The Effect of Strategic Cost Management Tools on the Performance of Public-Private Partnership Projects

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Abstract

The study aims to investigate the effect of Strategic Cost Management (SCM) tools on the financial performance of public-private partnership PPP projects. A data content analysis was made. The researchers reviewed 31 studies that examined the effect of cost tools including traditional cost tools and SCM tools on the quality and profitability of PPP projects. The number of reviewed studies that confirm the effect of SCM tools on the quality and profitability of PPPs are 21 classified into 14 international studies and seven national studies. The researchers listed the most common SCM tools, as indicated in the studies reviewed, and coded them by numbers from 1 to 25 in the table (as shown in appendix 2). Finding indicate that Benchmarking and ABC tools are the most appropriate tools indicating high significance as they succeed in the reduction of costs, improvement of product quality, and the enhancement of PPP profitability.

In sum, this study contributes specifically to two accounting fields of research, namely (i) strategic cost management and (ii) cost accounting.

Introduction

Lately, the notion of the private financing of infrastructure projects has progressed globally. The government currently is not considered the only provider for the public works or services in society. The concept of the Public-Private Partnership (PPP) has been newly acknowledged as an essential influence for governments in providing infrastructure systems. This type of involvement suggests enhanced quality for the infrastructure projects owing to the competent management and skills of the private sector, allocating cost over time to the government, as well as fair profit of the private sector.

The private sector's proficiency, modernization, and talents elevate the cost of the project thus offers value for money to the government. As a result, managerial and financial proficiencies are taken into progression (Chan and

Cheung, 2014). The principal motive for accepting PPP involvements is the government need for support. In many countries, PPP system was initiated initially due to financial shortages to deliver public infrastructure and services. Also, the private sector's efficiency and expertise are considered an additional purpose for implementing PPP projects (Chan and Cheung, 2014).

Many researchers and practitioners described the advantages of PPP projects as opposed to standard procurement methods that lead to the importance of such participation. Some of these advantages are the transfer of risk, better value for money, more appropriate financial analysis, and enhanced partnership between the public sector and the private sector (Tang et al. 2010).

On the other hand, PPP projects are considered somehow complicated due to the long allowance span, imprecise projecting of investments and market demands, indefinite process capacity of the facility and the diverse stakeholders involved in the practice. All these aspects build lots of risks that should be considered while handling these projects (Yun et al. 2009). Also, there are political risks involved in the PPP participation that results from the communication with the government. Consequently, accurate risk distribution in PPP projects is critical so that each party can create its strategy to manage these types of risks to safeguard project success.

In addition to risks, financial assessment of PPP projects is considered an additional crucial factor for the triumph of such projects. Therefore, for the achievement of privately funded infrastructure, a high level of financing skill is essential in order to produce a sufficient plan that fulfills the stakeholders involved.

Several researchers have tried to reach an optimal capital structure for PPP projects to reduce financial risks as much as possible. However, the economic assessment of such projects is considered complex and stimulating due to the diversity of uncertainties and doubts involved; which makes the estimating of cash flows quite tricky. In PPP projects, the private sector handles more risks than any contractor in any other type of project. PPP projects are typically financed through changing sizes of debt and equity. Usually, the private sector will try to decrease the amount of investment and increase the amount of debt finance to reduce the level of risk exposure. On the other hand, creditors or lenders will try to promote the amount of equity finance to save a decent level of financial responsibility from the operators.

Strategic cost management helps in achieving the strategic goals of the company such as enhancing its competitive attitude, which in turn, increase the profitability. The relationship between the private and public sector may be built by achieving and sharing profits in return of providing services on an economy of scale. In addition to accomplishing several economic aspects to fulfill the social needs, the gains are achieved through the cooperation between the public and private sector in providing services.

Two forms of Strategic Cost Management (SCM) are described: (i) structural cost management, and (ii) executional cost management. Most profitable firms are interested in both forms (Anderson & Dekker, 2009). Structural cost management is the cost management activities, includes organizational tools, to change or build the cost structure of the firm. Executional cost management is the cost management activities, depends on management accounting tools measuring cost performance, to improve the performance. In summary, the purpose of SCM is to align a firm's resources and associated cost structure with: (i) short-term tactics through cost reductions (executional cost management), and (ii) long-term strategy through the re-engineering of the value chain and production of a different cost structure (structural cost management) (Henri et al., 2016). The researchers summarize the above in figure (1).

The goal of the study is to contribute to the growing SCM flow of research and specifically intend to address the advantages of PPP projects. More specifically, this study aims to examine the relationship between SCM tools, in terms of both executional and structural cost management, and performance. Three main research questions are investigated: (i) To what extent do SCM tools improve the quality of the decision-making process regarding financial and non-financial issues? (ii) To what extent do SCM tools increase the profitability of PPP projects? In order to provide answers to those questions, previous studies, examined this relationship between SCM and performance, have been reviewed. (iii) What are the most appropriate SCM techniques to enhance the performance and cost management of PPPs operating in Egypt? The answer to this question will be provided through the logical analysis of the results of the reviewed studies. This study contributes to reducing the gap found in previous literature.

