

Exploring the Challenges in Transitioning from Traditional Project Management to Agile Project Management

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ABSTRACT

For the past few years, agile methodologies have been hailed as the silver bullet that can successfully rectify the high project failure rate. Many project based organizations are now either considering or in the progress of introducing a more agile approach as a substitute for the more rigid, inflexible and control oriented traditional methodologies. A gap of knowledge has been identified on problems, hindrances and challenges that can arise during the agile transformation process. Accordingly, this study focused on exploring the challenges involved in adopting agile project management methodologies by organizations that followed traditional project management practices. In-depth interviews with experts and practitioners have been carried out to collect data for the study and analysed using coding techniques. Findings have illustrated the challenges in relation to the six key thematic areas, namely organizational culture, leadership, structure, management practices, work unit climate and individual and organizational performance. The weaknesses in traditional project management approach have been identified as the major motivational factor for adopting agile methodologies whilst organizational culture acts as the utmost challenge.

Key words: Agility, Project Management, Traditional Project Management, Agile Project Management, IT industry

Introduction

The industrial environment has changed radically over the last two decades with technology, market conditions and customer requirements are changing at an unprecedented speed and in directions that have been difficult to foresee. Against this new competitive background, many firms have started re-orienting their distinctive competencies, adopting different practices and tools to improve their competitiveness such as automation and flexible manufacturing systems, concurrent engineering, total quality management, strategic and cooperative outsourcing, time-based competition, business process re-engineering, benchmarking, mass customization (Kalyani, 2016). The adoption of all these practices and tools has been considered by the academic and research community to form part of a new Project Management (PM) paradigm.

PM as a discipline underpins much economic activity. Projects drive businesses in industries as diverse as Information Technology (IT), pharmaceuticals, construction and aerospace and many more (Joslin and Muller, 2015). Most organizations use projects as a way to turn strategies into actions and realize their objectives. Choosing the right project management methodology is therefore an essential component of any business strategy.

Different PM methodologies put different demands on the organizational structure, market strategy, processes, management expectation, as well as the team member roles and competencies (Karaman and Kurt, 2015). More traditional methodologies emphasize rigid planning and tight command and control, whereas an agile approach focuses more on flexibility, leadership and team collaboration (Fernandez and Fernandez, 2016). Traditional methods put a lot of emphasis on analysis and planning in early phases of the project, making estimations and assumptions of time and cost before all the factors are known. These assumptions often build on models and templates, combined with previous experience. In contrast, agile methodologies focus on adapting to the situation, making it harder to develop an initial estimate of time consumption and cost. As a result, they are more capable of dealing with changing requirements (Masood and Farooq, 2017).

Extensive PM research has been accomplished in specialized industries such as construction, engineering, and information technology, and these larger industry sectors have been able to increase the value of project processes with the application of formalized PM methods (Thomas and Mullaly, 2008).

More recently industry sectors that do not traditionally have a history of PM are also investigating whether these management practices can bring about improved project success (Pollack and Adler, 2015). This is primarily due to the fact that practitioners in these emerging fields have witnessed the results achieved through the use of PM, such as better utilization of resources and scheduling. These organizations have also seen that improved project success can result in fewer business disruptions, allowing them to concentrate on their primary objectives (Thomas and Mullaly, 2008).

Not only organizations benefiting from using PM for building products and delivering solutions for external clients, but internally the value of project management for the control of IT project delivery and execution has been acknowledged, and has also become a topic of research in the past few years. Many of these recent studies have centered on researching the emerging concept '*Agile Project Management*' (APM) because Agile came as a '*solution*' to the disadvantages of the waterfall methodology (Masood and Farooq, 2017)

Due to the attractive characteristics of APM such as flexibility and short time-to-market, agile development has been increasingly popular and the number of organizations which have started to move to APM is growing every day (Masood and Farooq, 2017). Despite the high rate of practicing APM methodologies globally, there is lack of adoption and awareness about APM in Sri Lanka. Owing to these issues the research focuses to address the challenges and factors affecting to transition to agile methodologies by IT companies in Sri Lanka.

Accordingly the purpose of this research is to determine the challenges involved in adopting APM methodologies by IT organizations that followed traditional project management (TPM) methods.

To cater that, problem was formulated as follows:

What are the challenges faced when transitioning and implementing agile methodologies by traditional software development organizations in Sri Lanka?

Accordingly, the primary objective of this research was:

To identify the challenges involved in adopting agile methodologies by traditional software development organizations in Sri Lanka.

This primary objective has been supported by the following sub objectives.

To identify the weaknesses in the traditional project management approach.

To determine the factors affect for the transition from traditional project management approaches to agile project management by IT companies in Sri Lanka.

