PROJECT MANAGEMENT CHALLENGES AND DIFFICULTIES: A CASE STUDY OF INFORMATION SYSTEM DEVELOPMENT

[1]ESUH OSSAI-IGWE LUCKY, [2]OJENIYI ADEGOKE, [3]NORANI NORDIN

[1]College of Business, Universiti Utara Malaysia
[2]School of Computing, Universiti Utara Malaysia
[3]School of Technology Management and Logistics, Universiti Utara Malaysia

ABSTRACT

The successful development of Information System (IS) is not high even with enormous interest and fund committed by organizations on this new technology. It has been revealed that a combination of insufficient and unsuitable project management issues are responsible for this low rate of IS development. This paper presents the findings of the fieldwork and interview conducted on the challenges and difficulties of system development project. The study employed both personal interview and observation methods. The findings revealed that fund, infrastructures (hardware and software), manpower, management commitment, monitoring and inspection were the critical challenges and difficulties faced by organizations during their system development. Therefore, the study concludes that fund, infrastructures (hardware and software), manpower, management commitment, monitoring and inspection play crucial role for an effective system development. Our study recommends that there should be sufficient budget to procure the right system hardware and software for right requirements. Secondly, training of staff for both IS development and management should be given urgent attention.

Keywords: *Project Managemet, Information System (IS), IS Development, Challenges, Difficulties.*

INTRODUCTION

Information system development is a huge and extreme investment project for organization seeking competitive advantage edge in this dynamic global market. In order to survive in this market, many organizations develop information system to enhance efficiency and

profitability. This usually makes organizations to commits considerable time, resources and funds to information system development with the expectation of receiving efficiency and profitability in return. However, many organizations usually make the mistake of valuing technology over the organization process (Drucker, 1998). This usually leads to investment in technology that goes beyond their needs and resulting to inefficiency and wastefulness. Likewise, it might even result to abandonment or failure of the development of the information system. Information system on its own cannot create the gains and advantages that organization need to survive the dynamic competitive global market. The need to explore project management in information system development becomes desirable to ensure successful and effective organization gains and advantages in the global market. Hence the combination of project management and information system development will provide a better philosophy and method for planning and managing successful IS development.

Similarly, IS development is a project and success and failure of project depends largely on the methodology adopted. Project management methodology defined the step-by-step, quality standard, activities, tools, controls, processes and deliverable elements to achieve successful development of the project. Therefore, the success of IS development project does not totally depends on the development team but more on the set of processes and procedures in place to ensure successful completion. Hence, it becomes necessary to investigate difficulties and challenges experience while development information system from project management perspective.

LITERATURE REVIEW

In today's ever increasingly competitive markets, business and enterprises rely more and more in their information systems to achieve their purposes of effectiveness and efficiency. New technologies bring new opportunities to enhance business operations and interactions. Project management is concerned about the application of tools, skills, knowledge and techniques to achieve effectiveness and efficiency to survival in competitive market (PMI, 2000). The usefulness of project management cut across disciplines and it's applicable to any industry regardless of the service and product it aims to achieve. Despite its wide application in different industries and products, project management has an enormous usefulness on effective development of IS to significantly increase the successful completion.

Kerzner (2013) pointed out that project management is successful due to its methodological approach of process integration, process creativity, effective planning, execution, supervising and control, and lastly closure to accomplished completed projects. Similarly, Heagney (2011) echoed that project management is highly effective particularly in IS due to its nature of process based. He further added that the sequential phases of project management directly enhance IS development, making it an invaluable means in facilitating successful completion of system corresponding to its original requirements. Hence, the issues of cost, project scope, time and quality is paramount to business efficiency and effectiveness which also defines project success particularly IS development in an organization (Atkinson, 1999). Project management assists organization management to be able to standardize their project and ensure that resources are available in achieving targeted project. It permits organization managers to be able to apply appropriate techniques and measures to ensure completion of projects with minimal cost and least resources.

