The Notion of Strategy in Facilities Management

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Abstract

Facility Management (FM) is changing the way we work, create and share information, plan, and organize the flow of people, ideas, and things around business. Strategic FM is all about managing the firm to achieve benefits. Strategy implementation is still complex despite previous research describing mechanisms related to the construction of strategy and strategy use by FM organizations. This article attempts to fill this gap by examining strategy. Since strategy refers to a complex network of thoughts, insights, experiences, expertise, and expectations that provide general guidance for management action, organizations must keep pace with the changing environment to increase market shares and business success. Based on a literature review, the findings of this study report a service-strategy classification grid. Such a service-strategy grid provides for a better understanding of the business environment. The study findings are intended to enhance business managers' understandings of the issues behind FM strategy. Together these elements can maximize the impact of strategic FM on economic growth of any company.

Keywords: strategy grid, facilities management, facility services, FM literature review

1. Introduction

Facility Management (FM) is an interdisciplinary field. FM is dedicated to the maintenance, care, and development of commercial or institutional buildings, such as office complexes, arenas, schools, universities, hospitals, hotels, shopping centers, convention centers, and other buildings. Service or maintenance strategies draw more and more attention in organizations. In today's business life, the work environment is largely conditioned by IT, IT infrastructure, equipment and machinery, the working environment, and information. Organizations rely on a combination of functions and services to support core business operations (Clements-Croome, 2006; Duffy et al., 2011; Haynes, 2007). Nowadays, given the complex FM systems within which new services and technologies are implemented, it is even more difficult for the implementer of a new service strategy and/or new technologies to anticipate users' resources and capabilities.

Previous research has examined the outcomes of differing user and implanter perceptions (Anderson & Narus, 1998; Levin, 2005; Wood, 2005; Basole & Rouse, 2008; Becker, 2003; Boone & Ganeshan, 2001; Brynjolfsson, 1994; Chan & Reich, 2007; Chotipanich, 2004; Collis & Montgomery, 2008; Eisenhardt & Sull, 2001). Similarities are found between FM and strategy theory. The relation between strategy as a link between an organization and an organization's environment and performance (Chandler, 1962; Hofer & Schendel, 1978; Ansoff, 1979; Andrews, 1986) is similar to the field of FM, which focuses on people, processes and places. Most strategy models include the following three factors: (1) the ability of the organization's management to formulate strategies that match the organization's current and future resources (Ansoff, 1979; Hofer & Schendel, 1978; Rumelt et al., 1994), (2) the ability of management to recognize and adapt to issues that affect the organization and strategy (Mintzberg, 1980) and (3) competences, skills, and the ability of the management and employees to quickly respond to changes in types of environment (Grant, 1991; Teece et al., 1997). Departing from this viewpoint, strategy has been the focus of research in the FM literature regarding both reactive and preventive maintenance in the built environment (Chan et al., 2001).

This paper attempts to integrate the different explanations in FM and seeks answers to the question: To what extent could service type and strategy be grouped into a FM service grid? This is consistent with the call for research focusing on FM strategies (Grimshaw, 1999; Alexander, 2003; Nutt, 2004). Next, the paper's background and the literature review's method are explained which is followed by the findings and conclusions.

2. Background and related work

FM is one important type of resource and management area brought into business in recent years. The European Committee for Standardization (CEN 2011: 5) recently defined FM comprehensively as: "[the] …integration of processes within an organization to maintain and develop the agreed services which support and improve the effectiveness of its primary activities." Departing from this perspective it is important to note that FM sees strategy as a potential resource. At best, the value of this is decided by how well it is developed and implemented and used by any business model in the built environment. Nutt (2000) addressed the strategic role that FM plays in the business market. The challenge of strategic management in FM concentrates on growth, value, productivity, service focus, change, and information.

It focuses on multi-disciplinary activities within the built environment, the physical and virtual infrastructure, and the impact upon people, workplaces, and processes (Grimshaw, 1999; Alexander, 2003; Bröchner et al., 2004; Elle et al., 2004; Price, 2004; Goyal & Pitt, 2007; Chotipanich & Nutt, 2008; Bröchner, 2008; Tucker & Smith, 2008; Tulla et al., 2009). One commonly used framework to predict FM is the practice for managing non-core business services. The literature recognizes that non-core services hold the key to business results (Alexander et al., 2004; Salonen, 2004; Yik & Lai, 2005; Bogenstätter, 2008; Cotts et al., 2009; Grimshaw, 2003; Krimmling, 2010). A central idea in FM is that there is a strategic fit between the first and second level business needs (or core and non-core business services) and that this has an influence over business outcome and value. The integrated management of the built environment, supporting services, and resources is based on designing, planning, and monitoring the operations in order to execute an organization's strategy. To achieve a strategic fit between the first and second level business needs, all elements of the service production and delivery have to follow strategic principles (Grant, 2010). This has led Finch (2011) to conclude that FM has difficulties in bridging of the gap between what an organization has and what it needs. The author argues that FM as a second level multi-disciplinary business is embedded in an organization's strategy. Therefore, FM functionality of the built environment integrates people, place, processes and technology (Barrett, 1995; Alexander, 1996; Grimshaw, 1999; Barrett, 2000; Redlein, 2004). Following Barrett and Baldry (2003), Grimshaw (2003), and Finch (2011) FM has a strategic function that is concerned with the forward planning of infrastructure resources to support organizational development, performance and is vital to the reduction of risk.

