The Challenges in Managing Information Technology Shared Services Operations

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ABSTRACT---The IT shared services initiatives support the 4th Industrial Revolution. The services are also measured to determine the e-government ranking. Sharing services is one of the strategic management options for reducing redundancy in operations, which can be very effective for organizations in the public or private sector. The organization unit or department running the services is called a Shared Services Organization (SSO) or Shared Service Centre (SSC). The SSO responsible for managing other organization subunit. Sharing service is also one of an alternative to outsourcing as it able to reduce costs by sharing functions across organization. The services must be managed efficiently to ensure customer satisfaction. This paper focuses on identifying SSO challenges in managing IT shared services in Public Sector. A literature review on shared services and intensive interviews with three types of IT project team responsible for sharing services in an SSO were performed. We identified eight challenges faced by the SSO: (1) meeting customer expectations, (2) standardization (IT, process, people), (3) communications, (4) struggle for resources, (5) new technology demand, (6) utilization and optimization of IT resources, (7) skills improvement and (8) contract management. Identifying the challenges contributes to a clear understanding of the real issues faced by an SSO.

Index Terms: IT Shared Services, IT Service Management, Shared Service

I. INTRODUCTION

Organizations need to keep abreast of the new way of doing business in the digital economy. The increasing use of electronic applications brings new challenges for organizations. IT Shared Services (ITSS) (including data centres, a network and communications resources) are the backbone of overall digital initiatives in businesses such as online applications, and in social media and big data projects. Previous research shows that shared services have become a popular choice for many organizations due to its benefits, such as cost savings [1]–[4], improved service performance [1], [5], [6], reduce redundancy [6], [7], enhance organizational learning [3], and its focus on core business [6]. Past studies also acknowledged the limitation of shared services for information system (IS) and broadening the scope of the study is recommended [6], [8].

A previous topic of study related to Shared Services is widely discussed. Many private or public sector organizations have adopted this service, but few research

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studies on the challenges related to specific types of Shared Services were identified. Hence, this study will explore those challenges. A real-world case study of Shared Services is considered covering three types of IT infrastructure Shared Services (ITSS) in the Malaysian Public Sector (MPS). The present study represents the first study to specifically discuss the challenges related to the operation of ITSS in Malaysia, [8], [9].

This study identified ITSS type and challenges in organizational activities. The challenges in managing the ITSS in daily operation. The initial part describes the literature on Shared Services and three types of ITSS in Malaysian Public Sector. Based on a literature review and case study of ITSS in Malaysia, the challenges of ITSS operations were identified.

II. LITERATURE REVIEW

Evolution of Shared Services

Shared services represents a strategy for managing services to achieve certain key objectives, especially cost saving and improved efficiency. The implementation of such a strategy is widely accepted in both the public and private sector. For effective implementation, engagement with all stakeholders is very important. Shared Services can be considered to represent an evolution from standalone and distributed services as part of a movement towards centralized and shared services, as shown in Fig. 1.
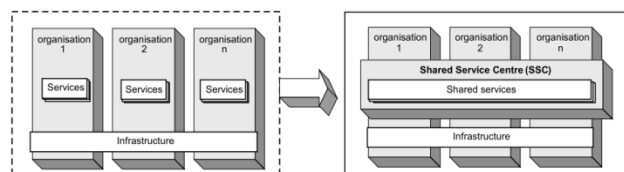

Fig 1.The sharing of services within a network of organisations (adapted from [10])

These services are managed by a central agency called a Shared Service Organization (SSO) or Shared Service Centre (SSC).

Shared Services Challenges

The authors [1] summarize the previous studies on the challenges of all Shared Services, i.e. those which are not only specific to ITSS. They categorize the challenges from four perspectives: efficiency, resource dependency, population and knowledge. Recent research by [11] was

highlighted showing the managerial challenges for ITSS in a public university. However, the research mainly focuses on challenges during the transition to Shared Services. Summary challenges from previous research are listed in Table I below.