When project management is incorporated in Information systems development, it leads to an improvement in usefulness and efficiency of business operations and interactions with minimal resources of the organization (Cadle & Yeates, 2004). The capabilities of the information system and characteristics of such business, its employees and the systematic development and implementation of the IS determine the degree to which that aim is accomplished. Coy (2004) explain that IS enhance the coordination of hardware and software to collect, filter, process, create and distribute date within a confine network to achieve business excellent. It aims to support business operations and managerial decision making in achieving business productivity and excellent. It deals with not only infrastructure but also the manner at which users interact with technology in support of business processes to achieve this excellent.

Similarly, Kroenke (2008) defined IS as an interaction formed by users and information technology (such as process, data, models, applications, machines and others) to achieve some organizational functions and purposes. This interaction can occur within or across organizational boundaries. An information system is the technology an organization uses and the way in which the organizations interact with the technology and the way in which the technology works with the organization's business processes. Hence, Information System (IS) is the interconnection and operation of information technologies and human managerial skills to achieve business productivity and excellence.

In the same scenario information systems development (ISD) can be seen as the process of interaction by which some collective work activity is facilitated by new information-technological means through analysis, design, implementation, introduction and sustained support, as well as process management to achieved business excellence (Korpela, Mursu, & Soriyan, 2002). It is the developmental change in process that is aim at achieving certain business objectives or purposes by using information systems. This change is targeted toward business operational excellence and productivity. Several information development approaches have been used since the origin of information technology to achieve business excellence. Mingers (2003) identified Waterfall, Prototyping, Incremental, Spiral, Rapid application development (RAD) and Extreme Programming approaches as commonly used in IS project and system development. However, these approaches have been found not to be sufficient on their own to achieve inclusive business excellent that is been anticipated by developers and business managers. For inclusive business excellent and comprehensive solution to complex system development, a multi-methodological approach is considered the most effective strategy (Iden, Tessem, & Paivarinta, 2012; Higgins, Taylor, & Francis, 2012).

In IS development, no one approaches is regarded as the preeminent because of the dynamic nature of business and its requirements needed to achieve operational excellence. These requirements are based on the ever-increasing competitive global market which every business must survive. Although information systems (IS) have become one of the most precious assets in the ever increasingly competitive global market yet development of such system usually encounter many problems. Among the most imperative are low productivity, a large number of failures, and an insufficient relevance of information system with business needs. Petersen (2011) submitted that low productivity occurs when the business operation functions and excels better in manual mode compare to the IS mode.

In the same vein, Conboy (2010) reported that IS development (ISD) efforts resulted to failure sometimes due to economical mismatches, such as budget, schedule overruns, poor product quality and insufficient user satisfaction. This was supported by Yeo (2002) and Standish Group (1995) revelations that only 16% of all projects are delivered on time and within their budget. This was carried out as a survey among 365 information technology managers, it also revealed that 31% of ISD projects were cancelled prior to completion and the majority, 53%, are completed but over budget and offer less functionality than originally

specified. Correspondingly, from the business point of view, Goyal (2012) identified growing criticism of poor alignment of ISs and business needs. He observed that while an increasing part of business' resources are spent on recording, searching, refining and analyzing information, the link between ISs and business performance and strategies has been shown to be dubious. For example, most managers and users are still facing situations where they cannot get information they need to run their units (Rockart & Hofman, 1992). Hence, ISD is continually challenged by the dynamic nature of business together with the ways that business activities are organized and supported by ISs.

COMPANY BACKGROUND

PHE is a corporation in Malaysia and it was established through in the year 1994. This establishment was gazette on 25 August 1994 and became operational on 30 August 1994. The main purpose of the establishment of PEH is to provide resettlement training for retiring personnel to inculcate knowledge, skills and work experiences to enable them to adjust to new life environments of civilian, and training for retired personnel for upgrading, value adding or diversification. PEH is an agency under government body that has been assigned to develop, manage and conduct skill training for the retiring and retired army personnel. As most of them retire within ten to fifteen years of service, they usually require new skill to venture into civilian life. The training will enable them to compete for job with other job seekers in open market. They are encouraged to apply for specific training or courses focusing on new skills that have been developed by PEH.

