Challenges Leading to Projects Struggle in IT Project Management Office

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Abstract: - The purpose of this study is to identify the challenging factors leading to projects struggle within the PMO of an IT and software development organization. These challenges have a potential negative impact on projects execution and management leading to higher likelihood of projects failure. The project challenges along with recommendation on how to address and overcome them are provided. Change of scope, conflict between project and departmental tasks, resource contention, lack of resources-utilization-tracking system, and shortage of resources were found to be the top challenges leading to the struggle of projects within an IT and software development Project Management Office.

Key-Words: -Project Management Office, Project Management, PMO, PM Challenges, IT PMO Failure, Agile PM

1 Introduction

According to a research conducted by the Standish Group, only 16% of projects were successful with regard to time, budget, and technical specifications (Crawford, 2001). In a follow up research, the Standish Group had observed an increase in the success rate of projects from 16% to 26% (Crawford, 2001). Amongst the reasons offered for the improved success rate was enhanced project management and use of standard project procedures as a consequence of the implementation of the PMO. According to the State of the PMO 2010 survey, 84 percent of organizations are currently implementing PMO within their organization, a jump of 36% from the year 2000 (PMI, 2012). Organizations with PMO report more projects coming on time, on budget and meeting business goals. Having that said, it is not a straight forward process to establish a project management office within even the smallest firm. According to a research conducted by Gartner Research, Project Management Offices have a failure rate of 50 percent or more on their first attempt of establishment (Crawford, 2001).

2 Project and Project Management

A project is the organization of people and resources to achieve a defined objective and purpose (Tuman, 1983). According to Pinto &Selvin (1988) a project is characterized by having a defined time for completion, limited budget, well defined and pre-set objectives, as well as a series of activities to achieve those objectives. As for project management; (Kerzner, 2003) defines it as the planning, organizing, directing, and controlling of company's resources to achieve specific goals defined for a particular project. According to the Project Management Institution (PMI, 2000), project management involves applying knowledge, skills, tools, and techniques to project activities to meet or exceed project's stakeholder needs and expectations.

Regardless of the minor differences in definitions, project management is gaining more ground when it comes to research, from requirements engineering (GHAZARIAN, 2013), to exploring the soft and

hard Total Quality Management factors that may impact business results (SCHMIDT, PICÓN, RUIZ & CAUZO, 2013) and even measuring job satisfaction for better customer management (KIM & HAN, 2013).

3 Project Management Office Definition

The origin of PMO can be traced back to the 1930's (Singh &Keil&Kasi, 2009 p.411) and gained popularity in mid 1990s (Dai & Wells, 2004, p.526). The number of PMOs forming in organizations is increasing (Hobbs and Aubry, 2007; Hobbs et al, 2008; Spelta and Albertin, 2012). Through the literature, there have been various definitions of PMO and its implementations. According to the Project Management Institute (PMI, 2008), a project management office (PMO) is an organizational body or entity assigned various responsibilities related to the centralized and coordinated management of those projects under its domain. The responsibilities of the PMO spans from providing project management support functions to being responsible for the direct management of projects (PMI, 2008)

Authors tried to meet PMI definition of "Project Management Office", never the less, some of its entities were given different names such as Project Office (Kerzner, 2003; PMI, 2004, p.17), Centre of Excellence (Hill, 2004, p.50) or Centre of Expertise (Dai & Wells, 2004, p.524), Program Management Office (Rajegopal et al., 2007, p.27). Some authors noted that a universal definition for PMO is not possible due to the difficulty in customization of individual PMOs to fit all organizational needs (Desouza & Evaristo, 2006, p.415). The responsibilities of the PMO can range from providing project management support functions, to actually being responsible for the direct management of a project." (2008, p.11)

Several organizations have established a Project Management Offices (PMO) in order to insure successful management and support of projects within their organizations. PMO provides a wide range of functions spanning form designing and maintenance of project procedures to strategic selection and initiation of projects in a matter that aligns with organizational vision and objectives (PMI, 2008) (Kerzner, 2009). The concept of Project Management Office (PMO) as an organizational entity came into shape in the late 1990s. Currently, the Project Management Office

(PMO) is a well-established concept around organizations. The evolution of the PMO as a concept and important entity within organizations has continued to evolve to this day since the early days when the US Air Corps and later, the US Air Force, used Project Offices to assist with monitoring and controlling aircraft development projects during the Second World Word and Cold War periods (Benson, 1997).