This study attempted to make an important contribution to bridge the gap in the knowledge of APM in Sri Lanka both in the industrial and the academic community and also to bridge the gap in the developing country agile adaptation literature, since the earlier researches on APM have conducted mostly in developed countries.

Meanwhile this research assists industrial community to make their strategic decisions to move towards agile methods effectively while overwhelming the challenges, and also this assist them to determine which organizational dimensions impact heavily when transitioning from TPM methodologies to APM methodologies.

Furthermore, the research will motivates future researchers to conduct their researches more focusing on the emerging themes of APM while expanding the context for varieties of industry sectors.

Literature Review

Agile

Agile is a set of approaches and methodologies that helps organizations to make better decisions by providing an environment for teams inside of the

organization to think more effectively and also work more efficiently (Stellman and Greene, 2014). The start of Agile is often seen as a response to the disadvantages of traditional methods of project development such as inflexibility and failure to address the new changes and requests of the customer. According to Sommerville (2007) the dissatisfaction with traditional methods led a number of software developers in the 1990s to propose new Agile methods which shifted the focus of the development more on the software itself rather than on its design and documentation.

Agile development attempts to be more flexible towards addressing the needs of both a project and the organization (Ashmore and Runyan, 2014). It promises to provide some solutions to the problems that software development faces in traditional approaches. Some of these promises are: reduce time and cost, higher quality software, well-constructed code, increase user satisfaction (Ashmore and Runyan, 2014).

Project management

The foremost discipline and thematic thread throughout this research is that of project management. Therefore, to form a solid basis, the definition of PM needs to be established. Simply project management is the act of managing or controlling something that is expected, devised, or planned.

The PMBOK (Project Management Book of Knowledge) (PMI, 2008) has an extended definition of a project as such:

A project is a temporary endeavour undertaken to create a unique product, service, or result. The temporary nature of projects indicates a definite beginning and end. The end is reached when the project's objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists.

The PMBOK (PMI, 2008) expands on this topic further, with a definition of PM:
Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

PM is not a concept that has been pioneered in this century. Throughout the ages there have been abundant large-scale construction projects, including such endeavours as the raising of the pyramids, the construction of stonehenge, and the establishment of roads and aqueducts by the Romans (Kwak and Aanbari, 2008).

Software development

As with PM, software development was founded initially in the engineering fields. A classic example of the early style of development is embodied in the waterfall model, which was introduced in the 1960s and gained popularity in the 1970s and 1980s. According to this model each phase of the overall development produces a result, which is then used as an input for the next phase (Leffingwell and Widrig, 2003). If a phase fails to produce a result or is not completed, then the next phase cannot properly proceed and the development process is delayed.

Whilst this style is now viewed as obsolete and an inflexible approach to software development, it has been implemented quite successfully in the past, especially for the production of secure operating systems and computing environments for government bodies. However, as technology progressed organizations began to encounter development issues, especially when creating products that required user interaction, or where the requirements were only partially understood during the design stage (Boehm, 1988).

A major issue with this model was that, the further along the phases a change or a correction was introduced, the more expensive it was to implement this change. As in the project management field, when initial requirements are less established, such a phase-based system will also encounter problems in the software development field.

Eventually organizations realized the inherent drawbacks of the waterfall style of development, and endeavoured to improve the process of software production. This became a pressing issue when computer hardware became considerably

less expensive to implement, as suddenly software was able to play a greater role in the complete computing experience.

At the end of the 1980s the spiral model was introduced. This model promised to deliver a more incremental development model, and took the risk factor into greater consideration (Boehm, 1988). The spiral model introduced the concept of incremental development, which quickly became an integral part of software production. This allowed developers to produce a usable prototype of the end product, thus enabling end-users to provide input on how to refine the prototype for the ultimate product (Leffingwell and Widrig, 2003). This was a break from the traditional method of design-and-build as depicted by the waterfall model, and was an important advance in development techniques. As IT developments progressed, technology and the business opportunities associated with it emerged extremely quickly.

The IT industry was progressing so quickly that it was often no longer feasible for a business to practice the more traditional methods of development. The traditional process usually involved planning, designing, and building one or two prototypes to fully test the concept, before releasing the software to the end-user. Organizations now required improved results in an even shorter time frame, and improvements in development methods were therefore required.

Whilst the spiral method was an improvement for development, the next major milestone in this field came with the introduction of the iterative approach. Introduced in the 1990s, this method was a hybrid approach that adopted the practices from the waterfall and spiral models, introducing the concept of iterative development (Kruchten, 1995). This initial iterative approach to software development was later expanded to form the basis of the RUP (Rational Unified Process) software development framework (Kruchten, 2000). This framework has undergone regular refinement and is still in use by many organizations today.

