

ICT Project in Malaysia - A Case of Public-Private Partnership

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Abstract: In recent time, many Government agencies are looking into Public-Private Partnership (PPP) model to implement complex mega ICT projects. The contradictory views on the effectiveness of the PPP model for complex mega ICT projects raise several questions. Among others is the use of PPP as a project financing and innovative approach for adding value to a project. This article seeks to evaluate how ICT project benefits from PPP in view of a Government Agency in Malaysia experience. Specifically, the processes involved during initiation and planning, procurement, and monitoring of the ICT project implementation. Utilizing the case study approach, based on secondary data and authors' experience, the key lessons learn will be examined. These will validate if PPP model is suitable in delivering ICT projects successfully and value for money. The case study of New Valuation Information System (New VIS) project for Valuation and Property Services Department, a department under Ministry of Finance, Malaysia, will be used for this purpose. This is a preliminary research that the authors are currently doing and hopefully will benefits Government agencies and private companies understand the challenges and risks particularly in implementation of future ICT projects.

Keywords: Public-Private Partnership, ICT, Project Management, Project Financing, Malaysia

1. Background

The implementation of Information and Communication Technology (ICT) in Government agencies has been on-going since 1960's. Various ICT systems have been implemented at massive costs. Growth of ICT implementation has continuously been given top priority by the Government of Malaysia. The implementation of ICT started since establishment of Multimedia Super Corridor (MSC) in 1996 by Government of Malaysia [1]. Malaysia Digital Economy Corporation (MDEC) and Malaysian Administrative Modernization and Management Planning Unit (MAMPU) are at the forefront in promoting the use of ICT among the public. According to MDEC report [2], MSC Malaysia new investments in 2015 recorded at RM19.8 billion. The MSC has accelerated the country's entry into ICT applications in the public sector to enhance its services for citizens. In other words, ICT application seeks to reinvent how the Government works and how it delivers services to the people as can be envisaged in the objectives of the whole program. At the same time, the changes brought by ICT applications in the public sector pose fresh challenges especially to the people in the developing country such as Malaysia [3]. The 2016 Survey published by United Nations Department of Economic and Social Affairs (UNDESA) mentioned that Malaysia is currently ranked 60 out of 193 countries and have achieved a High level in E-Government Development Index (EGDI) [4].

There are several definitions of e-government, but the general consensus among researchers is that electronic government entails much more than the evolutionary process of systems and technologies; it includes organizational, institutional, and administrative practices too [5][6][7]. The authors concur with [8] and [9] statement that measuring ICT success is a difficult and highly subjective task, indeed. The main aim of ICT policy in Malaysia is to increase efficiency and effectiveness of Government administrative machinery using ICT and to propel the country into the information age. This is to enhance quality of services by strengthening relationship with citizens and businesses as well as making the Government more responsive to citizens' need [3][10].

However, Governments are constrained by lack of financial resources and low levels of capacity/skills within the Government agencies. This indicates fundamental management challenges in managing business and financial risks inherent in these large and complex technology projects. To manage these challenges, the Valuation and Property Services Department or *Jabatan Penilaian dan Perkhidmatan Harta* (JPPH) under Ministry of Finance, Malaysia planned to utilize the Public-Private Partnership (PPP) model to access technical expertise in the private sector as well as leverage market-based sources for project financing.

2. ICT Project Through Public-Private Partnership

Mega complex projects, such as JPPH's New Valuation Information System (New VIS) project, require significant amounts of investments are often financed primarily through public sector resources. But this approach causes huge monetary disclosure and places a heavy burden on public finances. This reliance on public sector financing has not proven effective or sustainable. However, use of PPPs in ICT projects is not very common and is regarded as risky across the world. It is believed that ICT projects are not suitable for PPP as they are impacted by swift technological changes and require frequent renewal of the underlying asset. The global experience with PPPs for ICT projects has also not very convincing, and this is especially reflected in the experiences in the United Kingdom and other countries [11][12].