In a two-year empirical study conducted by Dai and Wells (2004) to investigate the establishment and use of PMO, they found that 113 of 234 responses from a random sample reported having a PMO or similar entity within their organization. According to Dai and Wells (2004), the majority of PMOs were established in the mid-1990s to 2000.

4 Project Failure Definition and Effect

A study conducted by the Information Technology Management Consultancy Robbins-Gioia LLC found that 51% of industrial companies claimed their implementation of ERP was unsuccessful (Robbins-Gioia, 2002). In their research, (Cooke, Gelman, Peterson & 2001) found that ERP systems failure rate reached 40% (based on 117 surveyed organizations). The cost of failed projects is estimated to have reached 75% Billion in 1998 (Chulkov & Desai, 2005). Although the US and UK are considered leading countries in project management, the project failure rate in these two countries is high, in UK, failure rate in 1990s projects reached 70% while in the US, the percentage was 83% (Kippenberger, 2000).

Avoiding project failure is not an easy task, and not being able to determine what is a failed project makes it even harder. The same project can be viewed by different people as a total failure, partial failure, or even a success (Kirby, 1996; Pinto and Slevin,1989). Literature is rich with researchers trying to determine what a failed project is. Sauer (1993) considers a system as a failure only if there is a development or operation termination. The Chaos Report by the Standish Group summarized success/failure projects in three groups(Yeo, 2002): "Successful"; which compromise 6.2% of the projects, "challenged"; compromising 52.7% of the projects, and "impaired"; which compromise 31.1% of the projects. Lyytinen and Hirschheim (1987) defined four categories that a failed Information System project can fail at, these categories are:

- Correspondence failure: When design objectives are not met
- Process failure: When an IS fails due to time schedule or budget overrun Interaction failure
- Expectation Failure: When the system does not meet the stakeholder's expectations.

Yeo (2002) defines a failed project as a project that was canceled or exceeded budget, or did not address meet its business goals. In his paper, Yeo predicted that challenged and impaired project percentages will increase while successful project percentages will decrease. Glass (1998) named failed projects as "runaway" projects while Yourdon (1997) called them "death-march". Flowers (1996) defined a system as a failure if it doesn't operate as expected, or if system is user hostile causing users to reject it, or if the cost of the system exceeds its benefits (due to creating a complex high maintenance system).

5 Project Management Office Importance

A project manager is an important part of any project for it to succeed (Crawford, 2000; Belassi and Tukel, 1996). In his research, Frank (2002) found that a manager influence over the success of a project can be up to 47%. As the number and complexity of projects throughout the business world has increased, the need to have a centralized project coordination functions has gone up. The popularity and expansion of PMO among organizations appears to be related to this (Dai & Wells, 2004). Organizations are increasingly implementing PMOs. Measuring PMO success is difficult, while some researchers adhere to its importance to making a project successful, some research (Stanleigh, 2006) found that 75% of PMOs in the IS domain shut down within three years of formation. Other researchers highlighted the frequent changes to the form of PMOs (Aubry et al, 2010a; 2010b). To determine how a PMO delivers business values, some authors examined the innovation in organizational project management (Dai & Wells, 2004; Desouza & Evaristo, 2006; Hill, 2004; Hobbs & Aubry, 2007; Hurt & Thomas, 2009; Kerzner, 2003; Martin et al, 2007)

In a 1994, the Standish Group conducted a research through which they found that only 16% of projects were successful with regard to time, budget, and technical specifications (Crawford, 2001). In a follow up research in 1998, they had observed an increase in the success rate of projects from 16% to 26%. Amongst the reasons offered for the improved success rate was enhanced project management and use of standard project procedures as a consequence of the implementation of the PMO. According to the State of the PMO 2010 survey, 84 percent of organizations are currently implementing PMO within their organization, a jump of 36% from the year 2000 (PMI, 2012). Organizations with PMO report more projects coming on time, on budget and meeting business goals. According to PMI's Pulse of the Profession Survey (PMI, 2012), PMO helps reduce failed projects, delivering projects on/under budget, improve productivity, deliver projects on/ahead of schedule, and increase cost saving. Having that said, PMO case of failure starts when the value of PMO within an organization is being questioned due to the fact of having projects not being completed and delivered within the defined sets of objectives ranging from budget, time, and deliverables. For the PMO to not deliver results is one form of failure; but not communicating PMO results upward is one of the main reason several organizations have the perception of a failing PMO (PMI, 2012). According to the State of the PMO 2011, only 15% of project managers who report to vice president of IT believed their firm acknowledges the value of PMO. In addition, 70 % of respondents to the Global State of the PMO study (2011) said that the PMO's value was questioned among senior management. Furthermore, some authors attributed to PMO performance dissatisfaction to internal politics and power systems (Aubry et. al., 2010A).