Software development using this framework occurs incrementally, with the amount of effort for a particular process group represented by the width of the

coloured bar on the time line. This framework allows for scope changes to be introduced throughout the project, with a reduction in the level of risk in comparison to older development methods. This reduction in risk is primarily achieved by focusing on high-level problems in the earlier development stages. One of the attractions of this method is that it can be heavily customized to specific projects, and only the necessary effort needed for that particular stage of development is undertaken. Additionally, phases in the development can also occur sequentially or concurrently, depending on the requirements of a project (Leffingwell and Widrig, 2003). This allows a development team to be more flexible in their approach, and provides them with greater possibilities when implementing a software project.

Agile software development

In 2001 a group of developers convened to discuss the future of a new generation of software development methods. These methods were not as process-heavy as earlier methods tended to be, and one of the main results from this meeting was the agreement to the term 'agile'. This term would be used to represent the kind of method that was able to respond quickly to changes in software project requirements.

The principles of the agile community diverged from the traditional development mind-set, in that not only would these developers be willing to accept change, even late in the development cycle, but would welcome it and strive to deliver a product that could maximize the benefit to the organization. The main focus of the agile movement is to produce software quickly, without being constrained by the bureaucracy of the traditional methods (Shankarmani et al., 2012).

Organizational transformation

Organizational Transformation is a process that radically alters the organizations strategic direction, including fundamental changes in structures, processes and behaviours. Munro (1992) states that transformational change is frequently

identified as the need for companies to change as the environment changes. Agility and rapid response are important to meet customer's demands, but not all organizations are able to make successful transformations. Blumenthal and Haspeslagh (1994) indicate that in order to qualify as transformational change, the majority of individuals within an organization must change their behaviour. This is usually achieved through a long running process which promotes paradigmatic change and helps the organization to better fit or create desirable future environments. For organizational transformation to operate, change is required in strategy and structure (Tushman and O'Reilly,1996)

Successful organizations are those that regularly refresh their strategies, structures and skills with the environment. Tushman and O'Reilly (1996) state that older, larger, successful organizations develop 'structural inertia' and/or 'cultural inertia'. Structural inertia is resistance to change, which has roots in the organization's structures, systems, procedures and processes that are tied to organizational size, complexity and interdependency. Cultural inertia is developed as lessons from success of the past become embedded in the shared expectations, stories, values and norms of the way things are to be done in the organization. Haveman (1992) states that the more institutionalized the culture, the more complacent an organization becomes. Managing company culture is an important aspect of managing change, because bureaucratic companies are subject to excessive rigidity in the application of rules and regulations and severely constrain their ability to transform in answer to environmental shifts.

Organizational change models

Organizational change models as described in organizational change theory serve as a basis for understanding the interrelationships of different variables and how they may respond to change. They are therefore ideally suited for structuring and contextualizing the agile adoption challenges resulting from the analysis.

There are multiple well founded organizational change models in existence which assist in formulating specifically tailored change processes in different

contexts. Generally, these can be categorized in two main streams. A first stream, consists of procedural models which describe the different phases or steps in which change can be effectively introduced into an organization. The most influential contributor in change theories of this type was Kurt Lewin and his previously mentioned, Unfreeze-Change-Refreeze model (Lewin, 1997).

A second category of organizational change models focuses more on the key organizational factors which affect (or are affected by) the introduction of change in an organization, as well as the relationships between these factors.

The Burke-Litwin Causal Change Model (Burke, 1992) has been developed to assist with the analysis and adoption of organizational change and performance. This model strives to introduce change in the performance of a team or an organization by establishing links between performance and the internal and external factors which affect performance. This model is based on assessing the organizational as well as environmental factors which can be adjusted so as to ensure a successful change. The Burke- Litwin change model begins with outlining a framework of the affecting factors which can be manipulated to guarantee a smoother transition from one phase of the change process to another. Of these factors, the external environment is considered to be the most powerful driver. This in turn leads to significant changes in an organization's mission and strategy, its organizational culture and its leadership.

In a next phase, these lead to changes to structure, systems and management practices. These are more operational factors and changes in them may or may not have an organization-wide impact. Subsequently, these changes affect motivation, which in turn impacts on individual and organizational performance. Each of the variables interacts with the others and a change in any one of them can eventually impact the others. This is useful in explaining not only how organizations perform, but also how they can be changed. As previously mentioned, the adoption of agile methodologies requires a transformation at organizational level, as it affects many organizational factors, including its processes, human resource structure, client interactions, revenue model, etc. In order to perform a structured analysis of the main organizational challenges and

agile adoption best practices, researcher therefore decided to structure the research according to a well-founded organizational change model.

