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Is there such a thing as agile IT program management?

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ABSTRACT

This paper presents early evidence of agile methods in IT enabled transformational programs of high strategic significance and substantial complexity in large organisations. Based on interviews of top management, and program and project managers, we discuss the key drivers that lead to agile IT enabled programs and some of the barriers encountered while managing IT enabled programs in an agile manner. In addition to the need for fast response to environmental changes, strong IT-business collaboration, and efficient resource use by minimising governance burden, we found that organisations are adopting agile practices in program management as transitory step towards achieving enterprise agility. In doing so agile and non-agile projects co-exist within a program thus creating new coordination challenges. Programs with high degree of agile methods adoption face similar challenges in coordinating with the rest of the organisation which operates in non-agile manner. The paper aims to contribute to fostering scholarly discussion on implementation of agile practices in major projects and programs, an emerging area of research with scarce academic literature.

Keywords

Program management, agile practices

INTRODUCTION

Small, low-risk IT projects have been traditionally considered most suited for the use of agile methods (Kruchten, 2013) and therefore, most research on agile methods has been conducted in this context. The findings from small project context should not be directly applied to major projects and programs because direct application of agile practices to major projects is highly problematic and requires significant adaptation and tailoring to fit the complex environment (Kruchten, 2013; Leffingwell, 2010). The initial objective of our exploratory field study was to map the process of how program management teams coordinate multiple projects within a program and resolve issues encountered in doing so. However, it quickly became apparent that adopting and adapting agile methods to suit program management was one of the main concerns of program managers and top management among the organisation we visited. In addition to the traditional agility demand factors, i.e. the need for fast response to environmental changes, strong IT-business collaboration to facilitate organisational strategic agility (Tiwana & Kim, 2015), and efficient resource use by minimising governance burden, we identified another key demand factor which is to promote agile practice use in business as usual. Though, the study is ongoing, and data collection and analysis is undergoing at the time of writing this paper, we believe that presenting our initial results can be of interest to the participants at the SIGITProjManagement workshop and eventually of interest to practice and academia.

While there has been some research on adoption of agile practices in the context of large IT projects (such as Bass, 2016; Goh, Pan, & Zuo, 2013), at least two important gaps exist. First, most studies are limited to individual project context, ignoring the organisational context in which they take place (Hobbs & Petit, 2016). This limitation seems peculiar when considering that up to 90% IT projects take place in multi-project environment (Turner & Speiser, 1992) and yet, IS studies in such environment are scarce and require further research (Elbanna, 2010, 2013; Evaristo

& Fenema, 1999). Since many projects take place within the context of a program, our study goes beyond individual projects and takes into account inter-project coordination which is a defining feature of program management (Maylor, Brady, Cooke-Davies, & Hodgson, 2006). This allowed us to identify the issue of coordinating agile and non-agile projects concurrently.

Second, past research on agile methods in large project context (such as Berger and Beynon-Davies (2009) and Goh et al. (2013)) is based on vendor outsourced project environment, whereas our study is focused on in-house programs. Highly strategic and business critical nature of IT enabled programs, and the availability of significant in-house IT development capabilities within large organisations, keeps them from outsourcing these programs. The focus on in-house program allowed us to identify challenges that agile IT programs faced while dealing with the rest of the organisation which continues to operate in traditional, non-agile manner. Furthermore, past studies are mostly limited to software product development projects only (e.g. Bass, 2016) whereas this study is based on IT enabled programs which are a combination of IT and non-IT change initiatives, including the projects, front-end work, and related portions of routine operations.

Due to the exploratory nature of the early stage of the study, we conducted open ended interviews. Each interview was recorded with the permission of the interviewee and later verbatim transcribed professionally. Each transcript was then analysed using Atlas.Ti software as the tool for qualitative data analysis, following open coding and sorting techniques from the grounded theory method (for methodology description see Glaser and Strauss (1967); Glaser (1978); Glaser (1998)). At the time of writing this article, we have conducted 30 interviews (average 46 minutes each) with program managers/directors, project managers, CEOs, CIOs, and senior manager members of program steering committees/boards (see Appendix A). Appendix B provides brief description of programs being studied.