The management of the built environment, facilities and related services has become complex tasks involving many disciplines. FM ranges from single office buildings to large multi-building facilities. In the offshore and outsourcing business, the volume of FM service-products in a service category, such as security, fire safety, catering, cleaning, office supply, building automation, building infrastructure and IT infrastructure, is likely to overload business customers and make them less aware of differences between corporate service brands, service-products and non-branded service products. Because of the increased awareness of efficient building and workspace operation, owners and operators are looking for routines to reduce the costs and increase the benefits of the built environment operation (Alexander, 2003; Redlein, 2004; Clements-Croome, 2006; Finch, 2011). The view of strategy as a link between the organization and its environment is close to the FM framework.

FM supports the organization to gain market shares, but also to increase profit (Alexander, 2003; Nutt, 2000; Chan et al., 2001; Chotipanich, 2004; Barney, 1991; Rumelt et al., 1994; Tucker & Smith, 2008; Porter & Kramer, 2011). Grant (2010) introduced a framework to employ strategy which is used and followed in this paper. His framework includes the firm, the industry environment, and strategy. Grant (2010: 19) distinguishes between corporate and business strategies: "Corporate strategy defines the scope of the firm in terms of the industries and markets in which it competes … Business strategy is concerned with how the firm competes within a particular industry or market. If the firm is to prosper within an industry, it must establish a competitive advantage over its rivals."

Work specifically examining the role of framing in FM has produced mixed results. Then (1999) emerged with the insight that FM acts as the interface between strategic and operational management decisions. In contrast, Nutt (2004) sees a danger in overselling FM by putting rhetoric and promotional activities before substance and reality. Her critique mostly concentrates on the lack of attention given to FM in achieving the "whole-life" performance of the facility service-product that gives a true measure of success. Finch (2010: 9) modified the European standard definition of FM by stating that "Facility management enables the promotion of organisational effectiveness and individual wellbeing by leveraging the transformative potential of such service settings."

In the past, technology and information has been the focus of critical research in the FM literature. The support of administrative facility management through information technology is identified as "Computer-Aided Facility Management" (CAFM). May (2006), Nävy (2006) and May et al. (2007) showed advantages of information management in FM (see Owen & Aitchison, 1988; Williams, 1996; Sanchez & Heene, 2003; Redlein, 2004). Therefore, the business discipline of FM and the role of the facility manager are evolving to the point that a facility manager has to operate at two levels: strategic-tactical and operational.

In the first case, facility owners demanded to be informed about the potential impact of their decisions on the provision of space and services. In the second case, it is the role of facility managers to make proper operations regarding of all aspects of a building in order to proactively create an efficient, safe and cost effective environment and working atmosphere for all involved people to function. Research specifically examining the role of Information Technology (IT) and Information Systems (IS) has emphasized the importance of business

processes for success (Williams, 1996; Redlein, 2004; May, 2006; Nävy, 2006; Chan & Reich, 2007; Atkin & Brooks, 2009). FM means a comprehensive facilities management program that provides leadership, develops supervisors, and installs operations and financial systems, while training employees to utilize all techniques of efficient facilities management (Boed, 1999). The key to FM is IT and IT infrastructure (Owen & Aitchison, 1988; Bröchner, 1991; Brynjolfsson, 1994; Williams, 1996; May, 2006; May et al., 2007; Atkin & Brooks, 2009). IT infrastructure provides the foundation for IT usability and for serving customers, working with vendors, and managing internal business processes (Boone and Ganeshan 2001; Finch 2011; Hertzum et al. 2011; Porter and Kramer 2011).

Studies in FM have improved the understanding of management and strategy in FM (Grimshaw, 1999; Alexander, 2003; Alexander et al., 2004; Bröchner et al., 2004; Kempten & Syms, 2009; Marco & Mangano, 2011; Hon et al., 2011). Johnston (1996) showed, that two dimensions describe the extent of the company's focus: market and service. Market focus is the extent to which a company serves the market. Service focus describes the extent to which it offers services. Building on the work of Porter (1996), Johnston (1996), Williams (1996), Gilmore and Pine (2000), Alexander (2003), and Grant (2011), this paper defines strategy in broad terms as an approach that allows one to take research into several areas. Strategy includes specific elements that influence organizational action. In most business-oriented firms, including offshore and outsourcing business relations, strategy is created in order to substantiate the claim that maximizing shareholder value is one of the company's objectives (Chandler, 1962; Mintzberg, 1980; Prahalad, 1994; Lazonick & O'Sullivan, 2000).