Since this study intends to identify the main challenges in adopting agile methodologies it focused specifically on the second set of models which help to identify the change factors and their relationships.

Of the described factor based change models, the Burke-Litwin model (Burke, 1992) (Figure 1) is the most elaborate and includes the variables identified in the other models as well. As such, researcher has decided to use this model as the basic framework for framing and categorizing the challenges identified during the research. Out of the twelve factors of the model including both external and internal factors, researcher has selected six internal factors, namely organizational culture, leadership, structure, management practices, work unit climate and individual and organizational performances in identifying and categorizing challenges in transitioning from TPM to APM.

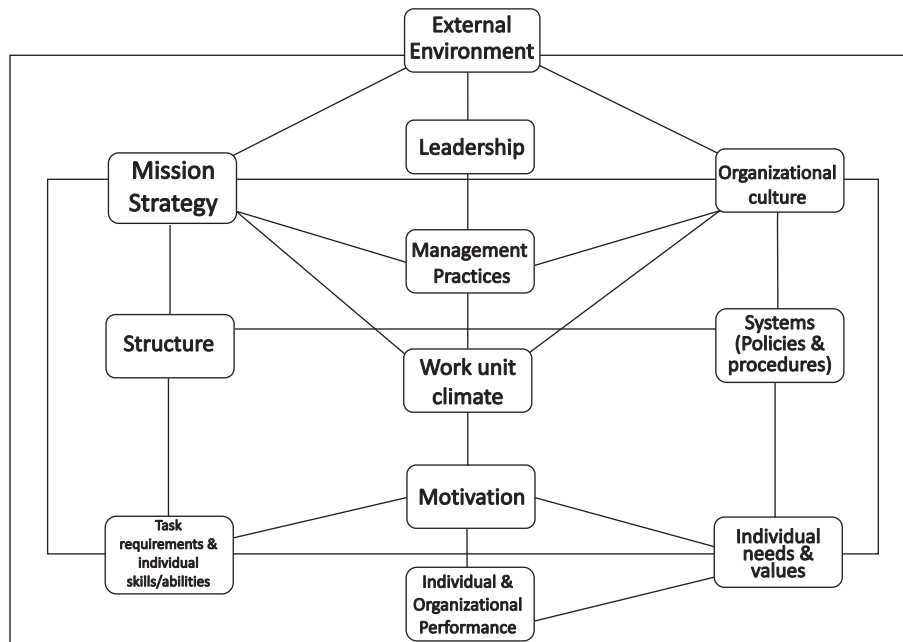


Figure 1: The Burke-Litwin Change model

Source: Burke (1992)

Organizational culture

Culture is the collection of overt and covert rules, value and principles that guide organizational behaviour and that have been strongly influenced by the organization's history, custom and practice (Martins and Coetzee, 2009).

Leadership

Behaviour that encourages others to take necessary actions, including perceptions of leadership style, practices and values (Martins and Coetzee, 2009).

Structure

Structure is the arrangement of functions and employees in specific areas and levels of responsibility, decision-making authority and relationships. It assures the effective implementation of the organizations' mission and strategy (Martins and Coetzee, 2009).

Management practices

What managers do in the normal course of events in using the human and material resources at their disposal to carry out the organization's strategy, including aspects such as managerial behaviour, work etiquette, professionalism, planning, communication and control (Martins and Coetzee, 2009).

Individual and organizational performance

This includes measurable outcomes or results, with their relevant indicators of effort and achievement. Such indicators might include productivity, customer or staff satisfaction, profit and service quality, salary and benefits, and recognition (Martins and Coetzee, 2009).

Sri Lanka's IT industry

Sri Lanka's IT industry which has recorded significant growth in export earnings with the emerging offshore outsourcing model, in recent years has been suffering from problems relating to project success rate (Vithana et al., 2015). APM is a new trend in the IT industry which has become the answer to most of the problems encountered in the TPM methodologies used in globally. Previous studies in other countries have identified some of the challenges to implement APM methods in an offshore environment (Vithana et al., 2015).

Despite the high rate of practicing APM methodologies globally, there is lack of adoption and awareness about APM in Sri Lanka. Owing to these issues, the research focuses to address the weaknesses of TPM approaches and challenges involved in transitioning to agile methodologies by IT companies in Sri Lanka.

Methodology

The researcher has followed the qualitative research approach which is more suitable for this research as an exploratory study to determine the challenges involved in adopting agile practices and research is interpretative, inductive and qualitative in nature to provide deep insights about the focused research area.