The rest of the paper is organized as follows. The following sections present a very brief discussion on agile methods and program management, followed by an examination of the preliminary findings. The paper concludes by stating research limitations and proposing future research.

Agile Project Management

The definition of agility varies in different contexts. For example, agility in software development differs from organisational agility. However, key elements of agility concept can be summarised as speed, change, learning, and customer value (Conboy, 2009; Pries-Heje & Baskerville, 2016). Agile software development offers an alternative, lightweight, approach to the traditional, plan-driven waterfall approaches due to the emphasis on team autonomy, light structure and openness to fast, frequent adaptation in response to emerging changes (Lee & Xia, 2010; Pries-Heje & Baskerville, 2016). The use of agile methods in IT systems development has been rising since the emergence of Agile Manifesto (Beck et al., 2001). At first, agile and traditional project management were thought of as polar opposites, however, in practice, agile approach is usually combined with traditional plan-driven project management (Baskerville, Pries-Heje, & Madsen, 2011). Due to the prevalence of agile methods, now, both major waterfall project management methodologies, PMBOK and PRINCE2, offer agile certifications on combining agile approaches with their respective methodologies.

In project management context, agility is an aspect of the project management team's performance and relies on at least two factors: how capable the project team is of changing the project plan; and to what extent the customers are involved the development process (Conforto, Amaral, da Silva, Di Felippo, & Kamikawachi, 2016). Additionally, agility is not a binary concept and different levels of agility exist for various projects at different times (Conforto et al., 2016). The advantages of using agile methods include: staff creativity and productivity, rapid adaptation to change, and increased value for customers (Hobbs & Petit, 2016).

The use agile project management is not without problems. Major risks associated with agile methods are inability of reliable estimation of cost and schedule, over reliance on customer interaction, insufficient documentation, and neglect of security and scalability (Ramesh, Cao, & Baskerville, 2010). However, due to the more strategic, longer term nature, and broader scope of programs, these problems may not be as relevant to programs or that they need to be considered in a different manner and that new problems may emerge. For example, cost and schedules estimates, as well as budget allocations and customer involvement, can be more fluid with program as opposed to projects. Since most agile methods research has focused on the project management context, further research is required to study the adoption of agile practices on the management of programs and portfolios (Bass, 2016; Hobbs & Petit, 2016). This paper reports on our ongoing study in response to these calls.

Program Management

Program management is "the co-ordinated management of a series of inter-connected projects and other non-project work, for the delivery of a specific package of benefits." (Maylor et al., 2006, p. 670). Programs bring about transformational change in organisational culture, processes, and/or structure (Artto, Martinsuo, Gemünden, & Murtoaro, 2009). Programs provide the necessary link between projects and organisational strategy (Pellegrinelli, 2002). IT program have been defined as "concerted IT-dependent strategic efforts to increase the ability of an organisation to address its future business environment and compete more effectively with IT" (Gregory, Keil, Muntermann, & Mähring, 2015, p. 57).

Some confusion exists around what qualifies as program or project due to interchangeable labelling of projects as programs, and vice versa, often due to political reasons (Pellegrinelli, 1997) and some researchers have argued that this confusion can be resolved by treating project management as product development paradigm (Artto et al., 2009; Pellegrinelli, 1997; Thiry, 2015). IT projects focus on delivering an IT product/system. But "an IT venture involves more than building a system. It is part of the unfolding of a broader story […] Perhaps the most powerful question in a decision makers' armoury is, 'Why are we doing this?'" (Drummond, 1996, p. 355). Organisations introduce IT systems to achieve some business purpose; thus, we agree with the argument that the product alone is not sufficient to achieve the benefits for which these systems were commissioned. We see IT as a key enabler but programs also require appropriate changes to the organisational processes, structure, and even culture via a mix of projects. Therefore, contrary to projects, program management is viewed as organisational development paradigm (Partington, Pellegrinelli, & Young, 2005; Pellegrinelli, 2002; Pellegrinelli & Bowman, 1994; Vereecke, Pandalaere, Deschoolmeesterl, & Stevens, 2003). In short "Projects generally deliver outputs: a single product or service […] Programs deliver outcomes: sets of capabilities which, together, produce benefits." (Thiry, 2015, p. 111).