Collis and Rukstad (2008) recommended, that one should ask which objective is most likely to maximize value. This particular objective should drive the operations of the business over the next several years. In line with Porter (1996) and Grant (2011), who defined strategy as the way a company creates value through the configuration and coordination of its activities, the current literature study recognizes the importance of the elements of an organization's strategy statement. Fundamentally, any FM business organization faces two generic strategies: mass customization or standardization (Chandler, 1962; Rumelt et al., 1994; Porter, 1996, Grant, 2010). A strategy of mass customization offers a service with some individualized service-product elements to a smaller number of customers. A strategy of standardization offers a service with the same service elements to a large number of customers. Thereby, it is acknowledged that the key to any adaptive strategy, in FM or any

other business field, concerns the role of advanced resources and capabilities (Lazonick & O'Sullivan, 2000; Hinks et al., 2007; Collis & Montgomery, 2008; Lind & Muyingo, 2012).

3. Method used for reviewing literature

The current study reviews existing meanings and uses of the notion "strategy" and "maintenance" in FM and follows Webster and Watson (2002) when reviewing relevant literature. Conducting a systematic review means to adopt a repeatable and scientifically transparent process (Webster & Watson, 2002; Hair et al., 2007), including an audit trail of the reviewer's decisions, procedures, and conclusions (Hair et al., 2007). The review was limited with the use of keywords and issues of perspective in order to assess the relevance and extent of the literature. Inspiration and guidance was adopted from Webster and Watson (2002), Grant (2010), and Collis and Rukstad (2008). The chosen keywords in relation to FM are: (1) objective, (2) scope, (3) advantage, and (4) strategy.

The review focused on the journal of "Facilities", the "Journal of Facilities Management", the journal of "Property Management", and the journal of "Building Research & Information". Papers were selected in three steps.

The first step consisted of selecting papers with the keywords in the title or abstract. Papers were selected if their title or abstract contained at least the term 'strategy' or 'maintenance'. In the second step, abstracts were read to filter away papers that were off target. The opening search on papers using the specified keywords resulted in 121 papers in total. All papers were downloaded in a full-text format. At step three all papers were reviewed in full according to the question-based quality assessment criteria as follows: (1) Was there an explicit account of the theoretical framework? , (2) Was there an explicit account of the strategy elements? , (3) Was there a description of the context? and (4) Were the findings relevant to theory? At the end of this assessment 27 papers were left for detailed review. Here, I used a coding scheme based on Grant (2010) and Collis and Rukstad (2008) to read and skim the papers in full-text format. The key words grouped the occurrences into categories. The results of the literature analysis are summarized and presented in table (1) in the appendix. The analysis resulted in the creation of the classification of a service-strategy grid (figure 1).

4. Results

FM organizations face a wide array of complex opportunities, global market expansions, developing internal and external services, and practices to remain working online and offline. Alexander (2003: 270) states that "the facilities management movement can be summarized as a belief in potential to improve processes by which workplaces can be managed to inspire people to give of their best, to support their effectiveness and ultimately to make a positive contribution to economic growth and organizational success." Like Alexander (2003), many other researchers have showed that FM services provide the infrastructure for businesses and that FM plays a key role in attracting customers and investments (Becker, 2003; Chotipanich & Nutt, 2008; Mossel & Jansen, 2010; Chan et al., 2010; Khazraei & Deuse, 2011; Price, 2011). All the authors strongly requested that FM must be seen in the context of business.

Grimshaw (2003) showed that FM as a profession is the interface between business and people. Walker et al. (2007) showed that FM implements the necessary policies and procedures to demonstrate an organization's ability to manage the built environment. Therefore, business principles help to focus on business success. Williams (1996), Nutt (2000) and Alexander (1996; 2003) have demonstrated that information is the key to FM. From a more approving point of view, usability and access to information is seen as the key to business success (Walker et al., 2007). Key to the strategic role of FM is the ability of an organization to manage information (Owen & Aitchison, 1988; Grimshaw, 1999; Nävy, 2006, May, 2006; Chotipanich & Nutt, 2008; Pemsel et al., 2010; Khazraei & Deuse, 2011).

There has been little research, evidence and analysis on frameworks in FM that explore the management of core competencies and dynamic capabilities (Barney, 1991; Grant, 1991; Teece et al., 1997; Sanchez & Heene, 2003; Pitelis & Teece, 2010). Even the classic readings on strategy in FM (Bröchner, 1991; Grimshaw, 1999; Chan et al., 2001; Nutt, 2000; Alexander, 1996, 2003) have been found to give little direction in terms of market segmentation, business and FM strategy. However, there are new trends emerging into FM. Price et al. (2011) for example have included environmental commitment to the primary objectives of FM. The authors followed Walker et al. (2007) who presented increasing pressures for environmental reporting of organizations. Organizations achieve a competitive advantage in the marketplace, by implementing environmental management systems to promote the organization's identity and service brand personality. Price et al. (2011) have showed that large multi-national organizations have a greater influence in the FM

marketplace. Furthermore, one could propose that a sustainability policy has an influence on sustainable business practices. On a corporate level, the scope of FM ensures that borders are clear to all employees, by specifying where the organization will not go to do business. This can also encourage experimentation and initiative among employees (Grimshaw, 1999; Chotipanich & Nutt, 2008; Chan et al., 2010). In terms of business strategy, Lind and Muyingo (2012) have showed that preventive maintenance strategy provides the advantage of being able to perform service activities when it is convenient to the user. The authors stressed the importance of the capability development processes of organizations at the industry level. Bröchner (2008) has showed that service innovation in FM is dependent on the FM service provider. In outsourcing relationships the service provider mobilizes a specific set of capabilities and competences that can change the buyer behaviour. Bröchner (ibid) states that the integration of the construction contractor affects the objective, scope, and advantage of FM services in terms of innovation, service maintenance quality, sharing information, and relationship quality.