In the past all information related to the courses, trainees, budgets, duration, location and other information are kept at central location. To keep track with all these activities, PEH need to have a systematic filling system, this in the past is hard to achieve due to large amount of data managed manually that is, using forms, letter, cards etc. Almost all information is input by typing or hand written and kept in a convention filing system. The management was facing many errors, inefficient and low productivity as a result of manual and conventional filling system usage. The only part that are being computerized at early stage are the trainees information detail however, it only uses Microsoft Excel to store the data. In early 1996, the management decided to have a database to handle trainee information. The system was known as "Sistem Maklumat Pelatih". It consists of few modules such as Registration of trainee,

Courses, Budget for the Course and some reports. System requirement and system development were done in house under the Information System Department led by the Head of IT department.

In 1996, the usage of computer was still new at PEH. They did not see the need and the importance of having a database system. To develop a database, it requires fund and time to collect all the relevant information and data. Finally, the management agreed to give a chance to prove that computer system can improve her overall data management in PEH. With minimum support from the management, the head of IT department and her team took the challenge to develop the system. They review the whole process of the registration, the need and requirement of the system and develop an in-house system. They have to work with basic infrastructure due to low budget. A critical observation shows that developing IS at PEH was not only a management challenge but also includes users' problem where staff (user) keeps changing due to either retirement or transfer or other reasons.

In 1998 the system was finally ready for implementation. At this stage according to the head of the IT department, the issues of end users were still critical particularly where the end-users were afraid to use the system. A special training on computer usage was conducted for the first stage in order to make them familiar with the new equipment. They also have to hire new staff (computer skilled) to speed up the implementation. In 2000, PEH developed a web page for the organization. The web consists of Bulletin of PEH, organization chart, course offer and most important is the registration form. They received a good feedback for the future retiree army personnel since most of them are youngster and technology driven.

RESEARCH METHODOLOGY

Rosenberg and Yates (2007), Sekaran and Bougies (2009) and Zikmund, Carr, and Griffin (2012) noted that for an adequately and in-depth understand of phenomenon, case-study research design with interview and observation research techniques are very important. Therefore, toeing this line, this study utilized a case-study research design with a face-to-face interview and observation research approaches. Two key personnel of PEH were interviewed on the project management challenges and difficulties experienced during the implementation of IS in their organization.

RESULTS AND DISCUSSIONS

In the early stage of establishment, there was no specific information system been developed to cater for data collections in PEH. This was due to:

- lack of requirement on information system
- lack of knowledge of the people (employee) on the system
- lack of budget for software and hardware
- lack of staff to implement the system

Even PEH was established in 1994, yet the first recruitment of an IT staff was conducted in 1996. There was no IT Department specifically at that point of time. A critical observation shows that IS implementation of PERHEBAT at the initial stage was manually. For example, the system was stand-alone based on the requirement of each department. At this stage, all data collected been processed in and by the ready-market applications of database and spreadsheets such as Microsoft Access for database and Excel for spread-sheet were later on converted to Microsoft SQL Server 2000 to deal with number of data. They engaged IS professional to develop the system for trainees' data and registration. They named it as *Sistem Maklumat Pelatih* (Trainee Information System). As time goes by, the requirements of information are getting more challenging and more complex from related departments for registration of trainees, payrolls, procurements, human resource activities and financial recordings and reports. The organization has developed in-house systems based on departmental processes. However, the in-house systems were not integrated with each other but stood alone and were developed to serve each department alone. With the consent of Management, few options have been considered and implemented gradually to cater for requirements such as:

- Bought off-the-shelf system and did some modifications for payroll. They named it as BOSS Payroll System.
- Bought off-the-shelf system for financial recordings and reports. They named it as OBM System.

Presently, the IT department has been established with three employees under the name of *Unit Teknologi Maklumat*. The functions of IT department are not only to monitor the systems and hardware but also the components of IS function that make the systems work. These include the people and the procedures needed for processing those data for the organization. Given the above background, the major objective of this study therefore, is to identify and reveal the project management

major challenges and difficulties of IS development in the organization in a particular PEH.

DISCUSSION

From the interview, the major challenges to IS development were identified. The aim was to provide validation and more insight on the key challenges impacting on the system development in PEH. The key informant reported all the major challenges faced by PEH during their initial IS development. Challenges were categorized into five major themes namely: fund, infrastructure, upgrading previous system, skills, monitoring and inspection.