Program management ensures alignment of projects with ever changing business environment and a focus on strategic outcomes. By taking into account the power dynamics and relationships with senior organisational leaders, program management creates the context for success of projects that constitute the program (Hatzakis, Lycett, & Serrano, 2007). Even though "(p)rogram (m)anagement has emerged as a distinct discipline in the late twentieth century" (Thiry, 2015, p. 3), we still know very little about the nature of program management challenges and how to manage them (Gregory et al., 2015; Jiang, Chang, Chen, Wang, & Klein, 2014). Due to the strategic importance for organisation's competitiveness, and the need to avoid failure, top management often has high degree of involvement in program management (Elbanna, 2013). This level of close oversight, and monitoring requires more structured approach to program management which may explain the popularity of traditional waterfall approaches to date (such as Managing Successful Programmes (Office of Government Commerce, 2011) and The Standard for Program Management (Project Management Institute, 2013). With the unprecedented rate of change in the business environment and technology, there is an appetite for a more, fast paced approach to programs which is leading to organisations adopting agile practices in program management. In response to this need, industry frameworks (such as Scaled Agile Framework SAFe (Leffingwell, 2010)) have emerged. However, there is very little understanding of the use of agile practices in program management and the challenges associated with it.

Furthermore, the overlay of traditional project management structure over agile methodologies has already led to blurring of accountability for project management roles. For example, Hoda and Murugesan (2016, p. 256) note that the boundaries of project management role have been blurred by agile practices and "it was unclear as to who was responsible for certain project management activities such as dependency identification, monitoring, and resolution, and such activities could easily slip into the gaps". The multi-level challenges proposed by Hoda and Murugesan (2016) stop at the project level but there is yet another set of challenges that lies at the program level, that is slowly emerging and needs research attention. This paper is a step in this direction.

PRELIMINARY FINDINGS

A transitory step towards program agility

In our study, we are observing a shift toward agile practices at program level. The IT-enabled programs we are investigating show that senior managers have been exposed to the benefits of agile practices and seem to be motivated to adopt agile practices in their routine operations. The case of a hierarchical, command and control, public sector organisation that has traditionally run programs by strict adherence to waterfall methodology and was described by the program director as an "MSP" and "PRINCE2 shop" the transition is somehow problematic. The

agile principles of self-organisation, autonomy, and flat structures are in apparent contradiction to the hierarchical, command and control culture of this organisation. The senior management has decided that they need to make the organisation more agile to increase the speed of response to changing government priorities. One way of promoting agility among senior management is by running program governance boards (steering committees) comprising of high ranking executives, on the format of a scrum stand-up. They have contracted a consulting firm to facilitate the process of adopting agile practices, setting up a collaboration centre that follows a number of agile principles. However, these are early days in the adoption of this new approach to program governance and the results are yet to be seen.

In another organisation, however, such exposure and seeing the use of agile practices in action in program management, has led to some senior managers adopting agile methods in their everyday management of large scale operations of the division. For example, one top executive in that organisation, who was on steering group of an agile program previously, "*runs now a Scrum every Friday for his leadership team around all the initiatives across the entire retail* [business]*. So, not just the digital initiatives, but all the things happening around"* P9. Due to this fast paced environment of status reporting and problem solving around the issues that would only get the division head's attention quarterly in the past, now get reported on weekly.

Thus, we believe that organisations are using agile practices in program management as a transitionary step towards achieving organisational agility[3]. Organisational agility can be facilitated by developing the capabilities for dynamic allocation of IT resources (Chen, Wang, & Chen, 2014; Chen, Wang, & Pan, 2011) and business process flexibility (Chen, Wang, Nevo, et al., 2014; Nazir & Pinsonneault, 2012). One of the ways these two enablers of organisational agility are enabled is by undertaking transformational programs to change their business processes and put in place new IT systems that allow for such dynamic allocation of resources. One particular case in point is a public sector organisation that has to deal with yearly cycle of peak workload for a large section of its workforce, whereas the rest of the year, they are underutilised. To add to this, urgent priorities from the parliament can arrive and disrupt ongoing work.