Understanding strategy and strategic thinking has become important in FM. Some FM literature focuses on strategic management and thinking. Strategic management involves two processes: planning and thinking (Eisenhardt & Sull, 2001; Chan et al., 2001; Alexander, 2003; Khazraei & Deuse, 2011). Planning concerns analysis. It involves establishing and formalizing systems, procedures and routines. Thinking involves synthesis. Synthesis in FM means thinking about scenarios and strategy in a creative manner. It is free from boundaries. Strategic FM thinkers view the organization as a complex system, affected by internal and external issues. Internal issues are determined by the objective, scope and advantages of an organization. The strategic FM thinker (top level and middle managers) needs to be able to obtain internal operational information (Chan et al., 2001; Shabha et al., 2003; Alexander, 2003; Bröchner, 2008; Lavy & Bilbo, 2009; Nikolopoulos et al., 2003; Pemsel et al., 2010).

Research has shown that strategic competencies are associated with organizational performance and customer satisfaction (Williams, 1996; Grimshaw, 1999; Becker, 2003; Lavy & Bilbo, 2009; Mossel & Jansen, 2010). In terms of service and maintenance strategy Khazraei and Deuse (2011) have distinguished two key strategies in line with Chan et al. (2001): (a) reactive maintenance and (b) preventive maintenance. The objective of FM when following a reactive FM strategy means maintenance in the form of repair work or the replacement of machinery and equipment. It will be performed when machinery or equipment

has failed. In contrast, preventive maintenance service provides systematic inspections, detection, and corrections of incipient failures before failures occur. It is a maintenance planning process for various items in the built environment; balancing maintenance resources with the reliability requirements (Chan et al., 2001; Becker, 2003; Shohet, 2003). Khazraei and Deuse (2011), Bröchner (2008; 2010), Alexander (2003), Grimshaw (1999), Walker et al. (2007) and Hinks et al. (2007) have shown that any organization is subject to a web of beliefs, values, norms, and assumptions that guide and constrain its actions and movements over time. Here, the objective of FM is to reduce the probability of failure, characterized as a part of an overall preventive maintenance strategy. The overall results and findings from the literature review show that FM service strategies include business principles, technology, service goals, resources, and the capabilities of service action. The next section synthesizes the results of the literature review into a classification grid of service and strategy types.

5. Linking Service Type to Strategy Type

Following from the preceding arguments, I propose that a match with cost sensitive issues and a more abstract thinking will lead to an enhanced understanding of the facility services and maintenance strategy. One way to understand these relationships is to focus on how business strategy may be triggered by different service types. As mentioned earlier, service features can vary on two market dimensions, mass customization or standardization. In line with Chan et al. (2001), Lind and Muyingo (2012), and Khazraei and Deuse (2011), I will link the market perspective to the FM service and maintenance perspective. Hence, I will link market dimensions to reactive and preventive strategies in FM. The classification grid below presents the outcome of this synthesis. The vertical axis describes an organization's service type. The horizontal axis describes the strategy type when an organization delivers the FM service.

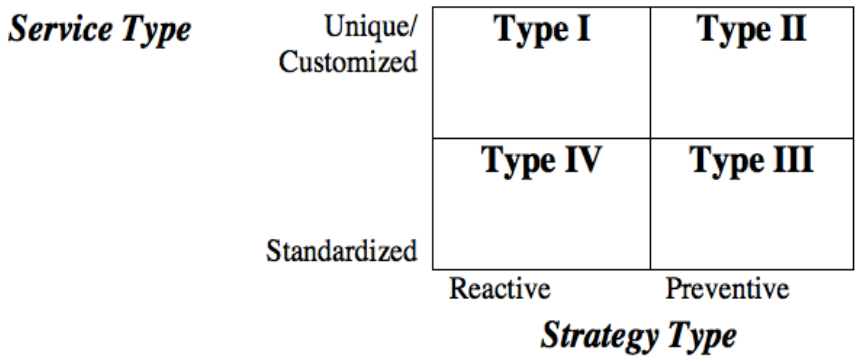

Figure 1: Service management classification (own figure)

A service type is ‘unique’ or ‘mass customized’ when an organization provides highly customized and expertise-oriented FM services to an end-user or customer’s problem. A service type can be ‘standardized’ when an organization provides low content-dependent and process-oriented services. The strategy type can be ‘reactive’ when an organization’s key concern is to offer ad-hoc solutions on a small budget and to trim down equipment failures once they occur. The strategy type ‘preventive’ describes an organization whose objective is to reduce the probability of failure in the time interval after the FM service or maintenance has been applied. The two dimensions form four different types of FM service-strategy approaches: (Type I) unique FM service with a reactive service strategy, (Type II) unique FM service with a preventive service strategy, (Type III) standardized FM service with preventive service strategy, and (Type IV) standardized FM service with reactive service strategy.