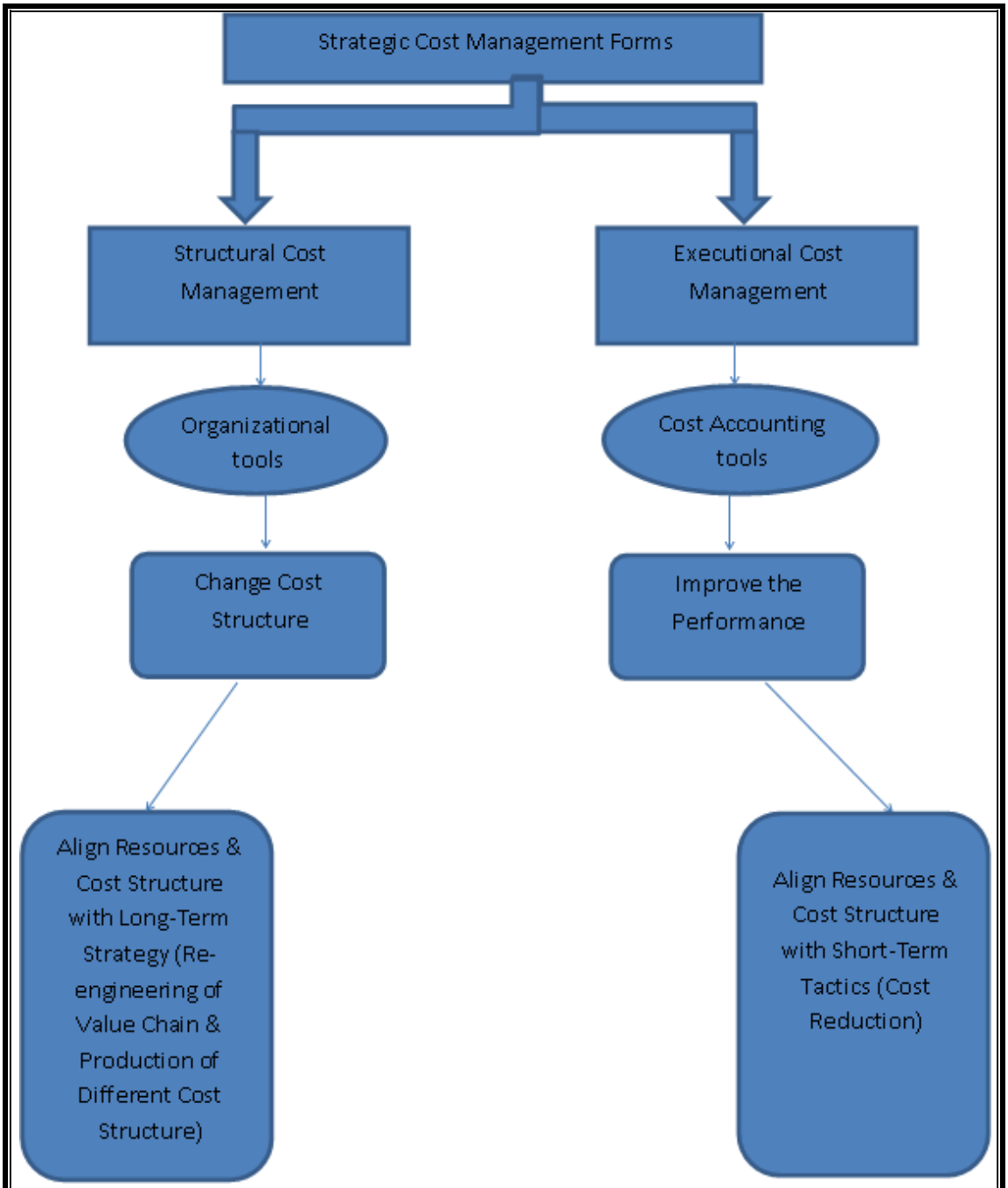

Fig. 1 summary of the SCM forms (by Authors)

The remainder of this paper is organized as follows. The second section presents the background and literature review. Then, the third section formulates the research hypotheses regarding the link between SCM tools and performance. After that, the fourth section presents the methodology followed by a description of the results of the analyses. Finally, the results and the conclusion of this study are summarized.

Literature Review

The financial model is an essential factor in the PPP projects for both the private and public sectors. This section of the study seeks to explore and summarize some of the most common ideas and research findings for the interrelated effect of PPP projects and the strategic cost management SCM tools. Strategic cost management is defined by Anderson (2007) as "deliberate decision making aimed at aligning the firm's cost structure with its strategy and optimizing the performance of the strategy" (Henri et al., 2016). The literature review exposes many key findings, which serve as the foundation of this study.

Ganapaiah (2017) study infers that (SCM) is an essential prerequisite for a business firm to gain advantages in modern increasingly competitive markets. An SCM system is a set of analysis, decisions, and activities made by a firm to create and sustain competitive advantage. The essence of SCM is to utilize a group of tools to generate information regarding planning, decision making, and control in order to help management to create more effective and efficient products or service.