Fund

Generally, fund has been identified as one of the major that hinders many projects particularly during early stage. As revealed by the key informants, fund was a major obstacle and challenge that organization faced during there IS development. This finding corroborates the ideas of Benjamin and Blunt (2012) and Lederer (2013) that sufficient funding and financial empowerment of new technologies is needed to survive in this age of technological ever increasing competitive business environment. Expressing her view, she said:

> *"The major difficulties faced with this organization in the time past are lack of fund. There is always little money budgeted to the IT department from the total budget of PERHEBAT. This has caused the department so many limitations to carry on smooth running of the department. There is an intention to move and upgrade to the latest technology but cannot achieve this objective because of lack of fund. The organization is constraint and could not move to the latest technology available in the then market. Due to the same financial constraints, the IT departments were unable to make purchases of latest technology in the market that would have enhance the performance of the organization in general. Example of such purchases includes; hardware, software, cable, and other component relevant for upgrading."*

Infrastructure issues

Another factor that was identified to imposed a challenge on IS development in PEH is infrastructures (hardware and software). There is need for procurement of some hard ware facilities and migration from old to the new or conventional machines. There is also need to build

Local Area Network (LAN) for communication purpose. From our observations, we found that the state of the infrastructural facilities at the early stage of the IS development were old and outdated. This is in line with Hatling (1996) who affirmed that good and standard infrastructure is the backbone of techno-driven business in this present business environment. The informant stated:

> "*My major concern was how to procure up-to-date infrastructures that can meet up with the new proposed IS. This is because majority of the board members don't make to commit much fund to IT but we need to procure new hardware that will support the proposed IS.* "

Similarly, there were major concerns about the software currently in use by the organization. At the short run, may not be compatible with the IS. This software caused the organization some fortune. For effective operation, they may be need for procurement of a new and compatible IS as stated by the interviewee.

> "*In a situation where most board members are of the view that IT engulf lot of fund with little to compensate for it. Then, it is a critical circumstance to stand up and explain to them that application currently in use should be replaced or up-graded with new vision because of compatible issues. Am sure cost implication should be the first question to be asked.* "

Similarly, the informant also identified upgrading as a major challenge and difficulty faced during IS development at PEH. For example upgrading pervious systems to IS was a major challenge. The informant revealed:

> "*Having an IS, Network and collaboration with Ministry of Defence and Armed Forces Fund Board (LTAT) can be made. Detail information about the retired and retiring army can be collected and a recommendation can be made to them to attend training. The retired and retiring army cannot avoid from attending any training that been assigned to them by the Ministry of Defence and Armed Forces Fund Board (LTAT). PEH always take a one step forward and be ready to give the best advice to personnel who retire in accordance with the current state. They used more than one approach to give advice to the retired and retiring army personnel. PEH Portal is the best way to*

inform and communicate to the retired and retiring army personnel to offer services that provide by PEH. The retired and retiring army personnel can have a look in the Portal at anytime and anywhere. The Portal consists of training provided, training date, training location etc. They can easily send the e-mail to enquire regarding the training. The portal should always be up to date to ensure all the information can be delivered accordingly."

Skilled Manpower

Furthermore, lack of computer skill was equally identified as a key challenge and major difficulty to the development of IS. There is lack of general computer skill amongst the employee of the organization. The employee of PEH need to be trained and those with little computer knowledge need to be retrained for proper handling of the IT department and IS. This factor hinders the smooth running of the IT department. Most of the older employee displayed lack of interest and willingness to learning computer skills which have great negative impact on the operation of the organization. Therefore, the organization requires qualified personnel to handle the IT unit if the IS system is to be implemented. The qualified personnel are difficult to recruit since other organization pay higher for professional compared to public one like PEH. This finding is consistent with Watson, Boudreau, and Chen (20100 argument on the fact that skill is a key factor in technological sustainability in any organization. The informant reported:

"*The report of the study and review shows that there is low number of computer literate staff in PERHEBAT. This is because older staffs run away from computer job while only younger staffs are interested in such job. Therefore, it calls for training of older staffs or recruiting younger ones that are interested in the job*".