6 Research Study

In this study, a group of project management professionals that have been part of an initiative to establish a PMO within a software development firm have been questioned about the factors leading to struggle in the execution of projects within the PMO. At the time of the study, it has been over three years since the PMO establishment. The PMO was an initiative sponsored by the CIO to enhance the management and delivery of many struggling and low performing software and IT projects within the organization. In this firm, the project organization is a matrix one in which project managers' work with project teams whose resources are pooled from various functional departments such as Software Engineering, Software Quality Assurance, Implementation and Support, and Product Development. The software development

organization was using the agile software development methodology; specifically Scrum (Schwaber & Beedle, 2002). Consequently, the project management office was driven to use a hybrid approach of project management that combines the principles of traditional project management with agile that is known as Agile Project Management (Hass, 2007). The Project management challenges leading to projects struggle and potential failure that have been surveyed in this study are:

1. Change of Project Scope
2. Conflict between project and departmental tasks
3. Resource Contention
4. Lack of Resources Utilization Tracking System
5. Shortage of Resources
6. Lack of a defined project management methodology
7. Lack of a defined software project management methodology framework
8. Unclear or conflicting projects prioritization
9. Ad hoc projects and tasks assignment to resources
10. Poor Software Quality
11. Unrealistic Projects Expectations and Optimistic Planning

7 Study Results

The results of the study regarding the reasons leading to projects struggle in an IT Project Management Office are presented in Figure 1.

Figure 1: Study Results with Reasons Leading to Projects Struggle in IT PMO

Reasons Leading to Projects Struggle
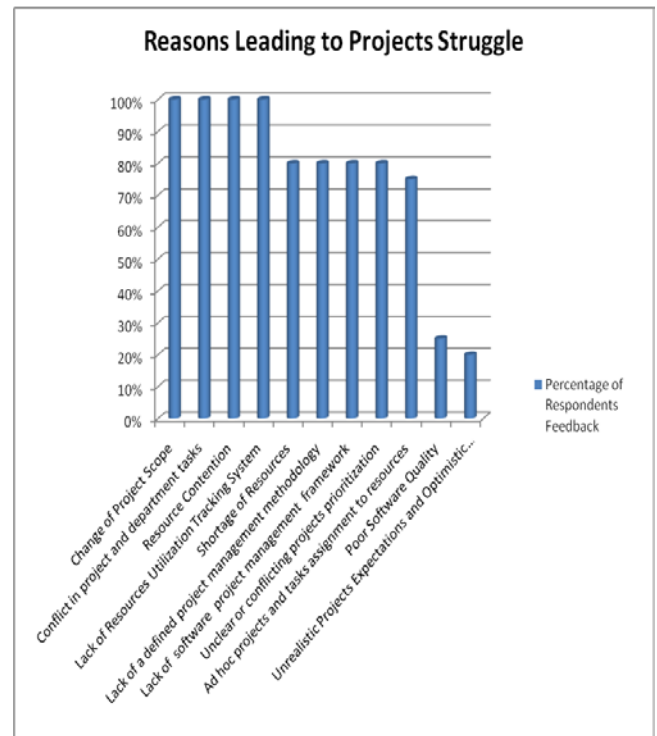
8 Results Analysis

Below is the list of the challenges leading to projects execution struggle as surveyed in this study sorted by the percentage of feedback reported by the study participants.

1. Change of Project Scope. Project scope creep is defined as adding features and functionality to the project scope without addressing the effects on time, cost, and resources or without customer approval (PMI, 2008). 100% of respondents reported this as a challenge leading to project struggle within their PMO organization. This challenge was an impact of two factors in this organization. The first one was related to the ambiguity in the understanding of the meaning of agile software development and project management within the organization, and the second was related to dealing with emergencies within the same projects or other projects. Those emergency tasks were a result of other challenges listed below such as shortage of resources, resource contention, and not understanding customer priorities and need. The use of agile software development; Scrum in this software development firm, leads to a paradigm shift in project delivery mechanism as agile development is driven by the principles of adaptability of change. In agile software

