routine experience is becoming a strong trend and clients are requiring high guidance and experience from service providers in the management of state-of-the-art buildings. "Our service provider is keen to take responsibility for our competence" had a mean score of 3.26. Clients can address this by evaluating the competence of the service providers.

The above discussion concentrated on the positive and neutral factors in outsourcing strategy criteria in the economic and environmental strands. Other factors between those two groups (positive and neutral) are taken to be of secondary agreement. The statistical means of these factors range between 3.26 and 3.82.

5.2. FM Service Provider Survey Results

On the positive factors influencing outsourcing strategies, ownership of FM assets transferred to service providers indicated completion on request in the economic strand, control of FM assets transferred to service providers suggested professional knowledge in the economic strand, outsourced FM portfolios on clients' competitive positions indicated focus in the social strand, and outsourced FM portfolios on clients' long-term planning specified value-added services in the economic and social strands.

Regarding the neutral factors influencing outsourcing strategies, ownership of FM assets transferred to service providers indicated equipment and machinery in the economic strand, control of FM assets transferred to service providers noted finishing on time in the economic strand, outsourced FM portfolios on clients' competitive positions suggested technical competence in the economic strand, and outsourced FM portfolios on clients' long-term planning specified policy in the economic strand, as well. This suggests that completion on request, professional knowledge, focus and value-added services are all critical success factors for outsourcing strategies.

The factor "We listen to our customers when they request a service" received the highest degree of experience among the critical success factors related to a service, with a score of 4.18. This suggests that daily routine experience has become important and service providers need significant skill in managing today's technologically advanced buildings. "We consider the availability of our own equipment or machinery for competing jobs" had a mean score of 3.62. This can be addressed by highlighting the importance of technical competence.

The above discussion concentrates on the good and neutral factors in outsourcing strategy criteria in the economic and social strands. Other factors between the two groups (good and neutral) are taken to be of secondary agreement. The statistical means of these factors range between 3.62 and 4.18.

5.3. Research Limitations

This research only discusses FM outsourcing contracts in Hong Kong's higher education sector, not other business sectors and Asian Pacific cities. The credibility of the proposed study could be increased if more questionnaire samples can be obtained from practitioners, and more structured interviews can be undertaken with FM experts. The

study is only focused on four main FM outsourcing services because of the dominant ratio of these four in all current outsourcing services in the higher education sector. The parametric statistics used to test the hypotheses and statistical measures are implemented to increase the robustness. This study also does not investigate the financial elements of the FM outsourcing contracts, as it is difficult to collect this highly confidential and sensitive financial data on the FM outsourcing contracts.

There is, however, considerable data available on FM outsourcing contracts in the local higher education environment, and the trend and value of these contracts are continuously rising in Hong Kong, making the local higher education sector a suitable area for the initial investigation. These research methods do have limitations. The use of the statistical analysis method means that the coefficients may be difficult to interpret. This can be overcome by studying the relative importance of each variable, rather than the application of the actual model. The study was undertaken in local higher education institutes and universities. Thus, the samples are localised in a single business environment, i.e., higher education. A substantial sample size is of paramount importance in this research. Therefore, the sample size of the survey group can be resorted to expand with the intention of including as many of the clients and service providers of the local tertiary institutes and universities as possible.

While this study meets the proposed objectives and expands our knowledge of the relationship between FM outsourcing relationship types and categories, it has its limitations, and there is great potential for future research along these lines. The choice of population was limited to a single industry, higher tertiary education, which has a tendency to constrain the generalisability of the findings in the context of other industries. The roles that FM outsourcing relationship types play in the related dimensions must be clarified from different industry perspectives.

Geographically, this study was limited to the government-funded tertiary institutes and universities in Hong Kong, which is only one international city in the vast Asian Pacific area. An interesting line of inquiry would be to replicate this research across the corporate sector of the FM industry. Other Asian Pacific studies in a similar context would provide valuable comparative data for FM managers and academics about the cross-fertilisation of FM outsourcing relationship types with the related relationships and categories.

6. Conclusions

The paper has highlighted critical success factors for outsourcing strategies in terms of three sustainable development strands of current FM outsourcing contracts. The results show that clients and service providers have different points of view on the most significant factor influencing the outsourcing strategies in the four FM contracts.