Table I. Summary of Challenges for Shared Services

Authors	Challenges
[12]	Lack of SSC performance data Weak collaboration within the SSC Management model not well thought through Problems with external service providers Availability of competent staff Poor internal communication Inadequate average quality of SSC staff
[9]	Ensuring alignment with the parent organization operational HR capabilities
[10]	IT governance mechanisms, A system and structure for defining policies Monitoring and controlling policy implementations Managing and coordinating the procedures and resources
[4]	Drafting the business case Measuring cost reduction
[13]	Strong governance -redesigning and standardizing processes Performance improvement, Relationship building both internally and externally
[14]	Ability to deliver IT services Communication between IT and non-IT staff IT-service portfolios Nature of IT services Power and control Pricing Service-level agreements
[11]	Changing organizational culture Standardization through practicing Balancing dual interests of cost and customer focus Establishing a sense of urgency

The challenges include the diversity of stakeholders involved in Shared Services such as top management, IT staffs, customers and vendors. A previous study showed the importance of an effective IT governance mechanism as a key element to ensure the successful implementation of a Shared Services strategy. Only three projects are discussed that are relevant to the present ITSS challenges. In the present study, the challenges identified during the operational stage of IT Service Management are a key focus.

III. MATERIALS AND METHODS

This paper aims to identify the challenges in managing ITSS operations by the SSO. An exploratory study was chosen due to the limited number of study on ITSS. A case study was conducted to understand the ITSS operation and its challenges in a real context [15] using experts' opinion.

A number of interviews with SSO team experts were performed. The informants were selected from three ITSS projects: MyGovNet (networking infrastructure), MyGovUC (unified communication infrastructure) and PDSA (government data centre infrastructure). The interviews took place from September 2017 to May 2018. Eight open-ended interviews were conducted for three ITSS projects with the ITSS director, a public sector consultant, IT manager and project team members as explained in Table II. The interview session covered the scenarios of ITSS and challenges in managing ITSS, especially relating to customer satisfaction. Due to limited time, three of the interviewees preferred to give written feedback.

Table II. List of Informants

Informant Code	Experience & Description	Length of Interview
PD	35 years in government services. Role as a CIO in Agency A, Project Director, Public Sector Expert	1 hour
PSC1	35 years in government services. Role as a Head of Division, Public Sector Consultant	1 hour
PM1	25 years' service in government sector. Role as a Project Manager of ITSS	45 minutes
PM2	20 years' service in government sector. Role as a Project Manager/Leader of ITSS	50 minutes
PM3	15 years' service in government sector. Role as a Project Leader of ITSS	Written feedback
SE1	10 years' service in government sector. Role as a Project Team of ITSS	30 minutes
SE2	25 years' service in government sector. Role as a Project Team of ITSS	Written feedback
SE3	5 years' service in government sector. Role as a Project Team of ITSS	Written feedback

In the present study, eight informants from three ITSS projects with various levels of experience in shared services programs participated in this study. All of them are involved in daily operations as part of ITSS. Convenient sampling was performed by setting up appointments with all the agreed informants. All the interviews were transcribed and coded using Nvivo as a tool. The code for the managerial challenges were divided into 3 perspectives in organizational theory: resource dependency, efficiency and population perspectives, according to [1].

The case studies cover three main ITSS projects providing ICT infrastructure to government

ministries/agencies, with such infrastructure representing the main Information Technology Operational requirements that are needed before any system can be put in place [6]. This explains the importance of managing those services carefully to ensure that government service delivery is always efficient. Brief explanations of the services and teams for each of the ITSS are shown in Table III.

Table III.Description of ITSS Case Study

ITSS	Service Description	Number of SSO Team	Vendor
Government Integrated Secured Network (MyGov*Net)	Provide 4 main network services and 16 optional services that offered to all government ministry/agency. Currently more than 10,000 network lines are operated nationwide.	19	Single vendor
Government Unified Communication (MyGovUC)	Provide e-mel, unified communications, portal and social media and add-on value services to all government agencies.	14	Single vendor
Government Data Centre & Data Recovery Centre (PDSA & DRC)	Provide data center facilities and services (physical & virtual server hosting, data center and disaster recovery center, gateway viruswall and support services).	31 (at early stage only 15 staffs)	Multiple vendor based on contract and data center location

IV.   RESULT AND DISCUSSION

Digital government is an important strategy for Malaysian Public Sector (MPS), and an essential part of the 11th Malaysian Plan (known as the 11th MP). Consistent with this strategy, the public sector's ICT Strategic (ISPSA) for 2016-2020 was structured to support the implementation of the program under the 11th MP, especially in the context of ICT [16]. MAMPU was appointed as Shared Service Organizations (SSO) for MPS. It is responsible for delivering ITSS to the government agencies. Furthermore, ITSS were executed extensively in 2010 to improve the overall productivity of shared services in Malaysian Public Sector (MPS). These initiatives simplify the integration of IT operations, covering wide area networks (WANs), data

centres and common applications. ITSS has strengthened the IT model, simplified the system, avoided redundancy and fully utilized the technology to enhance the delivery of government services.