development, change in scope and requirements is expected due to the uncertain nature of projects and the new discovery of customers needs and requirements as the project progress and new iterations are completed. According to Cadle and Yeates (2008), in agile project management (Hass, 2007) changes are seen as reversible and important part of learning. Hence, change is incorporated within the project itself since requirements are said to evolve over time (Alleman, 2005). In agile project management and software development these changes are considered to be unavoidable (Owen et al, 2006) and important for quality delivery (Conforto and Amaral, 2008). When these concepts are not well understood among an organization, conflict is experienced mainly when change is viewed as scope creep and constant project sliding target. This is mainly the case when the customer and top management are used to the traditional manner of project management and development in which a complete and fixed plan and delivery milestones are used. To overcome such challenge, the agile principles in delivery, project management, and process should be shared and understood with the customer along with top management among the organization. Agile project management is more focused on delivering value as perceived by the customer at an early stage which is achieved by following an incremental delivery and continuous revision of project tasks and requirements (Owen et al, 2006). This should not be considered or viewed against projects and project managers as project scope creep.

2. Conflict between Project and Departmental Tasks. 100% of project managers reported this as a challenge negatively impacting the performance of their PMO. of This was noted as a side effect of PMs not managing all aspects of projects. This is mostly a challenge that is mostly observed in organizations having a matrix project organization. The matrix organization structure brings many benefits to an organization through the utilization of cross-functional teams that are working to support a common project. Having that said, a matrix project organization has several challenges. Project managers competing for the same resources can lead to conflicts leading to set backs in project schedule and performance. In a matrix organizations, both the functional manager and the project manager should be in constant and tight communication to insure alignment of project objectives and obligations along with functional departments ones. Resource availability and commitments is one of the most difficult challenges to overcome without a matrix structure.

3. Resource Contention. Resource contention in project management is a conflict over access to a shared resource especially when this resource is needed to complete a task that is on the project critical path. 100% of respondents reported this as a challenge they phased during the start up of the PMO within their firm. In most cases, resource contention leads to delays in projects delivery and schedule consequently impacting the effectiveness of the projects execution and performance. There are several factors that can lead to project's resource contention such as inadequate on incorrect resource forecasting, conflicting resource priority, inadequate information on what and when resources are available, not enough skilled resources, and too many unplanned requests for resources. One of the most challenging reasons leading to resource contention which was dominant in the feedback of this study participants is the presence of a significant disconnect between the PMO and decision makers who assume that there are enough resources for all projects when, in reality, there often are not. Resource contention challenge is highly related and impacted by both challenge 2, 8, and 9.

4. Lack of Resources Utilization Tracking System. Not tracking the utilization of project's resources working hours limits the ability of projects managers in executing their projects and managing risks effectively. 100% of respondents reported this as a challenge in managing, executing, and controlling projects.

For the PMO to be able to provide metrics-based analysis of resources there should be a mechanism and a system to track actual time worked on actual projects and other work. Without this it is impossible to identify the true capacity of a resources working on a project, consequently leading to failure in meeting projects estimated schedule and cost.

5. Shortage of Resource. Not having enough resources to complete projects tasks is usually a sign of insufficient or inaccurate resource planning, resource forecasting, and projects governance, prioritization, and acceptance criteria. 80% of study respondents reported this as a factor leading to projects struggle in the PMO organization. In this organization, there was a persistent struggle and conflict among new software product development projects and software operations such as technical support and emergency customer requests. Emergency customers' requests and issues always trumped running and planned projects. This challenge is also aggravated by other factors and challenges such as ad hoc projects and task assignments to resources, lack of resources utilization tracking systems, and conflicts between projects and department tasks and assignments. This challenge was experienced by several project managers mainly when planning for a new iteration or sprints as resources needed to complete the next iteration were occupied with other tasks and assignments for other projects or departments. In software organization, it is always recommended to separate new products development teams from technical support and operation teams to insure focus among teams and consequently more efficient and effective projects management and delivery.

6. Lack of a defined project management methodology. 80% of participants reported this as a factor negatively impacting the performance of the PMO. Not implementing a standard and well defined project management methodology within the project management office is a major contributor to project execution and control difficulty and hence the failure of

the PMO. Not having a well-defined methodology and practices leads to inconsistency in managing and controlling projects. Consequently, reporting and visibility into projects status and portfolio becomes a challenge and constantly a moving target that is never attained

7. Lack of a software project management methodology framework. This challenge is mostly applicable to the PMO that is established within IT and software development organizations since the integration between the Software Development Life Cycle (SDLC) and project management methodology is usually not straight forward. 80% of respondents reported this as a challenge. An overall project management framework with the basic phases and gates and a few key controlling artifacts such as business case, project schedule, status report, etc. should be defined and agreed upon between the PMO and the software development related departments. This is sometimes known as a PDLC (Project Development Life Cycle), and many different SDLCs can fit under the framework, tailored to the needs of the project type. In this firm integration between the Agile software development methodology and process used required an integration with the traditional project management method and processes was required. Agile project management processes, framework, methodology were not clearly defined, communicated, and understood among major stakeholders and project and software teams.