Over the years, JPPH's functions continue to expand not only domestically but globally as well by participating in the development of valuation best practices standard. JPPH's objectives are to continuously provide quality valuation, information and research services; to extend valuation and property services to Government agencies; to be responsible for asset management of Government property; and to establish a renowned Centre for Advanced Real Estate Studies. In order to achieve JPPH vision, to be a world class organization in providing property valuation and property information services, it requires adoption of ICT technologies, organizational transformation, and risk-management capabilities. Development and implementation of New VIS is part of the core component in the JPPH's ICT Strategic Plan. Public-Private Partnership Unit or *Unit Kerjasama Awam Swasta* (UKAS) under Prime Minister Department has been assigned to assist and facilitate the PPP process for the development and implementation of New VIS for JPPH.

According to [13] review, there has been a growing interest in PPP since the late 1990s. Public-Private Partnership as combining the strengths of private sector, such as innovation, technical knowledge and skills, managerial efficiency and entrepreneurial spirit, and the role of public sector, including social responsibility, social justice, public accountability and local knowledge, to create an enabling environment for delivering high quality infrastructure and services [14]. Through these partnerships, public and private sectors may realise benefits such as the creation of jobs, educational development, incentives for innovation and competition, and infrastructure development. The private party will raise its own funds to finance the whole or part of the assets that will deliver the services based on agreed performances. The public sector, in return, will pay the private party for these services, governed by a concession agreement.

Selection of PPP project by UKAS usually starts when there is a need on the part of the Government for the project after taking into account the benefits as a whole in terms of, inter-alia: socio-economic impacts, value for money and cost savings to the Government, quick delivery of the Project and service enhancement, and increased level of accountability, efficiency and effectiveness. PPP is a public procurement model in which the value for money is optimised through efficient allocation of risks, whole life service approach, private sector innovation and management skills as well as synergies from inter-linking the design, finance, development and operations. Some of the key features/characteristics of PPP Projects are as follows:

- Relationship between public and private sectors is based on partnership;
- Public sector procures specified outputs or outcomes of a service for a concession period;
- Private sector determines the required inputs to achieve the specified output and the private sector is given latitude to introduce innovation into their designs and development to reduce overall costs;

- Payment for services is based on pre-determined standards and performance;
- Promotes ‘maintenance culture’ where the concessionaires will be responsible for the long term maintenance of the assets throughout the operational tenure agreed upon;
- Integration of design, development, finance, maintenance and operation – total package;
- At the end of the concession period, all assets shall be transferred to the Government at no cost;
- Optimal sharing of risks whereby risk is allocated to the party who is best able to manage it; and
- Total cost of ownership (TCO) whereby PPP Projects are usually awarded based on lowest total cost over the concession period (development and maintenance) compared to lowest development costs under the traditional procurement method - a paradigm shift in the form of procurement objectives.

The contradictory views on the effectiveness of the PPP model for mega ICT projects raise several questions. Among others is the use of PPP as a project financing and structuring approach for adding any real value. It is therefore important to evaluate how New VIS project benefits from PPP in view of the JPPH experience? Specifically, what were the processes involved in a PPP project Life Cycle (Figure 1) for the New VIS project? The most important question: Is PPP model able to create value for money and can it be implemented successfully especially for ICT project?