6. Conclusions

The review result on the basis of 27 papers shows that the literature mainly discusses strategy in a technical logic, by shrinking service and maintenance costs. In contrast this paper offers a service-strategy based classification grid to describe how customers and service providers could make better use of FM services and maintenance. Linking strategy, market segmentation theory and FM maintenance practices into a classification grid may help to improve competition over organizational resources and capabilities. This analysis explains FM and its strategic frame through a service-strategy classification grid of FM services. Both theory and research in the field of strategy and strategic management suggests that a successful formation of an organization is linked to the ability to recognize and establish a fit between current and future resources. This includes the relationships of selected competences and the skills of employees and managers.

To become more precise about strategy in FM this paper has developed a service-strategy classification grid (figure 1) that is based both on business and strategy theory. Specifically it describes strategy from a market and service perspective. Basically I see two implications of my work: First, there is a distinction between cost related services and life-cycle related services in FM. Cost related FM services are becoming commodities and are short-term focused. On the other hand, life-cycle related services are demanded in sensitive business areas where failure must not occur. Here, preventive strategy is dominated by information exchange and coordination and IT and IS are key to business success while FM becomes a strategic role in business processes.

Second, prominent definitions of FM fail to recognize fully that strategy may be actively created and communicated throughout a FM task on a corporate level as well. This raises the question of how strategy definitions in FM can be extended to incorporate active and ongoing creation of strategy and related components in FM. A large portion of the reviewed papers uses the notion of strategy rather loosely.

A more detailed comparison of FM service commodities and premium services could shed light on this issue. Research could focus on top-performing FM service providers who appear to share the view of their customers about efficiency and effectiveness. It would be worth examining options for raising and restructuring FM strategy to retain high-performance service providers who become top-performance service providers. To become more precise about the meanings of strategy and elements of strategy in FM, this paper re-heats the call for more research on strategy in FM. Resolving this issue requires more and better knowledge about how different strategy schemes are useful to FM, IT and IT infrastructure in FM, and about the role of the interaction of key players in the businesses of space. This calls for processual and more chronologically focused studies of FM strategy and management. Many of these exciting ideas in strategic FM are still in early stages, and FM managers have yet to turn them into systematic solutions. Some high-priority actions for facility owners and users and their collaborators should include defining what a 'FM strategy' would look like, what initiatives would help, and how workable standards could be integrated into strategic FM. Guiding principles such as: put the needs of owners and users first; keep room for real-world interactions and ensure that the people, places and processes work together; are important to any business success in FM. This paper hopes that its research can contribute to the discussion.

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References

Alexander, K. (1996): Facilities Management: Theory and Practice. Routledge.

Alexander, K. (2003), "A strategy for facilities management". Facilities, 21(11/12), 269-274.

Alexander, K., Atkin, B., Bröchner, J., Tore H. (2004): Facilities Management: Innovation and Performance. Spon Press.

Anderson, J. C., Narus, J. A. (1998): "Business Marketing: Understand What Customers Value". Harvard Business Review, 76(6), 53-65.

Andrews, K. R. (1986): Concept of Corporate Strategy. Richard D Irwin.

Ansoff, H. I. (1979): Strategic Management. Halsted Press.

Arnold C. L. (2005): "Changing the role of workplace design within the business organisation: A model for linking workplace design solutions to business strategies". Journal of Facilities Management, 3(4), 299.

Atkin, B., Brooks, A. (2009): Total Facilities Management. Wiley-Blackwell.

Barney, J. (1991): "Firm Resources and Sustained Competitive Advantage". Journal of Management, 17(1), 99 -120.

Barrett, P. (1995): Facilities Management: Toward Better Practice, Blackwell Science Inc.

Barrett, P. (2000): "Achieving strategic facilities management through strong relationships". Facilities, 18(10/11/12), 421-426.

Barrett, P., Baldry, D. (2003): Facilities Management: Towards Best Practice. Wiley-Blackwell.

Basole, R. C., Rouse W. B. (2008): "Complexity of service value networks: Conceptualization and empirical investigation". IBM Systems Journal, 47(1), 53-70.

Becker, F. (2003): "Integrated portfolio strategies for dynamic organizations". Facilities, 21(11/12), 289-298.

Boed, V. (1999): Networking and Integration of Facilities Automation Systems. CRC Press.

Bogenstätter, U. (2008): Property Management und Facility Management. Oldenbourg Wissenschaftsverlag.

Boone, T., Ram G. (2001): "The effect of information technology on learning in professional service organizations". Journal of Operations Management, 19(4), 485-495.

Brynjolfsson, E. (1994): "Technology's True Payoff - An MIT survey finds that business tends to overlook intangibles when evaluating information technology". InformationWeek 500, (496), 34-36.

Bröchner, J. (1991): "Information Technology and Facilities Management". Facilities, 9(1/2), 28-33.