8. Unclear or conflicting projects prioritization. Accepting and authorizing new projects to be managed and supported by the PMO should not be performed in an ad-hoc or informal matter. 80% of participants reported this as a PMO challenge leading to projects difficulty. Ultimately, ad-hoc authorizing of projects leads to failure of projects due to the lack of available resources and conflicting priorities. Most of the time, accepting new emergency projects trumps already running projects leading to a serious

project block. The process of accepting and prioritizing new projects should be done periodically along with all new projects requests along with the currently running projects.

9. Ad hoc projects and tasks assignment to resources. Accepting and authorizing new projects to be managed and supported by the PMO should not be performed in an ad-hoc or informal matter. 75% of participants reported this as a reason leading to struggling projects and consequently negatively impacting the PMO performance. Ultimately, ad-hoc authorizing of projects leads to failure of projects due to the lack of available resources and conflicting priorities. Most of the time, accepting new emergency projects trumps already running projects leading to a serious project block. The process of accepting and prioritizing new projects should be done periodically along with all new projects requests along with the currently running projects to address this challenge as well as challenge 8 stated above.

10. Poor Software Quality. Releasing poor quality software increases defects found by customers which consequently leads to increase number of support calls and cases that takes the software development team away from working on tasks and projects related to creating new products and features to fixing bugs and issues. This was a challenge reported by 25% of project managers. Poor software quality was a reason leading to projects struggle since resources were taken away from projects to work and address reported customer issues on customers' production systems whose priority was usually over the one of running projects. According to the National Institute of Standards and Technology (NIST), developers spend about 50 percent of development costs on identifying and correcting defects (2002). The NIST also found that over 80 percent of errors are introduced during coding, but well over half of these errors are not found until later in the development process. To address these challenges the software organization should enforce quality

early in the development and engineering process and should also allocate different teams or resources for projects related tasks and technical support and operation tasks or issues. This is necessary to insure focus and attention of projects resources on projects related tasks.

11. Unrealistic Projects Expectations and Optimistic Planning. 20% of respondents reported this as a cause leading to projects struggle within the organization. Past experience and lesson learned provide great insight when planning projects, forecasting and managing their risks. When planning projects it is usually better to fall on the side of error and account for possible risks and emergencies especially when those have been encountered in the past. In this organization, respondents reported that the disconnect between top management and the

PMO led most of the time to optimistic planning and being directed to ignore risk contingency and mitigation measures in their planning justified by " things should be better next year or next time around" which was not necessarily the case due to other challenges mentioned above.

9 Conclusion

Business organizations are increasingly changing into project-oriented or project-based as achieving organizations strategic objectives, business goals, and vision are realized through projects execution and management. Consequently, successful projects execution, management and delivery have become an important driver to business organizations success and prosper. The challenges and factors leading to projects failure or success continue to be a topic of great interest to project management and business practitioners. This study has surveyed the challenges faced while establishing, managing and operating projects in a software/IT firm. The surveyed firm had its PMO organization for three years at the time of the conducted survey. The PMO was setup to manage the organization's software development, delivery, and implementation

projects. The organization had a matrix project organization in which projects resources were pulled from various departments such as software engineering, quality assurance, technical writers, implementation engineers, and product development. The software organization used agile software development methodology specifically Scrum. The PMO was setup to report to the CIO. In this study, all the surveyed project management practitioners reported that the PMO was partially successful due to several encountered challenges while managing and executing projects.

According to the findings of this study, the main challenges leading to struggling projects were related to a perceived constant change of project scope although this should have been granted and expected as agile software development methodologies were used. In addition, conflict between project and departmental tasks, resource contention, and lack of resources-utilization-tracking system were reported as major projects challenges by 100% of respondents. 80% reported lack of resources, conflicting and unclear projects prioritization. Moreover, 80% reported that the lack of a defined standard project management method and framework to integrate software development processes with project management ones as other challenging factors. Ad-hoc projects and resources assignment were reported at 75%. Finally 25% and 20% reported poor software quality and optimistic projects planning as two reasons leading to projects struggle, respectively.

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