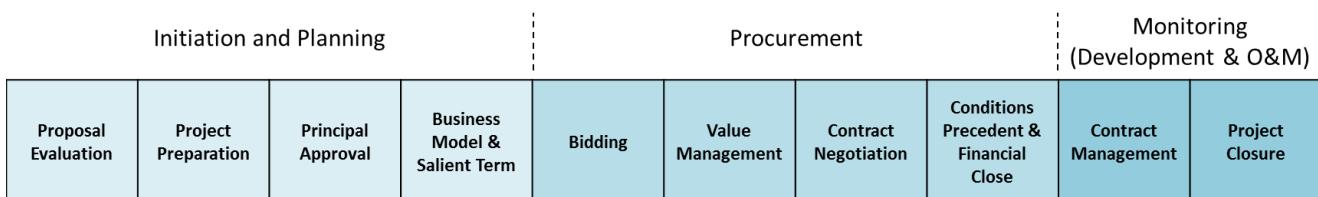


Fig. 1: PPP Project Life Cycle

3. Challenges

In keeping up with new requirements and technologies, Valuation Information System (VIS) was implemented in 1997. Over the last 17 years, JPPH has been using VIS as the core application to support the Valuation and Property Services Programme of JPPH until today at all its 39 Branches throughout Malaysia. As part of the effort to achieve its vision, that is to become a world class organisation in delivering property valuation services and providing property information, JPPH understands the need to develop a fully integrated end-to-end solution on a robust and flexible architecture to replace the existing VIS. By embarking on this new initiative, JPPH aims to continuously improve its operational efficiency to support the growing demands of clients and stakeholders and also to facilitate expanding roles in advising the federal and state governments in matters relating to property and valuation services.

JPPH needs to leverage on leading edge ICT technologies and best practices for the implementation of a fully integrated New VIS solution. Thus, through an effective combination of technology and business process re-engineering, JPPH seeks to achieve the following key benefits, amongst others:

- able to respond quickly to a rapidly changing business environment;
- create and track information accurately and improve control of the business by providing better information to the management;
- provide enterprise-wide data and information sharing to support better decision making;
- facilitate better customer interaction through multiple customer channels; and
- enable users to gather information and publish reports more efficiently.

Nevertheless, from the authors’ experience and involvement with mega ICT projects especially with PPP concession agreements, the authors have found the New VIS Project encountered several challenges in

implementing the ICT project. The authors have categorized the main challenges under five main categories: (a) Partner, (b) Technical, (c) Organizational, (d) Financial and (e) Project Management.

3.1. Partner Challenge

After evaluating the feasibility of the project and understanding the need statement from JPPH, the next challenge starts during pre-qualification from selecting the right partner or Concession Company to deliver the project. The Concession Company has to fulfil all the following conditions of eligibility set by UKAS:

- Financial Capacity - a company registered in Malaysia as a single entity or a consortium led by a Malaysian company and have minimum Net Worth of RM15 million for single entity or aggregate of RM30 million (Proportionate Based On Special Purpose Vehicle (SPV)'s Equity);
- Technical Capacity - Experience in ICT systems development and implementation in particular New VIS solution in separate environments, namely development, testing, training, and production and experienced as a concessionaire; Have collected and appropriated revenues from Eligible Project(s), such that the sum total of the above is more than RM50,000,000 (Ringgit Malaysia Fifty Million) over the past 5 (five) years for single entity or more than RM70,000,000 (Ringgit Malaysia Seventy Million) for Joint Venture/Consortium; Have paid for and received payments for system development and implementation of at least RM30,000,000 (Ringgit Malaysia Thirty Million) for a single project.

3.2. Technical Challenge

In this PPP arrangement, the Concession Company has to finance, supply, deliver, install, configure, develop, deploy, complete, test and commission a complete New VIS solution encompassing JPPH Head Quarters (HQ); 39 JPPH Branches (State and District); Data Centre, Disaster Recovery Centre and Training Centre. The Concession Company has to develop the New VIS within 18 months and maintain the New VIS for a period of 66 months which in total concession period of 7 years under the Build-Maintain-Transfer (BMT) option. To ensure higher performance levels from the Concession Company, strict Service Level Assurance (SLA) was defined and it was important to design an ICT architecture that could scale horizontally with 99% service availability. Penalty charges are also determined earlier in concession agreement to ensure Concession Company aware on their responsibility to fulfil the agreed service availability. Responsibility matrix also been defined to ensure who is responsible and who is to assist between Government and Concession Company.