There are researchers Garg, A. (2003), Baxendale, J. (2001), Guilding, C. et al (1998) David Lyall and Carol Graham (1993), Ghanbari, M. et al (2016), Huang, Q. (2018), Sulaiman, M.et al (2004, 2005), Rasiah, D. (2011), Ríos-Manríquez, M. et al (2014) that support the traditional cost tools especially for small businesses as they are considered more simple to use and less time consuming. However the situation is totally different for bigger firms with more complex operations. Hilton et al. (2000) believe that traditional cost systems are not valid to cope with the strategic management system. Therefore, they are not producing the information needed in the current business environment. As a result, cost management concept emerges that aims to provide a continuous cycle of information about the long term and short term transactions to add value and reduce costs.

Some researchers considered time dimension of cost management [Blocher et al. (1999), Shank (1989)] while others [Hilton et al. (2000), Dailey (1998)] ignored this variable. Nevertheless, both parties consider cost management as a system of improvement that permit firms to seek ways to strengthen its ties with customers to attain their satisfaction and reduce costs via specific tools to maximize profit and sustain competitive advantage [Horngren et al. (2003), Nicolaou (2003), Barfield et al. (2001), Hilton et al. (2000)].

Čadež (2006) studied Slovenian firms, El-Deeb et al. (2011), El-Deeb (2012), El-Deeb (2014), Mohamed (2013) and El-Dyasty (2007) studied Egyptian firms, Ganapaiah (2017) and Anand et al., (2005) investigated firms in India, De Melo & José (2015) studied firms in Brazil, Boiţă, et al., 2013 and Miculescu & Miculescu (2012) studied Romanian firms, Rahman et al., (2017) studied firms in Bangladesh, Kocakülâh & Austill (2006) studied firms in the

USA , Shingjergji and Sulanjaku (2015) studied Albanian firms, Deeb (2014) studies Palestinian firms.

Cadez (2006) evaluates data relative to 193 large Slovenian companies. Information is obtained from surveys that have been distributed, fully completed and collected. The results of investigating the application of 17 SCM techniques are reported. Results reveal there is a wide range of application rates for the 17 techniques appraised: the capital-budgeting and competitor- focused methods are the most widely used. The cross-industry comparison shows that levels of SCM usage are fairly distinct across industries. The manufacturing sector appears to be taking the lead whereas public services and the utility sector are lagging.

Deeb (2014) aims at recognizing the use of SCM by Palestinian services sector companies in the Gaza Strip and their role in decision making. In order to achieve this goal, the study adopted a descriptive, analytical approach and design a survey based on the theoretical research and previous studies in this regard. Forty-eight questionnaires were distributed. One of the most important conclusions of the study is that the system of the cost applied in services sector companies in Gaza Strip depends on scientific accounting principles that meet the needs of management in decision making.

Anand et al., (2005) aim to understand whether corporate India practices cost management in a value-chain analytic framework. Factor analysis was used. A nationwide survey to evaluate the design and applications of contemporary cost and performance management tools was performed. Fifty-three completed questionnaires have been received. The examination of responses revealed that the manufacturing and service firms that have adopted ABC were significantly more successful in capturing accurate cost information for value chain analysis and supply chain analysis.

The goal of the study by Henri et al., (2016) is to examine the relationship between executional and structural cost management and financial performance. They tested the link between SCM and financial performance; one specific context is investigated, namely the environmental costs. They found that the tracking of environmental costs positively influences financial performance. Also, they evidenced that executional cost management and structural cost management influences undoubtedly financial performance.

De Melo et al., (2015) analyzes the association between competitive strategies and management of manufacturing costs in small industrial firms. A descriptive survey with a quantitative approach was done. Findings infer that the integration of competitive strategies with cost management results in advantages, mainly for small industrial firms with combined priorities for strategic actions by product differentiation and reduction of costs, and that

alignment of competitive strategies with cost management. Findings also indicate that competitive advantages emerge from differentiation and low cost.

The study by Mohamed (2013) reviews the literature on cost accounting techniques practiced by the manufacturing and service industry. It concludes that practically all tools that are appropriate for service firms are also suitable for manufacturing firms. Never the less, the most common techniques in manufacturing companies include Activity Based Costing (ABC), Just in Time (JIT), Life Cycle Costing, Target Costing, Kaizen costing and Throughput Accounting, while, ABC is the most commonly used tool in the Service sector. However, ABC, Budgetary, Control, Cost Volume Profit analysis, and standard costing are common to both the manufacturing and service industries.

Boiţă et al., (2013) shows that knowledge of production costs in all its theoretical and practical complexity is a primary tool for operating management and is used to increase business efficiency. The cost study aims at solving the complex issue of cost production in various aspects, both at the microeconomic and macroeconomic level.

Rahman et al., (2017) examines the extent of use of Cost and Management Accounting Practices in Bangladesh cement industry. A sample of 23 cement companies was selected and analyzed. A structured questionnaire was distributed among selected professionals in the accounts and finance department. The study proposed a conceptual framework and revealed that there are five dimensions for practicing Cost and Management Accounting in the manufacturing industry. In terms of information for decision-making dimension, Cost Volume Profit (CVP) analysis is the most practiced tool. The cement companies widely accept value chain analysis for strategic analysis.

Kocakülâh & Austill (2006) discusses the use and process of target costing for product development, cost management, and product planning. They use a case study of a poultry processing company manufacturing home meal replacements for sale through supermarkets. Findings infer target costing will enhance the product and manufacturing planning process to assure greater efficiency and profitability.