Bröchner, J. (2008): "Construction contractors integrating into facilities management". Facilities, 26(1/2), 6-15.

Bröchner, J. (2010): "Construction contractors as service innovators". Building Research & Information, 38(3), 235.

Bröchner, J., Henrik O., Davor S. (2004): "Serviced offices: owner capabilities for FM coordination". Facilities, 22(3/4), 74-78.

Chan, D. W.M., Patrick T. I. L., Albert P.C. C., Wong J. M.W. (2010): "Achieving better performance through target cost contracts: The tale of an underground railway station modification project". Facilities, 28(5/6), 261-277.

Chan, K.T., Lee R. H. K., Burnett J. (2001): "Maintenance performance: a case study of hospitality engineering systems". Facilities, 19(13/14), 494-504.

Chan, Y. E., Blaize H. R. (2007): "IT alignment: what have we learned?" Journal of Information Technology, 22(4), 297-315.

Chandler, A. D. (1962): Chandler: Strategy Structure. MIT Press.

CEN (2011): European Committee for Standardization, EN 15221-1, http://www.eurofm.org/knowledge/en15221 (retrieved on October 15th, 2012).

Chotipanich, S. (2004): "Positioning facility management". Facilities, 22(13/14), 364-372.

Chotipanich, S., Bev, N. (2008): "Positioning and repositioning FM". Facilities, 26(9/10), 374-388.

Clements-Croome, D. (2006): Creating the Productive Workplace. Taylor & Francis.

Collis, D. J., Montgomery C. A. (2008): “Competing on Resources”. Harvard Business Review, 86(7/8), 140-150.

Collis, D. J., Rukstad, M. G. (2008): “Can You Say What Your Strategy Is?” Harvard Business Review, 86(4), 82-90.

Cotts, D. G., Roper K. O., Payyant R. P. (2009): The Facility Management Handbook. AMACOM.

Duffy, F., Craig D., Gillen N. (2011): “Purpose, process, place: design as a research tool”. Facilities, 29(3/4), 97-113.

Eisenhardt, K. M., Sull D. N. (2001): “Strategy as Simple Rules”. Harvard Business Review, January.

Elle, M., Jesper E., Bo J., Koch Ch., Susanne B. N., Flemming V. (2004): “Managing facilities in a Scandinavian manner: creating a research agenda”. Facilities, 22(11/12), 311-316.

Finch, E. (2011): Facilities Change Management. Wiley-Blackwell.

Gilmore, J. H., Pine B. J. (2000): Markets of One: Creating Customer-Unique Value through Mass Customization. Harvard Business Review Press.

Goyal, S., Pitt, M. (2007): “Determining the role of innovation management in facilities management”. Facilities, 25(1/2), 48-60.

Grant, R. M. (1991): “The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation”. California Management Review, 33(3), 114-135.

Grant, R. M. (2010): Contemporary Strategy Analysis. Wiley.

Grimshaw, B. (1999): “Facilities management: the wider implications of managing change”. Facilities, 17(1/2), 24-30.

Grimshaw, R.W. (2003): “FM: the professional interface”. Facilities, 21(3/4), 50-57.

Hair, J. F., Money A. H., Page, M., Samouel, P. (2007): Research Methods for Business. John Wiley & Sons.

Haynes, B. P. (2007): “Office productivity: a shift from cost reduction to human contribution”. Facilities, 25(11/12), 452-462.

Hertzum, M., Torkil C., Kasper H., Jyoti K., Qingxin S., Pradeep Y. (2011): “Personal usability constructs: How people construe usability across nationalities and stakeholder groups”. International Journal of Human-Computer Interaction, 27(8), 729-761.

Hinks, J., Martin A., Dunlop, G. (2007): “Translating military experiences of managing innovation and innovativeness into FM”. Journal of Facilities Management, 5(4), 226-242.

Hofer, C. W., Schendel, D. (1978): Strategy Formulation: Analytical Concepts. West Group.

Hon, Carol K.H., Albert P. C. C., Daniel W. M. C. (2011): “Strategies for improving safety performance of repair, maintenance, minor alteration and addition (RMAA) works”. Facilities, 29(13/14), 591-610.

Johnston, R.(1996): “Achieving Focus in Service Organisations”. The Service Industries Journal, 16(1), 10-20.

Kempton, J., Syms, P. (2009): “Modern methods of construction: Implications for housing asset management in the RSL sector”. Structural Survey, 27(1), 36-45.

Khazraei, K., Deuse, J. (2011): “A strategic standpoint on maintenance taxonomy”. Journal of Facilities Management, 9(2), 96.

Krimmling, J. (2010): Facility Management: Strukturen und methodische Instrumente. Fraunhofer Irb Verlag.

Lavy, S., Bilbo, D. L. (2009): “Facilities maintenance management practices in large public schools, Texas”. Facilities, 27(1/2), 5-20.

Lazonick, W., O’Sullivan, M. (2000): “Maximizing shareholder value: a new ideology for corporate governance”. Economy and Society, 29(1), 13-35.