The technical design to meet the users' requirements is highly complex and required implementation of three (3) major areas:

- a. Main: Valuation Information System:
 - Non-automated Valuation - The process of collecting, analysing and reconciling data that relates to the property being valued to arrive at an opinion the value. This generally requires substantial human intervention.
 - Automated Valuation - Automated valuation of property using mathematical modelling and a database of property to determine the value with minimal human intervention.
 - Appeal Cases - Appeals on valuation which has been reported by JPPH for reconsideration due to various reasons or disagreements with the valuation.
 - Courts Cases - Cases referred to court when an appeal is filed against Government departments disputing JPPH's valuation.
 - Valuation Data - Collection of relevant information to perform valuation.
 - Geographical Information System (GIS) - A computer based system, centralised at HQ, used to support valuation by charting and analysing property data with visualisation and geographic analysis benefits offered by digitised maps.

- Electronic Document Management System (EDMS) - A filing system or function used for tracking, storing and retrieval of electronic documents and/or images of hardcopy or softcopy documents related to current cases.
 - Workflow Processing System - The engine that defines the operational JPPH processes and facilitates automated activity routing and status tracking, corresponding to the predefined operational processes. This system shall be integrated with EDMS for the attachment of electronic documents in the workflow process.
- b. Supporting:
- Business Intelligence - The reporting engine used for collating, mining, analysing and displaying business data from key systems to generate reports that supports strategic decision making.
 - Reporting System - The functionality that supports generation of regular/ periodic or ad-hoc reports such as regulatory reports, operational reports, valuation reports etc.
- c. Administrative:
- Centralized ICT Helpdesk System - A support system used for the management and tracking of ICT problems and all other ICT support activities encompassing all JPPH ICT programmes.
 - Computerize Maintenance Management System (CMMS) - asset register where all assets shall be systematically tagged, registered and tracked including maintenance planning, budgeting and actual work done.
 - Network Monitoring System (NMS) – monitoring of network, server and application availability.

The key consideration criteria in the above solution is on its flexibility to support JPPH new business requirement as changes are inevitable and cannot be avoided in an organization such as JPPH. Addressing to those needs, the solution is built for change and innovation. As a new area of Service Oriented Architecture (SOA)-based solution, it is flexible and agile and arms the organization with the capability to innovate and respond to business dynamics. Though the entire cluster is proposed as one consolidated solution, each of the modules can be independently implemented to suit the components grouping as desired by JPPH.

However, there are some prevailing challenges faced by JPPH which need to be addressed as part of this initiative. Some of them include: technology constraints faced by the aging VIS limits the capability to support the increasing stakeholders and customers' demand or needs; distributed architecture environment limits the automation capabilities as majority of the processes are still manual oriented resulting in challenges to achieve speed to market; and disparate database restricts the ability to have single view of information at reasonable speed and efficiency required by JPPH management.

3.3. Organizational Challenge

On the internal organizational challenges, the Director General of JPPH commented, “having proper project management, conducting an effective communication, planning optimal risk management, implementing an effective change management have a tremendous impact on the success of this New VIS project. Changing the attitude and mind-set of the Government officials proved to be one of the biggest obstacles.”

Numerous researches have shown that large and complex change initiatives, be it a system implementation or total reorganization, often fail due to ineffective change management. Change management is not just about introducing new technology or restructuring. Change management program is beyond basic communication and training. It focuses on both the programmatic and transformational change aspects. This will ensure a sustainable change. Change management helps organisations to minimize the potential negative effects such as resistance from employees due to ignorance and decline productivity which could delay or even obstruct the change implementation. Some of the key changes foresee by JPPH management are such as job consolidation (e.g. database administrator), creating new department (e.g. data governance), mode of payment from external party to JPPH (e.g. case per case payment to monthly payment by external agency), automated case assignment,

change of work location (e.g. permanent office plus mobile), business processes (e.g. out-dated or deleted; existing being enhance; introduction of new business process), and digitization activities (e.g. fear in losing control and shifting authorization; promote accountability and transparency).

