# the role of procurement practices in effective implementation of infrastructure projects in Egypt

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**ABSTRACT**

The purpose of this paper is to report on a research that investigates the role of procurement practices in effective implementation of infrastructure projects(ppp) in a developing country, Egypt. The research investigated and explored the issues and barriers to effective implementation of different procurement methods, the environment and its suitability for implementing different forms of procurement in context of public sector in Egypt.

Egypt has sought to look for alternatives to enable them to carry out projects of infrastructure without carrying the general public budget new additional burdens, so PPP is one of these good alternatives to finance new investments in infrastructure projects in all countries worldwide. Egypt has signed three partnership projects between the public and private sectors in accordance with the law partnership of 67 for the year 2010 as following: New Cairo waste water treatment plant with capacity 250000 m3/day, which was completed and currently under operation, and sympathy university of the specialist and in Smouha Maternity and Blood Bank in Alexandria, but did not Reaching the financial close to date due to the local currency decline. After reviewing the experiences of different countries in the partnership and there success, Egypt has should expand in these projects that fit the reform plan and economic ambitious that carried out by the Egyptian state. The total number of public-private partnership projects has reached 52 Project from year ago 1990 to year 2018 , with total committed investments for public-private partnerships 9826 Million US $ during the period.

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**Key words** : Procurement; Infrastructure; Projects; Egypt

**الملخص**

الغرض من هذا البحث هو تقديم تقرير يحقق دور ممارسات التعاقد في التنفيذ الفعال لمشاريع البنية التحتية في بلد نام مثل مصر. تم البحث في القضايا والمعوقات التي تحول دون التنفيذ الفعال لطرق التعاقد المختلفة والبيئة ومدى ملاءمتها لتنفيذ أشكال التعاقد المختلفة للقطاع العام في مصر.

سعت مصر إلى البحث عن بدائل لتمكينها من تنفيذ مشاريع البنية التحتية دون تحمل أعباء إضافية جديدة في الميزانية العامة ، لذلك تعد الشراكة بين القطاعين العام والخاص واحدة من هذه البدائل الجيدة لتمويل الاستثمارات الجديدة في مشاريع البنية التحتية في جميع دول العالم. وقعت مصر ثلاثة مشروعات شراكة بين

القطاعين العام والخاص وفق قانون الشراكة رقم ٦٧ لسنة ٢٠١٠ على النحو التالي: محطة القاهرة الجديدة لمعالجة مياه الصرف الصحي بسعة ٢٥٠٠٠٠ م ٣ / يوم ، تم الانتهاء منها وهي قيد التشغيل حاليًا ، ومستشفى سموحة للأمومة وبنك الدم بالإسكندرية ، لكنها لم تصل إلى نهايتها المالية حتى الآن بسبب انخفاض العملة المحلية.

ومن مراجعة تجارب الدول المختلفة في الشراكة ونجاحها ، يتوجب على مصر التوسع في هذه المشاريع التي تناسب خطة الإصلاح والطموح الاقتصادي التي تنفذها الدولة المصرية.

بلغ إجمالي عدد مشاريع الشراكة بين القطاعين العام والخاص ٥٢ مشروعًا منذ عام ١٩٩٠ حتى عام ٢٠١٨ ، بإجمالي استثمارات للشراكات بين القطاعين العام والخاص ٩٨٢٦ مليون دولار أمريكي خلال هذه الفترة.

وأخيرًا ، إعادة هيكلة جميع قطاعات الاقتصاد ، الوطنية الزراعية والصناعية والخدمية والتكنولوجيا ، وتطوير سيناء ، وإنشاء محطات لتوليد الكهرباء من الطاقة النووية في الضبعة يجب أن يكون سوق الشراكة بين القطاعين العام والخاص أكثر فعالية. والعودة بشكل إيجابي إلى الاقتصاد ، وتخفيف العبء عن الموازنة العامة للدولة.