To deal with this the organisation undertook a large scale transformation program that provided, a new building with flexible, multi-purpose, open plan work spaces, new IT tools such as online forums and Sharepoint sites that allow working from anywhere in building, and new IT system and business process that allow them to periodically carry out an audit of individual workloads and organisational priorities. The new system allows for matching staff capabilities against the existing work and based on spare capacity, task suitability and work priority, recommends people suitable to be deployed on the emerging organisation priorities. This dynamic resource allocation represents a new level of organisational agility for the organisation which the organisation never had in the past. The purpose of the program was to transform the organisation form siloed, disjointed units to an agile one that quickly redeploy its resources from across the organisation to meet an emergent priority. This transformation is being enabled by a program that has agile practices built into it. This is really different from the way programs were done in the past in that organisation. The program manager admitted that management of this program was completely different form the past practice in that it was managed in a very agile way. The communication channels they used did not adhere to organisation boundaries and the governance structure was kept light by removing a lot of formalised steps in order to move things quickly.

The observed transition from agile program to organisational agility can be compared to the three stage, punctuated evolution model of information systems developments in organisations by Baskerville et al. (2011). A major difference however, is that their model is restricted only to software development part of the organisation, whereas we observed the transition to go far beyond IT systems development due to the cross functional, cross cutting nature of the program. In the *pre-agility* stage, organisation is seen as relatively siloed with information contained within. The *agility* stage was brought about by the program which broke barriers and established information flows across the boundaries. In the *post-agility* stage, organisation, now has the elements of agility stage embedded into it and may in future decide to rise to new agility level by starting a similar process all over. Thus we provide an indication and explanation of how agile program contribute to organisational agility.

Coordinating agile and non-agile projects together

[3] "(Organizational) agility (is) defined as the ability to detect and respond to opportunities and threats in the environment with ease, speed and dexterity" (Tallon & Pinsonneault, 2011, p. 464)

Conboy (2009, p. 333) identified three approached to gradual introduction of agile practices in organisations:

- "testing the waters starting with less significant projects"
- "introduction of few practices at a time"
- "by adopting a mildly agile practice and then replacing it with a more adventurous one in future"

We observed these approaches at the program level too because most organisations have conservatively experimented with introducing agile practices instead of going completely agile in big bang fashion. For example, using Kanban or doing daily/weekly stand-up for program management team and still managing the rest of the program using traditional frameworks and approaches. When organisations decide to *test the water* with a few projects within a program, one consequence of this conservatism is that agile and no-agile projects coexist within a program. Since both the projects operate differently in terms of their planning, reporting, and delivery mechanisms, supporting and monitoring these two different types of projects together creates additional coordination challenges and require changes to governance structures. Program managers are experimenting with such structures to find what suits their contexts.

Coordinating with non-agile units of organisation

A problem similar to the above manifests at a higher level when agile programs need to coordinate with other parts of the organisation that continue to operate in a non-agile manner. This is a resurrection of the older "[c]lash of approaches between funding agencies (projectified) and fundees (low level of projectification)" (Maylor et al., 2006, p. 667) but instead of the projectified and non-projectified divide, this time it is between agile program and non-agile functional departments. We have observed this clash in dealing with regulatory and finance departments within the organisation. In these cases, the finance department demand commitments on deliveries against the funding, thus conflicting with programs that try to follow the agile principle of giving the project teams autonomy to change the project scope if it better suits the program outcome, thus they engage in negotiations to deliver a less deterministic commitment on project scope that allows to protect both the financial integrity of the program and its agility.

Furthermore, we are observing that some aspects of program work rely on feedback or approval from other parts of the organisation that do not operate in agile manner, which can hold back agile projects. One way of managing interdependencies with non-agile departments is by placement of dedicated representatives from the non-agile departments to agile program. This solution is a different incarnation "continuous compliance" concept in agile development (Fitzgerald et al., 2013). The dedicated representatives provide early assessment continually which makes formal approval much quicker, at later stages. The ongoing tension between agile and non-agile is a significant concern for program managers and they are struggling to find strategies to deal with it.