This study collects both primary and secondary data for the research. The first source of information was reviewing relevant literature which let researcher to gain further insight into the strengths and weaknesses of both TPM and APM methodologies, the contexts in which they are most successfully applied, as well as to get an overview of and understanding for the problems and issues usually encountered when trying to introduce agile methodologies into an organization employing TPM methodologies.

The information gathered was then used to formulate questions for the interview guide. Interview guide was prepared based on a rigorous literature review where a similar type of interview guide was available which was conducted in a foreign country and this study has used that as a base in preparing the interview questions, which have served to gather data from experts who

have been part of an organizational transformation when APM methods were introduced. These data were the primary data sources for the research.

The sampling technique for the study was convenience sampling. According to Saunders et al. (2009) convenience sampling involves selecting randomly those cases that are easiest to obtain for the sample. The sample selection process continued until the required sample size has been reached. Although this technique of sampling is used widely, it is prone to bias and influences that are beyond the researcher control, as the cases appear in the sample only because of the ease of obtaining them.

Stakeholders at various levels of the organization who are involved with project developments were interviewed. The sample consists of stakeholders at senior management level, middle management level, tactical level, and operational level.

A total of twenty professionals were interviewed over means such as telephone conversations and face to face interviews. However, due to some reasons, not all participants completed the full interview. Therefore, researcher disregarded any participants who did not answer the core questions. After applying this filter, fourteen relevant interviews were remained. The Table 1 below provides a summary profile of the interviewee, his or her position and number of years experienced Interviewing and understanding all these stakeholders' perceptions and experiences have helped to ensure that a comprehensive and representative view have been obtained in order to achieve the predetermined research objectives.

Table 1: Interviewee Profile

Respondent	Position	Number of years experienced
R1	Senior Software Engineer	6
R2	Software Engineer	2
R3	Managing Director	23
R4	Software Factory Manager	18
R5	Project Manager	15
R6	Software Engineer	4
R7	Project Manager	8
R8	Software Engineer	6
R9	Software Engineer	3
R10	Project Manager	5
R11	Software Engineer	3
R12	Software Developer	2
R13	Project Manager	4
R14	Project Manager	7

Source: Survey Data (2016)

In order to analyse the data, the grounded theory approach was used as a method for the analysis. This takes the form of an inductive process for generating theories (Corbin and Strauss, 1990). This approach is extremely useful in developing context-based, process-oriented descriptions and explanations of the phenomenon. (Myers, 1997). Applying this approach consists basically of: firstly, an open coding of raw data, this is an iterative step that ends up with grouped codes; secondly, axial coding is made by identifying the similarities between the codes and similar codes are grouped in labelled categories; and thirdly, selective coding is made upon the categories identified in the previous step. In selective coding, the researcher reduces data from many cases into concepts and sets of relational statements that can be used to explain, in a general sense, what is going on (Corbin and Strauss, 1998).

Data Analysis

Context information

Analysis of the interview responses shows that usual project duration for almost every interviewed organizations falls between 3 months and 12 months period, and almost every organizations that were focused through the interview have been introduced SCRUM method. Furthermore the analysis identified that majority of the organizations have been adapted to APM more than 3 years ago and minority falls between 1-3 years.

Weaknesses in traditional project management methodologies Analysis of the data gathered through the interview shows that the crucial factor to diverge from TPM methodologies to APM methodologies by most of the software development organizations was due to the weaknesses in TPM approaches.

Majority of respondents indicated that the foremost weakness in TPM approach to move towards APM was that the high project failure rates due to the rigidity in the TPM approach. Because once the development cycle starts it is hard to alter the process though the customer requirements changed.

Out of fourteen respondents eight have identified that it was hard to prompt the delivery schedules when they were practicing TPM approach and minority have states that there was high quality assurance cost when they were practicing TPM methods.

“Before moving to agile, we had faced with higher project failure rates which caused even to loss our major clients. That was mainly due to the inflexibility of the process at that time” (Respondent 5)

It is evident from the above findings that rigidity in the TPM approach is a crucial weakness that had affect to adopt APM methodologies by the organizations which followed TPM approaches.

Challenges involved in adopting agile methodologies Organizational Culture

Analysis of the interview responses demonstrates that agile adoption is initiated both bottom-up (from team members) and top down (from management). It also indicates that what had driven most organizations to use APM methods was increasing customer satisfaction and two more reasons were identified namely to increase flexibility and to shorten the time taken to market.

“We wanted to raise customer satisfaction, avoid the risk of non-delivery of what the customer expects” (Respondent 6)

It is evident from the above finding that raising customer satisfaction as the utmost driving factor for adapting APM methods by the organizations that follow TPM methodologies.