**الكلمات الدالة** : ممارسات البنية التحتية-جمهورية مصر العربية

## INTRODUCTION

Procurement involves other issues such as culture, leadership, management, economics, environmental, ethical and political issues (**Walker and Rowlinson, 2008**). Value triggers throughout the project management supply chain, the generation of value can be designed into the procurement process (**Walker and Rowlinson, 2008).** Evolution of procurement in project management in the construction industry has arisen from a number of factors which has resulted in forcing the construction industry into a position where it has to change to survive **(Walker and Rowlinson, 2008a). Tookey *et al.* (2001)** state that there are a number of different types of procurement routes available to choose from. Each different type of procurement (traditional approach, design and build (D&B), build-operate-transfer (BOT), management contracting, public-private-partnership (PPP), etc.) has its own proponents and inherent strengths and weaknesses but the underlying question that arises is which one is the best choice? The selection of optimal procurement systems has been found to be difficult, because even experienced clients cannot know all the potential benefits and risks for each system. Procurement is, therefore, a succession of calculated risks **(Tookey *et al.*, 2001). Walker and Rowlinson (2008b)** suggest that the project procurement choice can be guided by the project typology and the degree of collaboration and integration between the supply chain parties and their relationships. The current process of procurement selection tends to be carried out in a rather unstructured and cursory manner, and this may give rise to the adoption of procurement system beyond the deliberate choice **(Masterman, 1992; Luu *et al.*, 2003).** Conversely, appropriate procurement strategies are needed to help achieve optimal solutions in terms of cost, time and quality. They can also contribute positively to other aspects of performance, such as meeting agreed targets **(Jagger, 1995).**

Historically, Egypt has tended to be slow to adopt new procurement

techniques, such as partnering and alliancing. Consequently, in order to expedite the rate of adoption of the PPP approach to procurement and thus deliver on infrastructure needs outlined above, it is urgent to assess their implementation criteria in the Egypt context. Hence, this paper presents the findings of a study to investigate the drivers and obstacles for PPP adoption in the Egypt market, and looks at possible innovative solutions to facilitate this adoption. To date, research on the drivers and obstacles for adopting PPPs has mainly focused on other jurisdictions, such as the UK, Australia and Hong Kong**,( Liu and Wilkinson, 2011)** which cannot be directly applied in Egypt. Targeted, Egypt based, solutions are therefore presented in this paper. Therefore, the aim of this study to clear the role of procurement practices in effective implementation of infrastructure Projects in Egypt.

**1. Procurement and the project management:**

The general conception about procurement is that it is the acquisition of resources only, but in fact as **Walker and Rowlinson (2008a)** state that it is only a part of the procurement system and have termed it as "the contract strategy". There are five key principles of procurement as described by **Raymond (2008)** they include: value for money (VFM); ethics; competition; transparency; and accountability.

Procurement involves other issues such as culture, leadership, management, economics, environmental, ethical and political issues **(Walker and Rowlinson, 2008a).** Value triggers throughout the project management supply chain, the generation of value can be designed into the procurement process **(Walker and Rowlinson, 2008a).** Although the current industry climate is highly diverse and rapidly evolving, there are still relatively few procurement systems to choose from. Each procurement system that is available delivers project success to a variable degree **(Bowen *et al.*, 1997; Tookey *et al.*, 2001).** Evolution of procurement in project management in the construction industry has arisen from a number of factors which has resulted in forcing the construction industry into a position where it has to change to survive **(Walker and Rowlinson, 2008a). Tookey *et al.* (2001)** state that there are a number of different types of procurement routes available to choose from. Each different type of procurement (traditional approach, design and build (D&B), build-operate-transfer (BOT), management contracting, public-private-partnership (PPP), etc.) has its own proponents and inherent strengths and weaknesses but the underlying question that arises is which one is the best choice? The selection of optimal procurement systems has been found to be difficult, because even experienced clients cannot know all the potential benefits and risks for each system. Procurement is, therefore, a succession of calculated risks **(Tookey *et al.*, 2001). Walker and Rowlinson (2008b)** suggest that the project procurement choice can be guided by the project typology and the degree of collaboration and integration between the supply chain parties and their relationships. The current process of procurement selection tends to be carried out in a rather unstructured and cursory manner, and this may give