Shingjergji and Sulanjaku (2015) evaluated the results of applying SCM tools by Albanian business firms to identify the most popular and frequently used tools. Shingjergji and Sulanjaku referred to a wide range of literature, made interviews and distributed questionnaires. From their analysis, they found SCM is a familiar concept in Albania and the business firms successfully adapt its tools. According to the respondents the most used SCM tools were: benchmarking, strategic pricing, customer accounting, and target costing. Findings indicate that the Albanian business firms have been successfully adopting strategic cost management tools to improve their competitive advantage in the market.

Ganapaiah (2017) study analyzes Strategic Cost Management (SCM) practices adopted by SMEs in India and how these practices impact their business performance. From the review of the literature, it was concluded that adopting Strategic Cost Management tools would be helpful to overcome financial challenges, be cost effective and more competitive in the market.

The research by Henri et al. (2015) provides evidence suggesting that executional cost management allows for the analysis of performance which influences structural cost management and the definition of cost structure. Their paper provides empirical results from 319 manufacturing firms supporting the impact of the tracking of environmental costs on financial performance in the context of strategic cost management. The results contribute to this stream of research by suggesting that although a direct link may occur between the design of cost systems and financial performance, one portion of the effect may be indirect through organizational actions. Thus, past conflicting results might be explained in part by the lack of attention devoted to structural cost management.

The study by El-Deeb (2012) introduces the strategic management accounting for hospitals. This accounting framework is used for following and analyzing a health facility's services, resources, and costs. It provides the means for both routine management control and its useful tool for examining costs in connection with productive efficiency. It is built around a cost centers orientation. It is designed primarily for hospitals, and it can be easily modified to suit any service organizations. The study conforms to (O' Connor & Martinsons 2006) that the traditional costing system cannot perform multiple activities. El-Deeb concludes that with the proper costing system (Marginal Costing, Full Absorption Costing, Standard Costing, and Activity-Based Costing) will result in accurate recognition of costs and profitability of hospital units. The findings showed that the application of SMA is enhancing the quality of the accounting information presented by the costing system, and the quality of the decision-making process in the healthcare industry. The SMA can be easily modified to suit any service firm.

El-Deeb (2014) is an empirical study that proposes the combination of both the intellectual capital concept (IC) (measured through difference between the market value and the book value of the company) and the balanced scorecard technique (BSC) to deal with measuring, reporting and strategically managing the intellectual capital in the Travel & Leisure businesses listed in the Egyptian stock exchange. The author makes an exploratory study by analyzing secondary data from annual reports. The author examines a sample of 13 Travel & Leisure firms listed in the EGX 30 to prove the relation between intellectual capital, IC disclosure in annual reports and the performance of the companies measured by ROA and ROE. Also, a questionnaire was distributed to test the usefulness of the proposed model of Intellectual Scorecard (ISC) on enhancing performance. The findings shed light on the rationality of the

intellectual scorecard model constructs and assure greater efficiency and profitability in the Egyptian travel and leisure companies.

El-Deeb et al. (2011) argue that the Activity Based Costing (ABC) system has proved successful in both products and services firms. The authors propose using a new model through the application of the ABC approach that can be implemented in the purchasing department as one of the most dynamic departments in the service sector to optimize purchasing activities performance. The authors propose purchasing measures, targeting customers' loyalty ensuring the continuous flow of supplies. The authors distributed surveys to three hundred purchasing manager and staff through five-star hotels in the Greater Cairo region. Data obtained was analyzed using the Statistical Package for Social Sciences (SPSS). Findings infer that further research is necessary to establish the exact nature of the causal linkages between proposed performance measures and strategic intent in order to gain insights into practice elsewhere.

Kamel et al. (2017) is a presentation of the Egyptian PPP history, current background, and present business environment. Semi-Structure interviews were conducted among different participants representing a mix of government officials, investors, project managers, and consultants. Findings prove that the Egyptian government has adopted earnest were a mix of government officials, investor representatives, project managers, and consultants. The Egyptian Government has adopted earnest measures to facilitate execution of PPP projects as a manner among others to overcome its chronic budget deficit. The authors argue that despite the efforts, PPP practices have not yet achieved the anticipated contribution to the Egyptian Economy.

This study is not meant to propose a framework for SCM tools. However, it gathers some previous literature on the different experiences of different business environments applying SCM tools in public-private partnership projects. This research aims to guide the government in accepting the process of PPP projects.

Economies of Scale

Economies of scale describe a competitive advantage that large firms have over smaller ones. It argues that firm size is related to profitability as large firms have greater strategic diversification, a greater possibility of renegotiating with clients and suppliers, greater ability to face competition, and keeping prices above the competitive level. In line with this idea, a positive association between firm size and profitability is anticipated (Serrasqueiro and Nunes 2008). The reason most often put forward to justify resorting to an external service provider is the advantage it can represent in terms of economies of scale.

Since the average cost incurred to supply a product or service depends on the quantity to be produced, it is best to outsource the activity in question to a "specialist" who has several customers. This insures economies of scale where customers benefit from competitive prices.

On the same note, in case of the public service management, one can easily understand that in house provision of public services does not enable the same economies of scale as PPPs. Indeed, as demonstrated by many studies in applied economics, operators that are present on several markets can realize economies of scale which is not the case for public authorities, as they only operate in a single market, unless the optimal output level is low, or the public body is large enough to be able to realize economies of scale itself.