We found that stakeholders involved in a Shared Services environment include Shared Service Organization (SSO) top management, SSO steering and technical committees, SSO operational teams, vendor teams and customers. Each of the ITSS in MPS are managed and operated by a different team in SSO dealing with each specific ministry/agency. Each of the ITSS projects also appointed different vendors for managing the ITSS. The customer of each ITSS is a ministry/agency. Hence, they need to assign an administrator to deal with the ITSS team and to aid with coordinating the implementation of ITSS with their respective users. A summary of the management structure of the ITSS in MPS is shown in.Fig. 2:
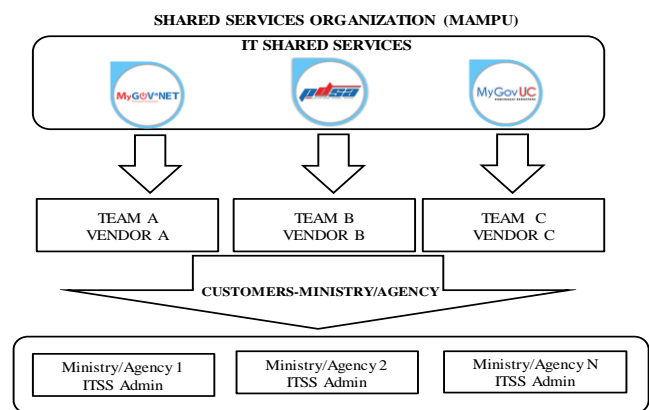
Fig 2.Governance of ITSS in MPS

From the interviews, we were able to discuss and summarize the challenges faced in managing ITSS operations. Eight challenges, in particular, were emphasized by the informants. The challenges are discussed according to a resource dependency perspective, an efficiency perspective and a population perspective as proposed by [1]together with supporting sources from previous studies. Six of the challenges identified were also discussed in the literature, but we found two new challenges, namely technology demand and utilization and the optimization of services, as listed in Table IV. All the challenges required solutions and actions to ensure the smooth ITSS operations.

ITSS Operational Challenges

Perspective	Challenges	Informants
Resource dependency	Struggle for required resources - human	PM1, SE1
		PD, PSC1, PM1
	Limitation of support system / tools	PM1, SE1
Efficiency Maximise	Meet customer expectations	PD, PSC1, PM1, PM2, SE1, SE2, SE3
	Standardisation	PM1, PM2, PM3, SE1

	Contract Management	PD, PSC, PM1, PM3, SE2
	New technology demand	PD, PSC, PM2, SE2
	Utilization & Optimization	PD, PM2, SE2, SE3
	Governance (policy)	PD, PSC
	Communications	SE1, SE3
Population	Multi skill Improvement	PD, PSC1, PM2, SE2

We arranged the challenges in order of priority of according to the frequency of the informant feedback about the challenge. Meeting customer expectations was the main challenge faced by the SSO team, followed by contract management. Both of these challenges required commitment and support from top management from the SSO organization side as well as from the vendor and customer sides. Serious attention should be taken by the management of SSO in these challenges. The final list of challenges is given in Fig. 3 and discussed below.
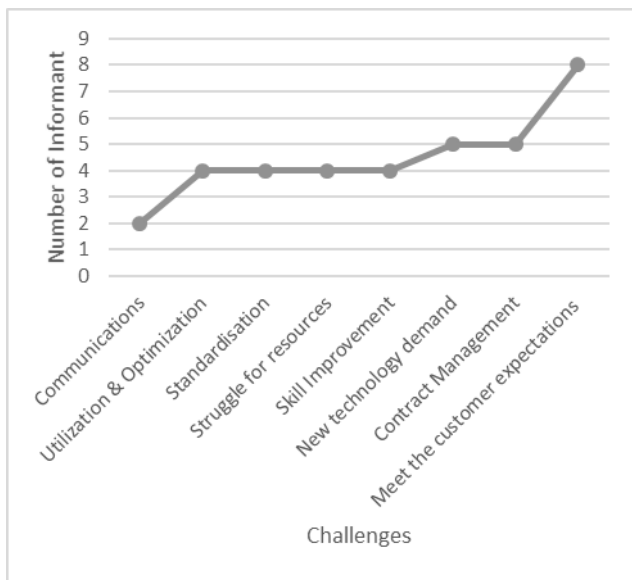