rise to the adoption of procurement system beyond the deliberate choice **(Masterman, 1992; Luu *et al.*, 2003).** The result of employing an imprudently selected procurement method could be an impediment to the realization of certain anticipated benefits associated, and might eventually lead to project failure **(Naoum, 1994; Rwelamila and Meyer, 1999; Ambrose and Tucker, 1999; Luu *et al.*, 2003).** Inappropriate procurement strategies may lead to cost and time overruns claims and disputes on projects **(Masterman, 1992; Abdel-Meguid and Davidson, 1996).** Conversely, appropriate procurement strategies are needed to help achieve optimal solutions in terms of cost, time and quality. They can also contribute positively to other aspects of performance, such as meeting agreed targets **(Jagger, 1995).**

More recently, **Noor *et al* (2013)** found that the research has identified the different procurement choices and reasons for a particular choice, the issues in procurement choice and the issues in procurement implementation in the public sector organizations in Pakistan. It has also described the impact of procurement practice on successful project outcomes. As a result multiple issues have been identified which affects the choice of procurement such as the need for efficiency and finances, client objectives, timely policy decisions, clarity of client's needs, delays in bidding and response, delays in approvals, proposal and bid evaluation procedures, need for relaxation of rules and project characteristics.

## 2. Suitability of procuring large public works by PPP.

### 2.1. Attractive factors of adopting PPP.

The attractive factors of PPP have been discussed by many previous researchers. This section looks briefly at some of these works. Risk transfer is one of the main reasons for adopting the PPP approach. The private sector is in general more efficient in asset procurement and service delivery and as a result it is to the government's advantage to share the associated risks with the private sector. In line with widely accepted principles, the Hong Kong government's **Efficiency Unit (2003)** advocated that the most ideal situation is to allocate the risk to the party most able to manage/control that risk. For example, the contractor would take up the construction risk, the designer would take up the design risk, and the government would take up environmental approval risks, land acquisition risks, etc. **(Efficiency Unit, 2003;Corbett and Smith, 2006; So *et al.*, 2007; European Commission Directorate, 2003 and United Nations Economic Commission for Europe, 2004).** Cost savings refer to the reduction in price as a result of delivering a project by PPP instead of traditional methods. The saving could be a result of the private sector's innovation and efficiency which the public sector may not achieve **(Efficiency Unit, 2003; Environment, Transport and Works Bureau, 2004; Corbett and Smith, 2006; United Nations Economic Commission for Europe, 2004 and So *et al.*, 2007,)**. The private sector generally achieves higher operational efficiency in asset procurement and service delivery by applying their expertise, experience, innovative ideas/technology (e.g. using durable materials to reduce future maintenance costs) and

continuous improvements. Overall cost savings to the project can be achieved by striving for the lowest possible total life cycle costs while maximizing profits. Value for money – defined by **Grimsey and Lewis (2004)** as the optimum combination of whole lifecycle costs, risks, completion time and quality in order to meet public requirements – is another important consideration, especially for the public sector **(Efficiency Unit, 2003;Chan *et al.,* 2006; Boussabaine, 2007; Li *et al.,* 2005b).** The "public sector comparator" is the tool most commonly used by the public sector to show how much it would cost government to build the asset through public funding, which is then compared with how much it would cost to build the asset as a PPP **(Farrah, 2007).** Cost certainty is more easily achieved in PPP projects as financial terms are identified and included within the contract. Since the private consortia will normally be responsible for financing, designing, constructing and operating the facility over an extended period, any cost saving can naturally result in a better chance of securing profit. Hence they are keen to control their spending tightly **(Environment, Transport and Works Bureau, 2004; Corbett and Smith, 2006; Chan *et al.,* 2006** and **Boussabaine, 2007).** Innovation is another important advantage that the private sector can bring to public services. Generally speaking, the public sector may not be as innovative as the private sector. The private sector, on the other hand, is continuously searching for new products and services to increase its competitive edge and to save costs **(Chan *et al.,* 2006; Environment, Transport and Works Bureau, 2004; Akintoye *et al.,* 2003; Li *et al.,* 2005b; New South Wales Government, 2006; British Columbia, 1999).**