In spite of the different motives of introducing APM practices, all respondents have indicated major challenges related to changes in organizational culture. Ten out of fourteen respondents describe one of the challenges that there was internal resistance from team members to changes in processes, such as the necessity for collaboration with team members, fear for new method, see the new process as additional work and as another way that management tries to manage their activities, and equal number of respondents identify the problem of level of stakeholder involvement and interaction such as adjusting to a different way of interacting with the customer during the projects.

Rest of the respondents cited as the level of agile literacy also act as a challenge in adopting agile, where it faced difficulties when sharing knowledge within the team and assigning variable tasks among team members and also indicate that customer expectations such that customers are used to expect fixed price projects also act as a challenge in transitioning to agile methods.

Thus, the difficulties faced when introducing APM practices can be summarized as level of stakeholder interaction and involvement, employee resistance and level of agile literacy.

“Changing the mental model of the employees, resistance to move with team members, lack of involvement with customers were the main difficulties face by the organization when introducing agile” (Respondent 3)

It also apparent from the above findings that level of stakeholder involvement and interaction is a vital challenge when introducing APM methodologies.

Leadership

Most interviewees agree that changing the “command and control” mental model is the hardest challenge. Six out of fourteen respondents indicate that it takes time for management to adapt these changes and in an initial phase, management and also team may resist and question the approach, while trying to hold on to the command and control style. Out of fourteen responses, eight states that it needs to provide coaching and guiding to team members.

“Changing the command and control mental model was the hardest challenge when adapting agile methods within the organization” (Respondent 2)

The findings also demonstrate that changing the command and control mental model is the most crucial challenge that organizations faced when transitioning to agile methods.

Structure

Analysis of data demonstrates that majority of respondents accentuate with the fact that the new teams were self-organizing and the team had to learn to take the responsibility of the project outcome, where previously this was the responsibility of the project manager.

In terms of training, all said that no specific training was carried out and instead, there were group discussions and encouraging of team members to share their knowledge within the team.

“Agile project management should be the responsibility of all of as a team.” (Respondent 3)

It is evident from the findings that APM is a responsibility of the entire project team. Accordingly, agile teams are often composed differently than traditional project teams and have an increased focus on self-organization, autonomy, communication and collaboration.

Management Practices

Four out of fourteen respondents agree that changes in scope management are necessary, and that this also has a positive effect on output, since the improved flexibility in scope-management makes it easier to deliver continuously.

Also there were four other view-points that project development cycles became faster and shorter completion time and two respondent stated that through implementing agile it had impact on the quality improvement of projects.

Though the data emphasize on above factors it is difficult to find a common thread among the interviewees regarding what changes in management practices and how this affected results of the entire organization.

Work Unit Climate

Analysis of data shows that slight majority of respondents indicated the introduction of agile teams initially caused stress to the organizations. The empowerment that comes with self-regulation team gives a certain degree of freedom, but also due to the extended responsibilities, some people are not comfortable with that which caused loss of drive and motivation.

Out of fourteen respondents six emphasize positive effects on both motivation and team work, once the team members get involved with the process and due to the attractive characteristics of agile, they felt personal involvement with the objectives of the project.

Individual and Organizational Performance

Majority of respondents find it hard to illustrate whether the efficiency and quality have changed in a positive or negative direction due to agile adoption within the organization. However, four out of fourteen respondents see an improvement in on time project deliverability and respondent 7 also sees an improvement in number of development activities undertaken in a spring.

Also majority of respondents agree that customer interaction has increased. For six respondents it seems to have resulted in a higher customer satisfaction. The exception is interviewee respondent 6, where the increased customer interaction instead leads to increase customer frustration and dissatisfied team members in long term.

Discussion

The researchers have identified the weaknesses in TPM approach and challenges involved in adopting APM methods under six key thematic areas such as organizational culture, leadership, structure, management practices, work unit climate and individual or organizational performance in relation to the literature.

Weaknesses in traditional project management approach

The TPM methods are still widely used in the software industry because of their straightforward, methodical, and structured nature; they have proved that they can provide high assurance, stability, and predictability. However, they have a number of key shortcomings, including slow adaptation to constantly changing business requirements and a tendency to be over budget and/or behind schedule, delivering fewer features and functions than specified in the requirements.

The analysis of the findings emphasizes that rigidity or inflexibility in the process is the foremost weakness in TPM approach where it is consistent with the findings by Fernandez and Fernandez (2008) who have pinpointed that *“Traditional methods are poorly suited to dynamic and uncertain project environments”*.