Management Commitment

In addition to computer skill, the ability to convince the board on the need for IS development was one key factor that was found challenging and difficulty. Just like the issue of budget and fund, the ability to convince the top management on why such fund should be use to that particular project is more difficult. Because IS development is very expensive and involves a lot of cost. It is always very difficult to convince the decision makers why such budget or fund should be invest in the project. From our observations, we discovered that it took the I.T department a lot

of effort to convince and talk the top management into accepting the need to spend such fund on IS development. Expressing her view, the informant said:

> "*In a situation where most board members are of the view that IT engulf lot of fund with little to compensate for it. Then, it is a critical circumstance to stand up and explain to them that application currently in use should be replaced or up-graded with new vision because of compatible issues. Am sure cost implication should be the first question to be asked*".

Monitoring and Inspection

Apart from lack of fund, infrastructure, upgrading previous systems and lack of skills, monitoring and inspection was a critical factor as identified by the informant. PEH has a big problem when coming to the processing of an application to attend a new training by the applicant. This is because all the information is kept manually and has to be retrieved manually. The information about the trainee and courses attended are not been kept accordingly. This will then slow down the process of approving of the new application by the current trainee. She said,

> *"An integrated IS shall reduce the trauma and stress on the of manual information retrieval system which slow down work process. With the use and structured information system, PERE can have a good way for tracking the trainees courses attended. Retrieving information of the trainee, retrieving about the course attended, course offer and duration are easier, faster and more efficient. Monitoring and inspection to ensure all the trainee have completed their courses and succeed in their life after retirement can be monitored. A list of report can be accessed to show courses that they have attended and the advanced courses offered if required by them."*

Project Management ISD Checklist

Today, the usage of computer is beyond office use to support business operations but more to creation of central database, central information processing and decision making to improve the organization overall performance and to give better mean to provide information and training for the future retiring army. The study asserts that the installation of central database will straighten ICT infrastructure in any organization with integration of up-to-date technologies and application. With this inline PEH mission to set up a University College by the year of 2015 is seem possible. Having a central database will enhance all processes

that are mostly managed either manually or in isolation. IS not only will help to improve current PEH website/Portal but most importantly it can minimize tasks that are currently redundancy.

Having a central database also will then improve on corporate governance through a well-structured information system where they can have a good collaboration with the Ministry of Defence to have the data/ information of the future retiree army (New trainee) been shared by the Academy. Documentation process also will be better structured compare to the current methods of using a conventional filling system. Beside that it will also enhance the usage of ICT as a training tool. ICT will enhance Employee Skill on using of new applications and new approaches. It is recommended that PEH to have a new ICT Lab for training to achieve the above. Having a central database will then give them an opportunity to upgrade their databases and Backup system used. Since centralized database will deal with huge data and number of process involved. A new Backup strategy, a new Backup plan and a new backup system has to be introduced in order to deal with new enhancement.

Apart from having, a central database there is need for PEH to upgrade the Information System Department itself by having Secure Data Centre to secure the data and the system by upgrading their Networking System (LAN & WAN) and replacement of New Computer for each department. From our reading and talk to the expert in Information System the following action must be taken by PEH for their sustainable success to improve their overall data management and other administration processes:

- Sufficient budget to procure the right system (hardware & software for right requirements (process, procedures and end results)
- Top management 'buy in' to the propose project
- Training of the staff to manage the system
- Useful data to be input for processing (remember; garbage in garbage out)
- Monitoring and inspection of both software and hardware
- Data security

Information system can solve complex problems and managed huge data, only when the implementation project is successfully and comprehensively achieved. With the right hardware, software, data and procedures managing data can be much simpler and took shorter time to resolve. Data can be shared transfer and in large amount in a shorter time, minimize errors and manage different type of reporting for

different uses at ease. In today's world of internet system can also be linked to other system via network that make task much easier even if we are at different part of the world.

CONCLUSION

Taking the decision to development IS can hold the promise of big gains and rewards both to the IT department and the organization management. However, the risk involve in such project is enormous and huge to both parties too. Therefore, it becomes imperative to consider project management guidelines and checklist for successful ISD projects. This is because the implication and consequent of a failed or even a less successful ISD project exceed the significant of cost. It also impact on the credibility of organization management, competency of both consultant and IT personnel and potentially hampers organizational operations. Hence, this paper had explored challenges, difficulties and checklist to mitigate risk and improves chances of success in ISD projects.

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