The private sector is made responsible for ensuring that the asset and service delivered meet pre-agreed quality benchmarks/standards throughout the life of the contract. Sometimes, private consortia only receive payment upon meeting certain requirements of the project, or they are motivated by incentive payments to reward the high quality of service to be provided.

In a PPP project the consortium is also responsible for the long-term maintenance of the facility/service. The concession period may range from a few years to decades. Therefore the consortium is keen to design and construct the service/facility to ensure better maintainability **(Chan *et al.,* 2006; Environment, Transport and Works Bureau, 2004; Grimsey and Lewis, 2004; So *et al.,* 2007** and **Efficiency Unit, 2003),** at least within the concession period if not beyond. Public sector projects delivered by the PPP model can often be completed on time and even with time savings because the consortium would start receiving revenue once the facilities/services are up and running. Therefore, the project team is keen to complete design and construction as quickly as possible. Once it starts to accrue revenue it can begin to pay off the initial costs and build up profits, whereas in a traditionally procured project there are no extra financial incentives for public servants to deliver projects faster. As a result, projects can proceeded as scheduled **(Efficiency Unit, 2003** and **Environment, Transport and Works Bureau, 2004)**. Time certainty is found to be more easily achieved in PPP projects. The consortium is often paid according to milestones of the project schedule, and any delay might be subject to

liquidated damages. Therefore the consortium is often motivated to reach these milestones on time, if not earlier. This is a common behavior observed in the private sector, but may not be the case in the public sector **(Chan *et al.*, 2006).** To the government, PPP frees up fiscal funds for other areas of public service and improves cash flow management, as high upfront capital expenditure is replaced by periodic service payments. PPP also provides cost certainty in place of uncertain calls for asset maintenance and replacement. Public sector projects delivered via the private sector normally involve private sector funding. Consequently, the public funding required for public services can be reduced and redirected to support sectors of higher priority, for example education, healthcare, community services, etc. **(Li *et al.*, 2005a, b; Efficiency Unit, 2002)**. To the private sector participants, PPP provides access to public sector markets. If projects are priced accurately and costs are managed effectively, projects can provide reasonable profits and investment returns on a long-term basis. Also, these projects tend to be large, and therefore expertise from many areas is required. Hence, co-operation among different collaborating parties is encouraged (**Grimsey and Lewis, 2004 and Boussa baine, 2007**) Business opportunities are also created due to the large scope of works that can benefit different sectors **(United Nations Economic Commission for Europe, 2004** and **So *et al.*, 2007).**

**2.2. Negative factors of adopting PPP.**

The negative factors for PPP were also reviewed, and a summary is given in this section. The impact of risks to project objectives in completing a PPP project is usually significant, and these risks arise from multiple sources, including political, social, technical, economic and environmental factors, due mainly to the complexity and nature of the disciplines, public agencies and stakeholders involved. Both the private and public sectors need to have a better understanding of these risks in order to achieve an equitable risk allocation and enable the project to generate better outcomes **(Environment, Transport and Works Bureau, 2004; Chan et al., 2006;** and **Zhang and Abou Risk, 2006).**