The existence of such economies of scale can also explain the municipalities wish to pool their purchase policies and the management of their public services within organizations for inter-communal co-operation. Because private operators usually operate at a large scale to take advantage of those economies of scale, the sectors related to the provision of public services often suffer from high degrees of concentration.

If the research applies this reasoning to public service management, one can easily understand that in-house provision of public services (that is, direct public management) which is the alternative to externalization, whatever its form does not enable the same economies of scale as PPPs. Operators that are present on several markets can realize economies of scale which is not the case for public authorities, as they only operate in a single market, unless the optimal output level, beyond which average costs increase is low, or the public body is large enough to be able to realize economies of scale itself. Therefore, these advantages of contracting out are stronger when the value of investments to be set up is substantial (especially in the case of the construction/renovation of infrastructure) and as these investments are not too specific.

Public-Private Partnership (PPP)

There are various structures of a partnership between public and private sectors according to the political environment, the nature of the assets and the level of the private sector participation (Laing et al. 2011). Public-Private Partnership (PPP): create a robust legal framework, prioritize projects based on quantifiable public goals, pick politically smart projects, understand what the private sector needs, find the right revenue stream, create a clear and transparent process, build an empowered team, actively engage with stakeholders, monitor and learn from the partnership. Public-Private Partnerships aim to finance, design, construct and operate public sector facilities and services.

According to the PPP Resource and Research Center in Kuala Lumpur (Kong, 2007); PPPs are increasing the efficiency of infrastructure projects by long

term collaboration between the public and the private sector. PPP is the long term relationship between the public and private sectors, involving the sharing of risks and rewards of multi-sectors skills, expertise, and finance to deliver desired policy outcomes. PPP is a collective term for the relationships formed between the private sector and public bodies with the aim of introducing private sector resources or expertise in order to help provide and deliver public sector assets and services. A PPP is a partnership between the public and the private sector to deliver a project or service commonly provided by the public sector. It recognizes that both sides have advantages and by allowing each to do what it does best, public services and infrastructure is provided most efficiently. The term PPP refers to forms of cooperation between public authorities and the private sector to ensure the funding, construction, renovation, management, and maintenance of infrastructure. The term PPP is used to explain a broad assortment of arrangements from loose, informal and strategic partnerships Design Build, Finance and Operate (DBFO) type service contracts and formal joint venture companies.

According to the Egyptian PPP Central Unit (PPP Central Unit, 2009), the PPP projects are "the long term contractual relationship between the public sector and the private sector to have the private sector deliver a project or service traditionally provided by the public sector. PPP projects do not reduce the public sector's responsibility to improve public services; only the methodology for its provision and procurement is different."

A PPP is a very particular type of contract whereby the public partner (government entity) assigns some of its commitments to a private partner under a long-term contract that outlines the rights and obligations of each party during the term, as well as, the tools for its financial re-equilibrium arising from unexpected events or lack of compliance of the parties.

PPPs are an essential tool for developing infrastructure and therefore fostering economic development. PPPs are used with infrastructures like roads, airports, ports, power, water, and solid waste treatment and typically involve investment and operation and maintenance. PPPs are also used in social infrastructures like health and education. These are complex long-term contracts that typically span 15, 20, 25 years or more, depending on the nature of the project. In that period, demographics, technology, politics, and environment can all change, so contracts need to be flexible to adjust to the project's life cycle.

Some authors (Tang et al. 2010), (Li and Akintoye, 2008), (Laing et al. 2011), and (Roehrich et al., 2014) consider PPP a popular way of generating private capital and making projects affordable. They find PPPs: (a) to be attractive to larger and more sophisticated bidders to the project, (b) to reduce the life cycle costs of the projects, (c) to reduce implementation time of projects, (d) to increase the quality of public facilities and services, (e) to ensures that assets are adequately maintained, and (f) to facilitate creative and innovative

approaches to implementing projects. The public sector only pays when services are delivered.

However, these same authors (Tang et al. 2010), (Li and Akintoye, 2008), (Laing et al. 2011), and (Roehrich et al., 2014) find the private sector to have a high cost of finance. They consider PPPs to have: (a) long term relatively rigid structures, (b) unjustified costs, unrealistic price and income projections, (c) legal disputes between private operators and the government (d) problems in management relationship, (e) limited competition, (f) earning delays and high earning costs, (g) higher capital costs compared to traditional government acquisition . PPPs do not achieve absolute risk transfer.

Despite all this, the idea of PPPs was developed due to financial shortages in the public sector. It has demonstrated the ability of the private sector to add financial resources and to facilitate more efficient operations of projects.

Public-Private Partnership in Egypt

As firms continue to evaluate the opportunities of growth in alignment with government entities, businesses see the apparent increase in category competition, improved innovation with impact in specialized industries, and maximize consumer targeting creating unique progress in the country. Positive market sentiment toward progressive projects has led to immense growth in public-private partnerships, providing evidence that exclusive dependence on government alone cannot spur the economy.