Challenges involved in adopting agile methods Organizational Culture

Organizational culture is a system of shared assumptions, values, and beliefs, which governs how people behave in organizations. The literature review illustrated how agile adoption has a major impact on organizational culture as it proclaims different values than traditional methodologies. These include the emphasis on innovation, self-organization, and team-work and customer satisfaction, instead of structure and control (livari and livari 2011, Siaskas and Siaskas 2007).

As per the data gathered through the interview it also indicates that organizational culture as a major challenge in adopting APM methodologies. In spite of the different motives and means of introducing APM practices, all participants have indicated major challenges related to changes in organizational culture.

It is evident that majority of respondents have stated that most of the challenges seem to stem from all stakeholders (team members, customers, management) needing to mentally adapt to the reduction in structure and organization and the increased interaction required between all types of stakeholders.

This is consistent with the findings of livari and livari (2011) who investigated the relationship between organizational culture and the deployment of agile methods, as well as Siaskas and Siaskas (2007), who conclude that the agile culture imposes a highly competitive environment with cultural and social implications.

Leadership

Leadership is the way of influencing people in order to achieve the organizational goals. Leaders should invest time in employees and make sure that they feel comfortable in the workplace which increases the functionality and efficiency of the company. As illustrates in literature agile project management is often accompanied by a shift in leadership style from command and control to increased team autonomy and accountability (Found and Harvey, 2007).

According to Found and Harvey (2007) successful agile project management requires a significant shift in leadership style. This considers the attitudes and leadership style of senior personnel and how these behaviours are perceived by/affect the organization (Burke and Litwin, 1992).

According to the findings of the research most respondents agree that changing the 'command and control' mental model is the hardest challenge where reassigning control to the agile iteration manager and team appears to be the main problem. Here the project manager should take on the role of facilitator instead of controller. Facilitation in this context means removing obstacles which impede team performance. Yet, in terms of team control and daily follow-up, the project manager needs to place trust in the team.

According to DuBrin (2010) a participative leadership style will work well when the leader is one of the team, and shared leadership is often the mark of a high-performing team. The research findings also illustrate that empowering team members, delegation of authority and creating a friendly working climate will increase the employee motivation and satisfaction.

Structure

Structure describes the arrangement of functions and people in specific areas, their level of responsibility and the key decision-making, communication and control relationships (Burke and Litwin, 1992).

According to Augustine et al. (2008) agile teams are composed differently than traditional ones and responsibilities also differ radically. Agile teams are often composed differently than traditional project teams and have an increased focus on self-organization, autonomy, communication and collaboration.

According to DuBrin (2010) the keys for the transition to effective team member empowerment are: sharing information, providing sufficient training and support, gradually replacing traditional organizational structure, allowing individuals and teams to determine how to achieve objectives and above all, trusting in employees to do the right thing.

The research findings accentuate the fact that the new teams are self-organizing and that the team had to learn to take on the responsibility for the project outcome, where this previously was the responsibility of the project manager.

Management Practices

According to Burke and Litwin (1992) management practices concern the way management uses human and material resources, their relationship with subordinates and general management style. As the literature illustrates agile project management involves closer collaboration with stakeholders and deals differently with project management aspects such as scope, risk and quality management (Burke and Litwin, 1992).

Since this research specifically focuses on project management aspects, the shift in management practices is a vital dimension. However, it was difficult to find a common thread among the respondents regarding what changes in management practices and how this affected for the results.

Work Unit Climate

Work unit climate concerns the overall feelings, impressions and expectations of employees, as well as their relationships between teams and individuals. According to Augustine et al. (2008) communication, relationships and expectations between team members differ radically in agile environments.

Literature illustrates that agile methods emphasize teamwork, drive and motivation and also minimization of micromanagement as a core ingredient of employee (team) empowerment (DuBrin, 2010).

Based on the findings it has indicated that adopting agile has both positive and negative influences on team work and motivation where empowerment that comes with self-regulation team gives a certain degree of freedom where it is consistent with the literature, but also with extended responsibilities some people are not comfortable with that. Initially, this causes some loss of drive and motivation. However, rotating responsibilities also seem to have had a good influence on team spirit and individual work satisfaction.

Individual and Organizational Performance

Individual and organizational performance handles factors such as productivity, efficiency, quality and customer satisfaction (Burke and Litwin, 1992).

According to Boehm and Turner (2003), agile methods and their attention to prioritizing requirements and responding to changes in stakeholder value propositions are pushing us in more high-pay off directions.

Agile methods deal very differently with quality management, planning and performance in general, and literature indicates that agile methods proclaim to increase both efficiency and quality of both individuals and the organization. However, through the findings it is hard to indicate whether the efficiency and quality have changed in a positive or negative direction though minority sees an improvement in quality.