In fact, a fair and reasonable allocation of various risks is vital to PPP success. If risks are inequitably or wrongly allocated beyond the capacity of the parties concerned, PPP projects will fail (e.g. demand risk resulting from town planning falling on private consortia). PPP projects may fall apart due to failure on the part of the private sector participants. In contracting out PPP projects, governments should ensure that the parties in the private sector consortium are sufficiently competent and financially capable of taking up the projects. Due to a lack of relevant skills and experience of project partners, PPP projects are more complex to procure and implement (e.g. London Underground). PPP project arrangements are complex and involve many parties with conflicting objectives and interests. Hence, PPP projects often require extensive input of expertise and high costs and take a long time to negotiate. The high transaction costs and lengthy timescales may not represent good value to all parties and as a result the deal may not materialize in the beginning or may falter in the end. PPP projects may incur higher transaction costs than those

under conventional public sector procurement. Legal and other advisory fees would be involved, as lawyers are involved at all stages of a PPP project, as well as the cost of private sector finance, and the price premium for single point responsibility arrangement. The potentially high transaction costs may have a negative impact on the objective of securing the best value **(Corbett and Smith, 2006; Environment, Transport and Works Bureau, 2004; Li *et al.*, 2005b)**.

Complex PPP projects require input from many parties with different expertise. Therefore, projects should be economically viable to cover such costs. One common problem encountered in PPP projects is the high bidding costs, which are due to increasing project complexity and protracted procurement process. The private sector incurs high bidding costs, partly due to the consideration of the client's and their financiers' objectives. Lengthy negotiations and especially the cost of professional services may increase the bidding costs further **(Chan *et al.*, 2006; Corbett and Smith, 2006).**

The PPP bidding process is also regarded as lengthy and complicated. For example, bidders are required to prepare tender proposals with a bundle of additional materials attached. Such a process may take three to four months. Also, another several lengthy negotiations will be required for the formation of the contract. Clearly, setting up a complicated agreement framework for successful PPP implementation can slow down the bidding process **(Grimsey and Lewis, 2004; Li, 2003; Li *et al.*, 2005b** and **Chan *et al.*, 2006).** One other reason for failure is stakeholders' opposition and public opposition. Whether the proposed project is consonant with the interest of the public is important, as public opposition can adversely affect the funding for the project from the public sector **(El-Gohary *et al.*, 2006 and Zhang and AbouRisk, 2006).**

PPP in public projects typically involves political and social issues like land resumption, town planning, employment, heritage and environmental protection. These could result in public opposition, overblown costs, and delays to projects. Another common complaint by the public is the high tariff charged for the services provided. More often, the private sector would face an uphill political struggle in raising tariffs to a level sufficient to cover its costs and earn reasonable profits and returns on investment. The participation of the private sector in provide public services will undoubtedly bring innovations and efficiencies in operation, but may produce a fear of downsizing in the public sector. To a certain extent, there would be fewer employment opportunities if no regulatory measures were implemented **(Li, 2003; Li *et al.*, 2005b).**

The introduction of PPP exerts unprecedented pressure on the legal framework as it plays an important role in economic development, regeneration and the mechanism for developing infrastructure. Still, some countries do not have a well-established legal framework for PPP projects and the current legal framework is only supposed to deal with the traditional command and control model. Although PPP involves a great deal of legal structuring and documentation to deal with potential disputes amongst

PPP parties, a "water-tight" legal framework is still lacking (e.g. protection of public interests versus legitimate rights of private sector). Without a well-established legal framework, disputes are inevitable **(Grimsey and Lewis, 2004; Li *et al.*, 2005b and Satpathy and Das, 2007).** Private sector investors bear financial risks in funding investment. Seeking financially strong partners in a PPP project is regarded as difficult. In most PPP arrangements, the debt is limited-recourse or non-recourse, where financiers need to bear risks. In fact, most stakeholders are not willing to accept excessive risks. The lack of mature financial engineering techniques on the part of the host countries can also be another problem **(Grimsey and Lewis, 2004; Zhang, 2001).** An unattractive financial market (e.g. politically unstable or high interest rates) is often a negative factor to PPP success.