3.4. Financial Challenge

Experts from Ministry of Finance state that the primary reason for the recent growth of PPPs is that they do not require public sector funding today. A PPP allows the capital cost of a public-sector facility to be spread out over its life, rather than requiring it to be charged immediately against the public budget. PPP project preparation is a complex and time-consuming exercise requiring experts and funding. In securing the funding, Concession Company has to get financing from banks and equity from shareholder with ratio of 80:20. The Concession Company has to take the financial risk of not getting paid from Government during the development period and payment only comes after final acceptance test approved by end users.

Concession Company also needs to plan for the procurement of hardware and software. Selections of right products or platforms are very challenging due to technology rapidly updated or upgraded from time to time. Procurement timeline and validity of quotations always have to relook and renewed until the commencement of the concession effective. Inflation and foreign exchange can also impact the overall pricing and vendors can't hold their pricing too long. All critical software and hardware vendors require Concession Company to commit in a long-term contract to procure the software licenses and hardware for the entire concession period. The exit or consequence of termination clause is also vital on structuring a realistic cash flow to ensure profitability and viability of Net Present Value (NPV) and Internal Rate of Return (IRR) for project and equity.

3.5. Project Management Challenge

Lesson learned from previous failed ICT projects have identified lack of skilled project manager and technical personal that has experienced in delivering large ICT projects among the reasons. Hence, Government has set a minimum certification such as Project Management Professional (PMP) and at least 10 years of experience for qualified personal to manage the New VIS project. Concession Company is also required to hire the relevant Subject Matter Expert (SME) to assist the development team in articulating JPPH business processes and best practices during performing their daily tasks.

In terms of project governance, the Government required to establish a Project Steering Committee (PSC) and Project Technical Committee (PTC). PSC will be chaired by Director General of JPPH which responsible to resolve issues relating to the implementation of the New VIS; to provide a forum for strategic discussions for the more efficient performance of the Concession Agreement; and to consider any recommendation made by the PTC. Project Director of JPPH will be chairing the PTC and its roles include monitoring the implementation of the New VIS; to ensure the implementation of the New VIS complies with the project scope, the deliverable of the project and the project timeline stipulated in Concession Agreement; to resolve any technical issue arises during the implementation of the New VIS; and to make recommendation in respect of project deliverables and any payment to the PSC for approval.

JPPH has also bring on-board a third-party Project Management Office (PMO) to assist Government in ensuring Concession Company delivers the agreed requirements accordingly. The third party PMO roles may conflict with Concession Company roles and may delay the project delivery if not carefully manage. On top of that, Concession Company has to deal also with an Independent Validation and Verification (IV&V) team as part of the project governance. The IV&V will need to make sure functional and non-functional tests are conducted according to defined processes, and conduct Quality Assurance (QA) Audit for system development process and deliverables.

4. Conclusion

As seen in the study, ICT has been recognized to create value to Public in general and JPPH in particular. The main objective of ICT to increase efficiency and effectiveness of Government administrative machinery

using information and communication technology and to propel the country into the information age is achievable. Although lack of financial resources and low levels of capacity/skills are some of the constraint but utilizing Public-Private Partnership (PPP) model, it able to access technical expertise in the private sector as well as leverage market-based sources for project financing. Nevertheless, PPP model also have its challenges when implemented in ICT projects such as New VIS project. Five main categories: (a) Partner, (b) Technical, (c) Organizational, (d) Financial and (e) Project management were identified. This is a preliminary research that the authors are doing at the moment and hopefully will benefits Government agencies and private company understand the challenges and risks particularly in implementation of future ICT projects. In depth research will be done to mitigate or solve the challenges and risks highlighted in the article.

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