Fig. 3.ITSS Challenges

Meet Customer Expectations

Implementing Shared Services should be in compliance with the customer requirements to ensure its success. The SSO need to understand each of their customers, who might have different strategic objectives, capabilities and resources available [10]. ITSS can have limitations and some services do not meet customer expectations. Based on[1] and [17], customer satisfaction reduced after the shared services implementation. Therefore, customer oriented mind set must be a priority to ensure successful shared services implementation [7], [18], [19]. The SSO need to ensure"service availability and reliability, which means that the services are always ready to be used by customers at anytime, anywhere, smoothly and without interruption" (Informant PM2).

However, in order to fulfil some customer requests, the SSO team need to go through a "lengthy procurement procedure and face budget limitation for a new service request" (Informant PSC). Currently, the SSO need "to think of an alternative way to reduce cost, where the services are not always on, but provided according to customer demand." (Informant PM3). On the other hand, the SSO top management need to give a commitment and provide enough budget to add more necessary services as demanded by the customers and to become competitive in the market. As mentioned by Informant PM1, "Government's Cloud requirement, such as Dropbox, is still under SSO planning. Even though this service is not critical, but customers still request it in advance".

Furthermore, the professionalism of the SSO team, including the appointed vendor, are important to give better service to customers, including providing an explanation about the services offered. Service quality "… needs to consider the response time and availability of the services that can be accessed anywhere. In addition, the services must be compatible for all users by ensuring they meet a minimum user specification without the need to purchase a new computer" (Informant PM2).

In addition, for ITSS-C, the issues with the services provided were less than those for their previous services or open services, where "supposedly the capacity provided should be equal with the current need. For example, ITSS do not allow the transfer of big attachments as with other open services. This is one reason why the customers did not want to use ITSS" (Informant PM2).

Contract Management

The quality benchmarking of services needs to be determined and aligned with the motives behind ITSS implementation. Contract contents need to be comprehensive to ensure that ITSS implementation can meet the motives of ITSS, this includes all aspects related to finance (value for money), efficiency (determination of Service Level Agreement) and organizational structure (IT, personnel and process). The contract must offer a win–win situation for both parties. Good governance of shared services is important to meet such organizational motives[20].

The services offering and the procurement process are two elements in the contract that should be flexible so that they can remain aligned with rapid changes in technology and the different ways of doing business. "The existing procurement process takes a long time, the proposal for flexible procurement was drafted to align with the requirement for new technology to offer to the customer" (Informant PD). This could be delivered with shortening the duration of procurement. "… currently each procurement needs to go through the technical committee, but with the new process, it needs to go through just once, but the normal evaluation will continue as usual" (Informant PSC).

New Technology Demand

Customers demand cutting-edge technology but the procurement processes are lengthy. This impacts the efficiency of the services and leads to complaints from customers. It's important for the SSO, therefore, to produce a flexible procurement process, as suggested by PD, PSC and PM1. The existing structure for procurement should be reviewed and needs improvement to ensure the competitiveness of SSO.

Informant PM1 explained that "…technology can change significantly and quickly and our customers always request new services to keep up to date with these changes and so we have to constantly develop and deliver new services. The preparation work for a new service may require certain processes to be followed and before we can deliver it we need to gain approval from senior management, which can take time."

Skill Improvement

Need to improve multiskilling of SSO team in dealing with customers, technical, finance and contract management. Professionalism of the SSO team is important to maintain service quality delivered to the clients and meet the objective of shared services [1], [21]. Informant PD mentioned that "Outsourcing is still required due to a lack of technical knowledge. We do not fully utilize the in-house expert because the equipment is installed by others and we cannot modify it due to warranty terms and conditions in the agreement. As a result, our IT staff cannot learn all the technical aspects in regard to this condition. This creates challenges to ensure our capability or technical exchange can be fully executed."

In addition, management need to continually develop the skills in the organization, "The SSO team need to constantly update their skills to keep up to date with technology. They need to be able to multi-task work and skills improvement so that they can prepare for, manage and keep abreast of technology changes and be ready to apply and adopt new technology in the workplace" (Informant PSC). Strategies and planning for capability improvement must be well executed to ensure leveraging the specialist capabilities of external vendors [18].