DISCUSSION AND CONCLUSION

The overlap of traditional program management framework and agile projects while using a mix of agile and non-agile approaches appears to be the current norm in IT-enabled programs we are studying. Currently the most prevalent form is where traditional program management techniques have adopted some practices from agile methods. However, with the advent of agile frameworks that cover the whole spectrum from Scrums to projects to programs and portfolios (such as Scaled Agile Framework SAFe (Leffingwell, 2010)), and their adoption by large organisations[4] the number of completely agile programs and portfolios will increase, creating additional challenges for organisations in accommodating their demands. Table 1 summarises the key findings.

Drivers	• Need for fast response to environmental changes • Need for strong IT-business collaboration • Need for efficient resource use by minimising governance burden • Promote agile practices use in business as usual
Challenges	• Inter-project coordination of co-existing agile and non-agile project

[4] such as the adoption of Scaled Agile Framework SAFe (scaledagileframework.com) by Westpac Bank in Australia http://scaledagileframework.com/westpac-case-study/ (last accessed 29 August 2016).

	• Coordinating with organisational units that operate in traditional non-agile manner

Table 1: Drivers and challenges for agile IT-enabled program

Our research is delimited by an Australian context and, in some of our cases may be biased by early adoption factors due to the emergence of support, and optimism, for agile practices across the Australian government (Simpson, Wilkin, Campbell, Keating, & Moore, 2016a, 2016b). So far, this study has skimmed the surface of issues related to adoption and implementation of agile practices in program management. In this paper we presented a key driver and two challenges faced by program management teams in adopting agile practices. In subsequent phases we intend to find more challenges and identify how they are resolved. An important area of future work could be the effect of agile IT programs on organisation and conditions that facilitate or inhibit agility in IT programs. Research is also needed to fully develop the concept of agility in program management and its various levels.

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APPENDIX A:

Interviewee Details

Pseudonym	Designation	Program Role	Industry Sector
P1	Director	Sponsor	Public Sector - Service Delivery
P2	Director	Steering Committee Member	Public Sector - Service Delivery
P3	Advisor to Chief Executive Officer	Steering Committee Member	Public Sector
P4	Project Manager	Project Manager	Public Sector
P5	Chief Executive and Managing Director	Strategic oversight	Media
P6	Chief Information Officer	Steering Committee Member	Banking
P7	Chief Digital Officer	Steering Committee Member	Public Sector - Service Delivery
P8	General Manager	Steering Committee Member	Public Sector - Service Delivery
P9	General Manager	Program Director	Banking
P10	Portfolio Executive	Project Manager	Banking
P11	General Manager	Steering Committee Member	Banking
P12	Chief Information Officer	Sponsor	Public Sector - Service Delivery
P13	Chief Information Officer	Steering Committee Member	Banking
P14	Head of Products	Sponsor	Banking
P15	Chief Information Officer	Steering Committee Member	Public Sector
P16	Program Manager	Program Manager	Public Sector
P17	Program Manager	Program Manager	Public Sector
P18	Chief Information Officer	Steering Committee Member	Banking
P19	Deputy Chief Information Officer	Program Director	Banking
P20	Executive Director	Sponsor	Emergency Services
P21	Change Manager	Steering Committee Member	Emergency Services
P22	Branch Head	Program Director	Public Sector - Service Delivery
P23	Program Director	Program Director	Emergency Services
P24	Program Manager	Program Manager	Media
P25	Chief Information Officer	Steering Committee Member	Media
P26	Technology Director	Steering Committee Member	Media
P27	Managing Director	Sponsor	Media
P28	Program Manager	Program Manager	Public Sector - Service Delivery
P29	Program Manager	Program Manager	Public Sector - Service Delivery
P30	Program Manager	Program Manager	Public Sector - Service Delivery

APPENDIX B:

Program Descriptions

Program	Organisation	Program Objective
Program A	Public Sector - Service Delivery	To improve customer experience and back office processing speed by transforming paper based processes to digital platforms including web and mobile.
Program B	Public Sector	A transformational change program aimed at fostering a culture of collaboration among different parts of the organisation, enabled by new IT and physical infrastructure.
Program C	Media	To transform the existing organisational processes around media reporting and pre-publishing processing to align with future of the company as it transforms from traditional to digital media company.
Program D	Banking	To improve customer satisfaction by providing world leading, innovative, seamless digital banking experience across digital and branch platforms.
Program E	Emergency Services	To reduce the emergency response time across one state of Australia, by completely transforming the existing operating model.