The public sector is frequently responsible for providing finance in public facilities (Kamel et al 2017). In some cases, financing may be relegated to an outside party's responsibility. In this regard, PPP has imposed itself as a valid delivery/financing system. The system depends on a private body, an individual private entity or a consortium of investors, finances the design, construction, operation, and maintenance of a public project for a determined concession period (Algarni et al., 2007). At the end of the concession period, ownership is transferred to the public sector, probably after regaining the initial costs and achieving profits. Governments widely resort to abnormal financial resources after the critical political or economic events due to the withdrawal of foreign capital. More and above, governments may have no choice but the untraditional financing resources, particularly in case of the budget deficit (Kamel et al 2017). In light of these circumstances, PPP appears to be one of the best financial/delivery systems that may be adopted by the Egyptian government.

The Egyptian government budget deficit causes the development wheel to be hampered. Governments in both developed and developing countries are turning to private investments as an alternative source of funding to cover the funding shortages. In Egypt, the private sector involvement in infrastructure projects provides a new source of investment capital in addition to the high

quality of service to Egyptian citizens. PPPs create a new private sector facility management market, expand the economy, drive the creation of local long term funding markets, and stimulate job creation (PPP Central Unit, 2009).

The idea behind the PPP participation schemes in Egypt has been introduced since 2004 in order to sustain Egypt's growth in the field of infrastructure projects. The private sector's investment is required, as discussed earlier, to cover the government needs. It is estimated that Egypt can target 10-15% of its infrastructure needs through PPPs (PPP Central Unit, 2009). Accordingly later in 2006, the government of Egypt has established the PPP Central Unit within the Ministry of Finance. The role of the PPP Central Unit is to offer support and expertise, identify pilot projects together with the line ministry involved, set national guidelines for implementation, standardize PPP contracts, provide technical/advisory support to the responsible line ministry and monitor the implementation of PPP projects (PPP Central Unit, 2009).

PPPs in Egypt provide a new source of investment capital for infrastructure projects, in addition to the efficiency of the private sector’s management and skill that will lead to a high quality of the service with the least cost. Throughout a PPP project, the government retains control over the delivery of the specified level and standard of service (PPP Central Unit, 2009).

Research Hypotheses

Hypothesis 1: There is a significant impact of SCM tools on the quality of performance of PPP projects.

Hypothesis 2: There is an effect of SCM tools on the profitability of PPP projects

Research Methodology

Reviewing the results of the research by Henri et al. (2016) was the base for testing current research hypotheses. The results of their study supported the impact of SCM tools on the PPP projects and have guided to the identification of the best practice tool. In turn, these results evidenced the significance of the relationship between SCM and the performance of PPPs.

The study uses the data content analysis as a research method to examine the influence of SCM tools on the performance of previous PPP projects applied in Egypt. The study indicates the most appropriate SCM tools to be used in PPP projects that increase their quality and profitability. The data content analysis was performed by analyzing the results of some related previous studies to conclude the final results that supported our proposed hypotheses. The researchers collected many studies and then classified them into two groups titled National and International studies. The national studies present the studies that investigate the effect of SCM tools on PPP projects in Egypt.

International studies convey the results of examining the relationship between the SCM tools and performance of PPP projects around the world.

The researchers reviewed 31 studies that examined the effect of cost systems including traditional cost systems and SCM tools on the performance of PPP projects. The number of reviewed studies that confirm the effect SCM tools on the quality and profitability of PPP is 21 classified into 14 international studies and seven national studies summarized in Appendix (1). There were 10 studies Garg, A. (2003), Baxendale, J. (2001), Guilding, C. et al (1998) David Lyall and Carol Graham (1993), Ghanbari, M. et al (2016), Huang, Q. (2018), Sulaiman, M.et al (2004, 2005), Rasiah, D. (2011), Ríos-Manríquez, M. et al (2014) that were in-favor of the traditional cost tools. These studies argue that these tools are easier and less time consuming to use. However, the researchers focused on the data content analysis of the 21 studies that supported the application of the SCM tools in the PPP projects.

Research Results

The researchers reviewed 31 studies that examined the effect of cost tools including traditional cost tools and SCM tools on the quality of performance and profitability of PPP projects. The number of reviewed studies that confirm the effect of SCM tools on the quality and profitability of PPP is 21 classified into 14 international studies and seven national studies. There were 10 studies Garg, A. (2003), Baxendale, J. (2001), Guilding, C. et al (1998) David Lyall and Carol Graham (1993), Ghanbari, M. et al (2016), Huang, Q. (2018), Sulaiman, M.et al (2004, 2005), Rasiah, D. (2011), Ríos-Manríquez, M. et al (2014) that were in-favor of the traditional cost tools. These studies argue that these tools are easier and less time consuming to use. However the researchers focused on the data content analysis of the 21 studies that supported the application of the SCM tools in the PPP projects. The study performed a logical analysis for the results of prior studies, around the world and in Egypt, to investigate the effect of SCM tools on the firm quality and profitability. The results of reviewing 31 studies showed that 21 studies out of that total evidenced the impact of SCM tools on the financial performance of PPP projects .Then the analysis was conducted for those 21 studies to identify the most effective SCM tool . The researchers listed the most common SCM tools, as indicated in the studies reviewed, and coded them by numbers from 1 to 25 in the table (as shown in appendix 2). They classified reviewed studies into 14 International and 7 National studies.