Lind, H., Muyingo, H. (2012): “Building maintenance strategies: planning under uncertainty”. Property Management, 30(1), 14-28.

Marco, A. D., Mangano, G. (2011): “Relationship between logistic service and maintenance costs of warehouses”. Facilities, 29(9/10), 411-421.

May, M. (2006): IT im Facility Management erfolgreich einsetzen: Das CAFM-Handbuch. Springer Berlin Heidelberg.

May, M., Madritsch, T., Scharer, M., Koenig, T., Meier, J. (2007): Computer Aided Facility Management im deutschsprachigen Raum. Kufsteiner Hochschulhefte.

Mintzberg, H. (1980): The Nature of Managerial Work. Prentice Hall College Division.

Mossel, H. J. van, Jansen, S. J. T. (2010): “Maintenance services in social housing: what do residents find important?” Structural Survey, 28(3), 215-229.

Nikolopoulos, K., Metaxiotis, K., Lekatis, N., Assimakopoulos, ,V. (2003): “Integrating industrial maintenance strategy into ERP”. Industrial Management & Data Systems, 103(3), 184-191.

Nutt, B. (2000): “Four competing futures for facility management”. Facilities, 18(3/4), 124-132.

Nutt, B. (2004): “Infrastructure resources: forging alignments between supply and demand”. Facilities, 22(13/14), 335-343.

Nävy, J. (2006): Facility Management: Grundlagen, Computerunterstützung, Systemeinführung, Anwendungsbeispiele. Springer-Verlag: Berlin, Heidelberg.

Owen, M., Duncan A. (1988): “Facilities Management - The alternative Information Technology Revolution”. Industrial Management & Data Systems, 88(5/6), 15-17.

Pemsel, S., Kristian W., Bengt H. (2010): “Managing the needs of end-users in the design and delivery of construction projects”. Facilities, 28(1/2), 17-30.

Pitelis, C., David J. T. (2010): “Cross-border market co-creation, dynamic capabilities and the entrepreneurial theory of the multinational enterprise”. Industrial and Corporate Change, 19(4), 1247-1270.

Porter, M. E. (1996): “What Is Strategy?” Harvard Business Review, Nov 01, 21.

Porter, M. E., Mark R. K. (2011): “Creating shared value”. Harvard Business Review, 89(1/2), 62-77.

Prahalad, C. K. (1994): “Corporate Governance or Corporate Value Added?: Rethinking the Primacy of Shareholder Value”. Journal of Applied Corporate Finance, 6(4), 40-50.

Price, I. (2004): “Business critical FM”. Facilities, 22(13/14), 353-358.

Price, S., Michael P., Tucker, M. (2011): “Implications of a sustainability policy for facilities management organisations”. Facilities, 29(9/10), 391-410.

Redlein, A. (2004): Facility Management: Business Process Integration. Diplomica-Verlag.

Rumelt, R. P., David J. T., Dan E. S. (1994): Fundamental Issues in Strategy: A Research Agenda. Harvard Business.

Salonen, A. (2004): “Managing outsourced support services: observations from case study”. Facilities, 22(11/12), 317-322.

Sanchez, R., Aime H. (2003): The New Strategic Management: Organization, Competition, and Competence. Wiley.

Shabha, G. (2003): “A low-cost maintenance approach to high-rise flats”. Facilities, 21(13/14), 315-322.

Shohet, I. M. (2003): “Key performance indicators for maintenance of health-care facilities”. Facilities, 21(1/2), 5-12.

Teece, D. J., Gary P., Amy S. (1997): “Dynamic capabilities and strategic management”. Strategic Management Journal, 18(7), 509-533.

Then, D. S. (1999): “An integrated resource management view of facilities management”. Facilities, 17(12/13), 462-469.

Tucker, M., Smith, A. (2008): “User perceptions in workplace productivity and strategic FM delivery”. Facilities, 26(5/6), 196-212.

Tulla, K., Pentti V., Tapio M., Anne T., Veli M. (2009): “RFID technology changes FM services deliveries”. Facilities, 27(11/12), 457-468.

Walker, D., Pitt, M., Urmila J. T. (2007): “Environmental management systems: information management and corporate responsibility”. Journal of Facilities Management, 5(1), 49-61.

Webster, J., Watson, R. T. (2002): “Analyzing the past to prepare the future: Writing a literature review”. MIS Quarterly, 26(2), 13-23.

Williams, B. (1996): “Cost-effective facilities management: a practical approach”. Facilities, 14(5/6), 26-38.

Wood, B. (2005): “Towards innovative building maintenance”. Structural Survey, 23(4), 291-297.

Yik, F. W. H., Joseph H. K., Lai (2005): “The trend of outsourcing for building services operation and maintenance in Hong Kong”. Facilities, 23(1/2), 63-72.