**2.3. Knowledge and technological expertise Transfer**

The private sector has the experience, knowledge, modern technology, and good regulatory environment, which is not available to the public sector. It has technical human resources at the latest levels. If the partnership with the public sector is available, these experiences and knowledge can be transferred to the public sector, thus creating suitable jobs for their expertise and knowledge. Which gained from except for the partnership process so as to contribute to achieving sustainable human development and which reflected positively on sustainable economic development **(Luiz, 2002).**

**3. Achieving economic efficiency**

The integration of private sector objectives with public sector objectives is achieved when the private sector designs, finances, builds and operates projects. The public sector provides the appropriate regulatory environment and the infrastructure necessary to integrate the advantages of each party so that maximum goods and services, as well as the diversity of projects established helps in creating different jobs, providing a standard of living adequate and an opportunity to increase the income of citizens, thus achieve desired sustainable development.

**3.1. Continuation of economic growth.**

The availability of successful public private partnership leads to the private sector achieve profits , which can benefit towards other investment projects and then continued economic growth, and improve human resources in the public sector through education, training, experience, knowledge, technology and others which contributing the increase in growth rates and sustainability.

**3.2. Achieving social development programs.**

Where the integration of the private sector in social development programs and its contribution to solving the problems of society in education, health and social services which fight against poverty, unemployment and consumer protection and improve the development of housing, sanitation, and schools, hospitals and other social services such as placed on the private sector , social corporate responsibility, and his involvement in this responsibility it contributes greatly to the achievement of the desired community development **(Zaki, 2009).**

### 3.3. Achieving the environmental dimension of development

The environmental protection is the most important requirements of sustainable development environment as the environment is the source of resources to target development and to meet the growing human needs as the population growth rate 2.5% annually, thus partnership can play a pivotal role in achieving the safety and preservation of the environment through the requirements of the government in contracts Which conclude between them and the private sector certain environmental requirements that take into consideration the environmental safety that must be committed by the private partner, whether a partner locally or international **(Al Muhtasib, and Abu Eid, 2011).**

## 4. Egyptian Experiences in PPP

Many countries have gone through the process of public private partnership, and this partnership has diversified. The following are some of the experiences of some countries in this area to identify the strengths and weaknesses of these countries. The general budget of the Egyptian state has suffered over the past decades from a huge deficit in the state budget, which continued until the first decades of the third millennium, with the population increasing and increasing their requirements, the state's expansion in infrastructure redevelopment and the expansion of a number of social projects to meet the needs of citizens.

Egypt has sought to look for alternatives to enable them to carry out projects of infrastructure without carrying the general public budget new additional burdens, so PPP is one of these good alternatives to finance new investments in infrastructure projects in all countries worldwide

Egypt experience of public private partnership in the beginning of the nineties to finance and operate infrastructure projects, in view of the lack of public investments and in order to stimulate growth. The partnership process included various forms of partnership, the most important of which is the BOT, the government of Egypt established the PPP central unit of in the Ministry of Finance in 2006 , in order to eliminate the difficulties that faced the private sector in partnership projects , whether institutional, legal or weak public awareness ,the government of Egypt has developed a new long term policy to activate the program of private sector participation in 2010 through the issued the new law in partnership with the private sector to eliminate the difficulties for the limitations of legislative regulation, and according to the plan for the reform of the economic strategy to encourage private sector investment in order to provide a new source of investment money to finance Infrastructure projects requirements, reducing state borrowing and reducing the burden on the economy and General budget of the State, the national housing project a successful partnership projects between the private and government sector in Egypt, where the state to provide full land to investors at low prices to build housing units medium for young low - income, with the holding protocols with a group of banks to provide loans for each Housing units.

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