Table (1)

Classification	Number
International	14
National	7
Total	21

Table (2) summarized the result of the logical analysis. Findings indicate that a large number of international studies supported bench marking (4), target costing (7), life cycle costing (9), and ABC (10) as the most useful tools. About 30% of international studies (4 studies) [e.g., Čadež (2006), Shingjergji and Sulanjaku (2015)] agreed that Benchmarking is one of the most appropriate tools. Also, Target costing, Lifecycle costing and ABC have been supported by the same percentage of the international studies as most effective tools [e.g., Anand et al. (2005) Kocakülâh and Austill (2006), De Melo et al. (2015)], while the findings of rest of international studies are segregated among the other 21 tools.

On the other side, according to national studies, balance score card (11) has been considered the most appropriate SCM tool represented by 60%. As noted, bench marking (4) and ABC (10) shared the same importance in both national and international studies. As presented in table (2), Benchmarking and ABC tools have been supported by four international studies (30%) and three national (about 45%) studies. Thus, about 7 (national studies) out of the 21 studies that focus on the impact of application of SCM tools on the quality and profitability of PPPs agreed that Benchmarking and ABC tools are the most appropriate tools indicating high significance [e.g., El-Dyasty (2007), Anand et al. (2005)] as they succeed in the reduction of costs, improvement of product quality, and the enhancement of firm profitability. This inturn proves the validity of H1 and H2 of the study.

Table (2)

Accepted Tools	Percentage			
	International		National	
Benchmarking	4	30%	3	43%
Target Costing	4	30%	2	29%
Lifecycle costing	4	30%	1	15%
ABC	4	30%	3	43%
Balanced Scorecard	1	7%	4	57%

Conclusion

From reviewing prior studies that investigated the impact of SCM tools on the quality and profitability of PPP projects, the researchers proved the proposed hypotheses. Also, they answered the question ‘what the most effective SCM tools are.'

The researchers concluded that the results gathered from the logical analysis for the results of prior research supported the relationship between the SCM tools and the performance of PPP projects. Also, these results suggested that the most appropriate SCM tools are Benchmarking, Target costing, Lifecycle costing, ABC and Balanced Scorecard. Thus, a general agreement is noted that

Benchmarking and ABC tools are the most appropriate tools of high significance when applied by PPP projects in Egypt as they succeed in the reduction of costs, improvement of product quality, and the enhancement of profitability. This, in turn, proves the validity of the proposed hypotheses of the study.

It can be recommended that Benchmarking and ABC Should be used to improve the quality and increase the profitability of the PPP projects in Egypt. The application of these tools may result in enhanced performance of Egyptian PPP projects.

The future research may need to expand on the study at hand by investigating the success of applying suggested SCM tools in enhancing performance and cost management in Egyptian business environment through intensive interviews with management of prior PPPs in Egypt.

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Conference

Kamel, et al (2017), PUBLIC PRIVATE PARTNERSHIP IN EGYPT, CSCE Annual Conference Leadership in Sustainable Infrastructure

Appendix 1

	Title	Country	Technique
1	Čadež, (2006). A cross-industry comparison of strategic management accounting practices: an exploratory study.	Slovenia	Capital budgeting, Strategic pricing, Quality costing, Benchmarking, Strategic costing, Integrated performance measurement, Customer profitability, Value chain costing, Target costing, Attribute costing, Life cycle costing
2	El-Dyasty, M. M. (2007). A framework to accomplish strategic cost management.	Egypt	value chain analysis, activity based costing, competitive advantage analysis, target costing, total quality management, just-in-time, benchmarking, balanced scorecard, continuous improvement
3	Anand, M., Sahay, B. S., & Saha, S. (2005). Activity-based cost management practices in India: An empirical study.	India	ABCM activity based cost management, performance score card
4	De Melo, M. A., Leone, G., & José, R. (2015). Alignment between Competitive Strategies and Cost Management: a Study of Small Manufacturing Companies.	Brazil	ABC activity based cost, absorption cost, variable cost
5	Mohamed, (2013). Changes in the business environment and the level of management accounting practices in Egypt: A case study.	Egypt	multiple overhead rates, budgets, cost volume profit analysis, activity-based costing, product life-cycle cost, balanced scorecard, benchmarking, competitor analysis, target cost, just in time, Continuous value chain analysis, supply chain analysis
6	Nasieku & Oluyinka (2016). Cost Accounting Techniques Adopted by Manufacturing and Service Industry within the Last Decade	Revisit	marginal costing, absorption costing, throughput accounting, Just in Time, Activity Based Costing, Target Costing, Life Cycle Costing
7	Boiţă, et al(2013). Costs Management And The Added Value Method In The Consumer Perception.	Romania	Activity Based Management
8	Rahman, et al (2017), Extent of Use of Cost and Management Accounting in the Cement Industry of Bangladesh	Bangladesh	Activity Based Costing, activity-based budgeting Cost Volume Profit analysis, Value chain analysis, product life cycle analysis, and industry analysis, balance score card
9	Kocakülâh & Austill (2006). Product development and cost management using target costing: a discussion and case analysis.	USA	Target costing
10	Shingjergji and Sulanjaku (2015), Strategic Cost Management Accounting Instruments and Their Usage in Albanian Companies	Albania	Activity based costing, Benchmarking, Environmental Management Accounting, life cycle costing, Quality costing, Strategic costing, Strategic pricing, Target costing,
11	Ganapaiah, C. (2017). Strategic Cost Management and Business Performance: A Study of SME's in India-An Analysis.	٢٠ India	Strategic Cost Management Practices
12	Deeb (2014) Strategic cost management and its role in decisions making in the services sector companies in Palestine on Gaza strip	Palestine	Strategic Cost Management Practices