Struggle for Resources

Lack of resources in term of human and management supporting tools/ software/ application. Reference [7] and [19] mentioned that the benefit of shared services resolved lack of resources. On the contrary, this study observed lack of resources in the early stage of implementation and operations because IT staff from client organization failed to relocate into SSO. This showed that the strategy and coordination with the top management or chief information officer at the customers' end were not really successful. The planning for the relocation of IT staff to SSO should be given priority and performed

The relocation of an IT officer from the ministry/agency took a long time and it happened after the ITSS implementation was complete and not in the early stage of operation. The lack of resources caused a delay in action responding to issues as "there was no system to record incidents or service requests by customers via private channels – whether e-mail, WhatsApp or call. Sometimes we forgot because of the high work volume" (Informant SE2). Furthermore, there was "no proper management system and all communication went via an email to the SSO team. Incident reports, such as a monthly report, were difficult to generate and time consuming due to the unavailability of a system. There were no deadlines to close the incident report via the system; even though the deadlines existed" (Informant SE3).

Standardisation

The SSO need to come out with the clear policy and guidelines to be follow by all the involved stakeholders. We noticed that the comprehensive policy for all the ITSS just circulated in 2018. Its mean that after more than 5 years of its implementation. It is important to ensure that the guideline/policies are explained clearly before the implementation of shared services. According to [19], process standardization and consolidation in SSO is important during the business process redesign.

Informant PM1 highlighted that "from a security aspect, some customer was still reluctant to understand why we gave resources, but no customer responsibility was taken, such as conduct patching…the agency should take action on this". This refers to the lack of awareness of ITSS customer to policies/guidelines determine by SSO. Some of the customer resistance to follow the policies/guidelines.

Informant PM2 also agreed that "The role of SSO should be understood in relation to the agency. To date, it has been assumed that all ITSS responsibilities under SSO. In fact, this is not true and it is not fair to SSO team."

Informant PSC claims that "Governance for shared services should not be the same as for a normal project. Customers seem to pass all the responsibilities to SSO". Furthermore "If any issues are raised, the SSO team tends to get the blame. Yet, the SSO works hard to meet customer satisfaction needs and to build good relationships and harmony within the agency. Still, the scope of work and responsibilities under the agency and customer sides are very clear, and we keep all evidence for future use should issues arise."

SSO management need to provide clear ownership and accountability for all the stakeholders in ITSS. We assume that the resistance to new roles in SSO still exist for certain cases.

Utilization &Optimization

Customer underutilized the services is a main challenges faced by SSO team with clients. SSO team have to monitor the usage of the services provided to each customer and take a necessary action: terminate or reduce the bandwidth/capacity provided. Cost savings should be high if the utilization of ITSS can be optimum. This monitoring role is only performed by the SSO. But customers should also ensure their optimum use of the subscribed services.

This can be done through monitoring and schedule reporting by the SSO team and administration staff at the customer offices. This element is an important aspect in

managing ITSS operations for "…optimum usage during office hours. But at night the usage is very minimum or maybe there is no use. So we need to look at the schedule related to the data centre or data recovery services to optimize the use of the network services at night" (Informant PD).

Communications

Communication is a key element in management and lack of communication lead to misunderstanding and conflict. Some customer was reluctant to use the official helpdesk channel. External communication between the SSO team and customer were lacking. Reference [20] stated that the governance for shared services model should involve all stakeholders.

"Some of the agency want to transfer all the responsibility to the SSO. But here, even if there was sufficient expertise in the SSO, it still would not be possible to handle the potential hundreds of applications from different agencies. We can only provide the infrastructure and facilities. The agency should only play a role in looking at the application scope from A to Z" (Informant PM1). Evaluation of the project team should be carried out since they are easy to communicate with via the helpdesk (i.e. incident analysis solution based on a customer charter).

V. CONCLUSION

In essence, this study has covered some important issues and offers enhanced insights into managing ITSS operations. The study identified eight challenges that require action by the SSO to maintain the quality of services provided to customers. All the challenges were in the operational stage. Being successful, there are many aspects of shared services to consider. The SSO should take the necessary action to ensure the efficiency of services provided. The most important is customer satisfaction in regard to the stakeholders. The outcome of the study may create an awareness to facilitate improvements to the SSO team to ensure a greater customer mindset in daily operation. Therefore, further research should be carried out to identify the dimension quality of ITSS, especially to fulfil and improve customer satisfaction of ITSS services.

VI. ACKNOWLEDGMENT

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