Appendix

No.	Citation	Focus of study, findings
1	(Alexander 2003)	The FM discipline covers all aspects of property, space, environment control, health and safety, and support services.
2	(Becker 2003)	Study on organizational strategies, new ways of working, and global competition. Strategy issues: Cost-reduction remains an important driver for an Integrated Portfolio Strategy.
3	(Bröchner 2008)	Study on construction contractors who enter the FM supply market. Strategy is needed that transforms a project view into a broader understanding of support services, continuously delivered.
4	(Bröchner 2010)	This study ascertains the importance of a set of internal and external factors for the intensity of technological and non-technological innovation among construction contracting firms.
5	(Chan et al. 2001)	Concept of strategic maintenance for the development of a maintenance program; Strategy issues: Traditional and direct maintenance strategy is referred to the breakdown basis, comprising reactive maintenance (ReM) and emergency maintenance (EM). The renovation basis consists of two strategic approaches called modification maintenance (MM) and design-out maintenance (DoM). The integration basis can be divided into two systematic approaches: total productive maintenance (TPM) and reliability centered maintenance (RCM).
6	(Chan et al. 2010)	This paper explored the implementation framework, underlying motives, and critical success factors of adopting the target cost contracting form of procurement/sourcing.
7	(Chotipanich and Nutt 2008)	This paper addresses the question about how facility management should support arrangements to be positioned and repositioned to meet the needs and expectations of an organization, its staff and customers, as priorities shift and business circumstances change.
8	(Grimshaw 1999)	The core of FM relates to managing the changes, taking place in the relationship between organizations, their employees and their facilities.
9	(Hon et al. 2011)	The purposes of this paper are to identify and then evaluate the various strategies for improving the safety performance of repair, maintenance, minor alteration, and additional (RMAA) sector works.
10	(Kempton and Syms 2009)	Drivers of modern methods of construction (MMC) and the potential impacts of MMC on asset management from a long-term maintenance perspective. Strategy issues: Modern methods of construction (MMC) have implications of long term maintenance as their responsibility.
11	(Khazraei and Deuse 2011)	The paper provides new maintenance taxonomy by taking into account the conception of strategy science.
12	(Lavy and Bilbo 2009)	Study on 320 school facilities managers. The main purpose of this study is to identify and analyze how facilities maintenance is planned, managed and carried out by large public schools in the State of Texas, USA. Strategy issues: A well conceived, formulated and written school facilities maintenance plan is an essential component of an effective school program.
13	(Lind and Muyingo 2012)	Study on the structure for maintenance; focusing on long-term strategy goals for various buildings/components and then short run adjustments when new information generates. Strategies identified: corrective maintenance and preventive (or planned) maintenance.

14	(Marco and Mangano 2011)	The purpose of this paper is to prove that maintenance cost of warehouses is correlated to the performance of the logistic business, together with other relevant operational factors.
15	(Mossel and Jansen 2010)	Maintenance strategy impacts on customer satisfaction (survey of more than 6,000 tenants of Dutch housing associations); reactive strategies: satisfaction with the particular maintenance services. The authors found that maintenance services of drains, lifts, heating and water systems are most important to drive satisfaction.
16	(Nikolopoulos et al. 2003)	Study on design and integration of maintenance management strategy into ERP systems.
17	(Nutt 2000)	The primary function of FM is resource management, a strategic, and operational level of support. The essence of a strategic approach is making decisions in changing, uncertain, unpredictable and competitive circumstances (defense, attack mode).
18	(Pemsel et al. 2010)	Problems have to be managed alongside of the understanding end-users' real needs. To help in managing these issues, facility planners relied heavily on pedagogical and behavioral skills, rather than formalized methods as found in the literature.
19	(Price et al. 2011)	Objectives of FM; Research showed a link between the presence of a sustainability policy and the implementation of sustainable business practice. The position of facilities management.
20	(Salonen 2004)	Coordination mechanisms transcend traditional market mechanisms.
		The authors concluded, when companies outsource maintenance services, a contrast arises between the client's long- term maintenance strategies and the supplier's incentive to provide quality service.
21	(Shabha 2003)	This paper critically evaluates the approach to low-cost maintenance and refurbishment of high-rise buildings in parts of Birmingham, UK. Findings related to reactive FM strategy/ maintenance: Cutting cost at the initial design and construction stages has led to a significant increase in the long-term cost of replacing faulty components and running cost.
22	(Shohet 2003)	The performance of hospital buildings is affected by numerous factors, including quality of hospital maintenance.
23	(Then 1999)	FM is concerned with the delivery of the enabling workplace environment, the optimum functional space that supports the business processes and human resources.
24	(Walker et al. 2007)	FM is identified as a link between knowledge management systems for attaining continued business success.
		Key to strategic facilities is the ability of the facilities organization to manager information.
25	(Williams 1996)	'Premises and Facilities Benchmarking Data' offer the best solution to customized FM services. IT is key to FM.
26	(Wood 2005)	Study on user needs in building maintenance. Paradigm reactive maintenance and planned preventive maintenance (PPM) fails to put people at the centre.
27	(Yik and Lai 2005)	Study on recent trends of outsourcing for building services operation and maintenance work for commercial buildings in Hong Kong. It requires maintenance to keep up its structural integrity, water-tightness and aesthetic appearance, and both inside and outside. Cost cutting strategies - outsourcing for building services operation and maintenance (O&M) work.

Table 1: Sample of studies and conceptual papers that acknowledge the concept of strategy