However, both stakeholders are required to prepare their own specific outsourcing strategies. Clients and service providers must understand the implications of effective outsourcing strategies because the outsourcing services can be improved in a sustainable approach through comprehensive design on outsourcing strategies. The clients can have high-quality outsourcing services and the outsourcing service providers can maintain close FM outsourcing relationships.

The findings of this study are summarised as follows. From the clients' point of view, the results reveal that the most significant factor influencing the outsourcing strategies in the four FM contracts is daily routine operation in control of various FM assets transferred by clients in the economic strand. However, the neutral factor influencing the outsourcing strategies is competent service providers taking responsibility in outsourced FM portfolios on clients' competitive position in the economic strand.

As for the service providers' point of view, the results also reveal that the most significant factor influencing the outsourcing strategies in the four FM contracts is focusing on the provision of service in the outsourced FM portfolio on advancing the clients' competitive position in the social strand. However, the neutral factor influencing outsourcing strategies

is considering the availability of one's own equipment or machinery for competing jobs in ownership of various FM assets transferred to service providers in the economic strand.

The main insight drawn from the results is that both clients and FM service providers do not fully understand the impact of critical success factors on different outsourcing contract types for sound FM outsourcing performance. This may be the reason why both parties neglect the link between FM critical success factors and FM outsourcing strategies on different FM outsourcing services in daily operations in terms of sustainable development strands. This is an exploratory research study and its recommendations should be generalised with caution due to its geographic limitation. Future work will be carried out by increasing the sample size of the respondents along with the development of a rigorous structural equation model to identify the four different types of outsourcing relationships (i.e., in-house, technical expertise, commitment and common goals) of the CORE model from various clients and service providers in sustainable approaches.

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Appendix A

Questionnaire Survey for Client: A study on Outsourcing in Facilities Management	
Section A: Your background information	
Having Higher Diploma <input type="checkbox"/>	Having Bachelor's Degree <input type="checkbox"/>
Having Master's Degree <input type="checkbox"/>	
Course with FM related module(s) <input type="checkbox"/>	Course without FM related module(s) <input type="checkbox"/>
FM related experience less than 3 years <input type="checkbox"/>	FM related experience equal or more than 3 years <input type="checkbox"/>
Chartered builder <input type="checkbox"/>	Chartered surveyor <input type="checkbox"/>
Chartered building services engineer <input type="checkbox"/>	Certified facility manager <input type="checkbox"/>
Registered professional housing manager <input type="checkbox"/>	
Others _____	
Current outsourcing contract: Building maintenance <input type="checkbox"/> Security <input type="checkbox"/> Cleaning <input type="checkbox"/> Catering <input type="checkbox"/> Others: _____	
Section B: The following items relate to the the critical success factor for outsourcing strategies of your contract. Please rate HOW GOOD these items are to you in your experience. ^c	
1=Very bad; 2=bad; 3=Neutral; 4=good; 5=Very good	
a) Ownership of various FM assets transferred by you	
SO1: Our service provider is keen to take responsibility for our professional knowledge.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SO2: Our service provider is keen to take responsibility for our infrastructure technology.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SO3: Our service provider is keen to take responsibility for our computing system.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SO4: Our service provider is keen to take responsibility for our communication system.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SO5: Our service provider is keen to take responsibility for efficiency of our equipment.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
b) Control of various FM assets transferred by you	
SC1: Our service provider is keen to take responsibility for correct usage of our infrastructure. (E.g. time, specification and instruction)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC2: Our service provider is keen to take responsibility for correct usage of our equipment.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC3: Our service provider is keen to take responsibility for deployment of suitable human resources.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC4: Our service provider can support our daily routine operation.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC5: Our service provider completes the job as expected.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC6: Our service provider can meet our deadlines.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC7: We are supported by arranged co-ordination meeting(s) regularly.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC8: Our service provider is keen to take responsibility for control of expense.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
c) Influence of the outsourced FM portfolio on our competitive position	
CP1: Our service provider is keen to take responsibility for our competence.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP2: The accuracy of our service is enhanced.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP3: Our service provider can increase our general routine productivity.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP4: Our service provider can increase our technical competence.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP5: Our service provider can provide comprehensive service each day.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP6: Our service provider finishes their responsibilities within the stated time frame.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
d) Influence of the outsourced FM portfolio on our long-term plan	
LP1: Our service provider can support our policy.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP2: Our service provider can support our long term plan.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP3: We are satisfied with the work of the service provider.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP4: Our service provider can fulfill our requirements on safety and health.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP5: Our service provider can fulfill our requirements on human resources.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP6: Our service provider can fulfill our requirements on administration.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP7: Our service provider can fulfill our requirements on quality.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP8: Our service provider can fulfill our requirements on environmental protection.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
~ End of questionnaire ~	