Recommendations

This section has structured to propose some of the propositions for the challenges encountered during agile adoption within the IT companies that have been identified under the key thematic areas throughout the research namely organizational culture, leadership, structure, management practices, work unit climate and at last the individual and organizational performance.

Organizational Culture

For the facet of organizational culture, the findings emphasize a clear need for education and coaching, as well as the need for the transformation to be supported from management level. There is a trade-off here as education and coaching is a cost to the organization and takes time, but it is believed that the effort pays off in a short time span, and helps to increase motivation and efficiency at project and also in the organizational level.

As identified during the study, getting the client to be closely involved during the entire process was a major challenge for the organization where the agile

method requires higher customer involvement with the project. To overwhelm this management can coach the client in the agile processes and clearly explain the motivation and benefits of the approach.

Another foremost challenge that organizations confronted was the employee resistance to changing processes and reduction of structure. For this organizations can have an internal or external agile coach who clearly explains the new processes and introduce these changes gradually.

Leadership

The notable challenge identified here was evolving from project manager to project facilitator. For that let the teams take ownership of well-defined project objectives. Confiscate obstacles and provide an environment in which the team can operate autonomously with minimal distractions.

The leader's role in an agile project is not as clearly defined as in traditional project management methodologies, and requires more motivational and coaching skills, as well as the courage to 'let go' or delegate of some control and trust the team members.

Structure

The resulting challenge due to the change in structure was that team may feel without direction due to reduced control of project manager. As remedy for this challenge management can introduce team based performance metrics, to stimulate team self-organization and the emergence of natural team leaders. One more challenge identified was that alienation of agile teams from each other and rest of organization. For that management can organize inter/intra-group activities and team brainstorm sessions to encourage teamwork and communication.

Agile teams are composed differently from traditional project teams and have an increased focus on self-organization, autonomy, communication and collaboration. The increased responsibilities of team members and reduced

direction by the team lead require a higher level of confidence from the individual team members as well as increased teamwork.

Management Practices

Based on the findings it is hard to find a common thread among the respondents regarding what changes in management practices and how this affected results. So it is challenging to derive recommendations only concentrating on the literature.

Work Unit Climate

For the challenge due to the expanded responsibilities, rotating responsibilities and encouraging team members to pick up new kinds of tasks work well as a tool to let both individuals and the team as a whole to grow will be the most pertinent solution.

Individual and Organizational Performance

When it comes to individual and organizational performance, it is important to be able to measure how the organizational change has affected performance. Today this is often forgotten, and hence the organization is later unsure if agile adaptation has been successful from a performance perspective.

To overwhelm the difficulty in knowing whether the agile introduction has affected quality and performance in a positive or negative way, metrics should be defined beforehand and a baseline taken before agile adaptation is started.

Conclusion

Some of the most common challenges encountered during agile adoption involve the adaptation to an environment of reduced structure and control as well as the changes in team dynamics. Without proper guidance, this can lead to a reduction in performance and a lack of motivation. Additionally, project managers often seem to have hard time letting go of the traditional command

and control mentality, thereby hindering or excluding the benefits of agile methodologies.

The identified challenges clearly indicate that the adoption of agile project management is not just about introducing a new set of rules or techniques. Instead, it involves a major organizational change, which affects many stakeholders, from executives to clients and individual team members. This is consistent with the findings of livari and livari (2011) who investigated the relationship between organizational culture and the deployment of agile methods, as well as Siaskas and Siaskas (2007) who conclude that the agile culture imposes a highly competitive environment with cultural and social implications.

Based on the research analysis, it implied that managers must champion, disseminate and strengthen the agile vision across the entire organization. Managers must evolve from project drivers to project facilitators, thereby learning to give-up command and control in return for increased vision setting and guidance. Team members must take increased ownership and responsibility for their tasks and learn to collaborate more closely as a self-organizing and self-controlling team. Finally, clients must actively participate in during the entire life cycle of the project.

Also Burke and Litwin (1992) highlight the inter dependencies of the different organizational factors in their model and emphasize the need to tackle issues on all these levels in order to gain overall efficiency. From the data gathered through the interviews it can be concluded that an issue in any one of the analysed organizational areas can severely impact project success, if not properly addressed. Many of these challenges can be gradually overcome. This can be done by initial coaching through an internal or external agile expert, by introducing more team events and team works to support collaboration, by empowering teams through collaborative decision making and by gradual closer and continued involvement of customers in all phases of a project.

Accordingly, an agile transformation is obviously not an overnight event. In all examined organizations, it was a process which took several months to take

complete effect. In the situations where the challenges were successfully overcome, however, it generally increased the potential for higher customer satisfaction, improved flexibility and augmented team motivation.

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