13	Strategic Cost Management as a recession survival tool in the Nigerian Manufacturing and Financial Service Industries	Nigeria	
14	Miculescu & Miculescu (2012). Strategic Management of Costs-The Main Tool of Competitive Advantage in The Current Economic Environment.	Romania	benchmarking, life cycle cost, cost of quality, strategic cost, strategic pricing, target cost, value chain analysis
15	Lumley & Gergely (2015). The Value Perspective in Strategic Cost Management. A case study of a support function in a large manufacturing firm.	Revisit	
16	El Kelety (2006). Towards a conceptual framework for strategic cost management-The concept, objectives, and instruments.	Revisit	
17	El Deeb (2012) "towards a strategic management accounting framework for cost management in egyptian healthcare industry"	Egypt	
18	Eldeeb, Mohamed Samy,(2011) A Balanced Scorecard Model to Align Performance Evaluation of Egyptian Hospitality Organizations	Egypt	Balance score card
19	El Deeb (2014), The Intellectual Scorecard in the Egyptian Travel & Leisure Companies,	Egypt	intellectual capital concept and the balanced scorecard technique
20	El-Deeb,et al (2011). Activity Based Costing (Abc) As An Approach To Optimize Purchasing Performance In Hospitality Industry.	Egypt	ABC (Activity Based Costing) system
21	Kamel, Montaser, and Abd El-Rashid (2017), PUBLIC PRIVATE PARTNERSHIP IN EGYPT, CSCE Annual Conference Leadership in Sustainable Infrastructure	Egypt	

Appendix 2		
Tools	Code	**Studies (national and international)**
Capital budgeting	1	**National:** —— **International:** Čadež (2006)
Quality costing	2	**National:** —— **International:** Čadež (2006), Shingjergji and Sulanjaku (2015)
Strategic pricing	3	**National:** —— **International:** Čadež (2006), Shingjergji and Sulanjaku (2015), Miculescu and Miculescu, (2012)
Bench marking	4	**National:** El-Dyasty (2007), Mohamed (2013), El-Deeb (2014) **International:** Čadež (2006), Shingjergji and Sulanjaku (2015), Miculescu and Miculescu, (2012), El-Deeb (2011).
Strategic costing	5	**National:** —— **International:** Shingjergji and Sulanjaku (2015), Miculescu and Miculescu (2012)
Value chain costing	6	National: El-Dyasty (2007), Mohamed (2013) International: Čadež (2006), Rahman et al (2017), Miculescu and Miculescu (2012)
target costing	7	National: El-Dyasty (2007), Mohamed (2013) International: Čadež (2006), Kocakülâh and Austill (2006), Shingjergji and Sulanjaku (2015), Miculescu and Miculescu (2012)
Attribute costing	8	National: —— International: Čadež (2006)
Life cycle costing	9	National: Mohamed (2013), International: Čadež (2006), Rahman et al (2017), Shingjergji and Sulanjaku (2015), Miculescu and Miculescu (2012)
ABC	10	National: El-Dyasty (2007), Mohamed (2013), El-Deeb et al (2011) International: Anand et al (2005), de Melo, et al (2015), Rahman et al (2017), Shingjergji and Sulanjaku (2015)
Balance scorecard	11	National: El-Dyasty (2007), Mohamed (2013), El-Deeb and Samy (2011), El Deeb (2014) International: Anand et al (2005)
Absorption cost	12	National: —— International: de Melo et al (2015)
Variable cost	13	National: —— International: de Melo et al (2015)
ABM	14	National: —— International: Boiţă et al (2013).
Integrated performance measure	15	National: —— International: Čadež (2006), Miculescu and Miculescu (2012)
Cost of quality	16	National: —— International: Čadež (2006), Shingjergji and Sulanjaku (2015)
ABB	17	National: —— International: Rahman et al (2017),

CVP	18	National: Mohamed (2013) International: Rahman et al (2017)
TQM	19	National: El-Dyasty (2007) International: ——
JIT	20	National: El-Dyasty (2007), Mohamed (2013) Internationl: ——
Intellectual capital	21	National: El Deeb (2014) International: ——
Supply chain	22	National: Mohamed (2013) International: ——
competitive advantage analysis	23	National: El-Dyasty (2007) International: ——
Theory of constraint	24	National: El-Dyasty (2007) International: ——
Continuous improvement	25	National: El-Dyasty (2007) International: ——

Appendix 3:coded tools and number of supporting studies

Code	**National studies**	**International studies**
1	**1**	**0**
2	**2**	**0**
3	**3**	**0**
4	**4**	**3**
5	**2**	**0**
6	3	2
7	4	2
8	1	0
9	4	1
10	4	3
11	1	4
12	1	0
13	1	0
14	1	0
15	2	0
16	2	0
17	1	0
18	1	1
19	0	1
20	0	2
21	0	1
22	0	1
23	0	1
24	0	1
25	0	1