Figure A1. Sample of questionnaire to clients in the facilities management outsourcing relationship survey.

Appendix B

Questionnaire Survey for Service Provider: A study on Outsourcing in Facilities Management	
Section A: Your background information	
Having Higher Diploma <input type="checkbox"/>	Having Bachelor's Degree <input type="checkbox"/>
Having Master's Degree <input type="checkbox"/>	
Course with FM related module(s) <input type="checkbox"/>	Course without FM related module(s) <input type="checkbox"/>
FM related experience less than 3 years <input type="checkbox"/>	FM related experience equal or more than 3 years <input type="checkbox"/>
Chartered builder <input type="checkbox"/>	Chartered surveyor <input type="checkbox"/>
Chartered building services engineer <input type="checkbox"/>	Certified facility manager <input type="checkbox"/>
Registered professional housing manager <input type="checkbox"/>	
Others _____	
Current outsourcing contract: Building maintenance <input type="checkbox"/>	Security <input type="checkbox"/> Cleaning <input type="checkbox"/> Catering <input type="checkbox"/> Others: _____
Section B: The following items relate to the the critical success factor for outsourcing strategies of your contract. Please rate HOW GOOD these items are to you in your experience. ^c	
1=Very bad; 2=bad; 3=Neutral; 4=good; 5=Very good	
a) Ownership of various FM assets transferred to you	
SO1: We consider availability of own equipment or machinery for competing jobs.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SO2: We can immediately help our customers if needed with professional knowledge.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SO3: We are quick to respond and complete when our customers asked for help.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SO4: We are capable to help customers until completion of work.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SO5: We can share resources on daily operations and processes.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
b) Control of various FM assets transferred to you	
SC1) We complete the job with professional knowledge.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC2) We can meet the deadlines.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
SC3) We arrange coordination meeting(s) regularly.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
c) Influence of the outsourced FM portfolio on client's competitive position	
CP1: We consider financial capability for maintaining good relationship.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP2: We can efficiently deploy our human resources for maintaining good relationship.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP3: We could give help to our customers when they requested.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP4: We are there when our customers requested.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP5: We can enhance the accuracy of our customer's service.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP6: We can increase our customer's general routine productivity.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP4: We can increase our customer's technical competence.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP8: We listen to our customer when they were requesting a service.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP9: We are keen to take responsibility for what our customers had to say.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP10: We conduct ourselves with competence in front of public.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP11: We are courteous.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP12: We understand what our customers want.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP13: We can provide comprehensive service each day.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP14: We finish our responsibilities within the stated time frame.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP15: The quality of the way we treat our customers is high.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP16: My customers are satisfied with the way we treated them.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
CP17: The way we treat our customers meeting their expectations.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
d) Influence of the outsourced FM portfolio on client's long-term plan	
LP1: We consider duration of the outsourcing contract period for competing jobs.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP2: We can support by our customer's policy.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP3: We can support our customer's long term plan.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP4: Our customer are satisfied with the work that we treated.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP5: We can fulfill our customer's requirements on safety and health.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP6: We can fulfill our customer's requirements on human resources.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP7: We can fulfill our customer's requirements on administration.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP8: We can fulfill our customer's requirements on quality.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP9: We care about our social responsibility to the public.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP10: We care about our value-added services to the customers.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
LP11: We can fulfill our customer's requirement on environmental management.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
~ End of questionnaire ~	

Figure A2. Sample of questionnaire to service providers in the facilities management outsourcing relationship survey.

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