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Agile vs. Traditional Approach in Project Management: Strategies, Challenges and Reasons to Introduce Agile

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Abstract

Agility is a very topical issue today, however, it can be found most frequently in literature related to software development. The agile software development methodology is based on a gradual approach that is repeated. It focuses on the flexibility, acceptability of change, continuous advancement and strong interaction. There is a slowly emerging recognition that agile have something to offer within the wider project landscape and motivation for this research came from the fact that not many empirically grounded studies at the moment exist. Based on the aforementioned this study aims in the first instance, to provide academics and practitioners with a coherent overview of the strategies to introduce agile in traditional project management environment, recommended in literature. In the second instance, through empirical research to show which are the reasons for introduction of agile and challenges in its application in and beyond software development. Originally developed questionnaire was distributed through Project Management Institute worldwide network.

Keywords: agile, agile project management, traditional project management

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1. Introduction

Competition is global, opportunities are dynamic, business processes are highly complex. In such a complex and rapidly changing environment, according to a traditional approach to project management, project managers have sought to plan and anticipate all possible details and needs before the realization of the project, but in today's rapidly changing environment, project management as a discipline changes under the influence of the shortcomings of the traditional approach to project management to make changes acceptable and to successfully manage dynamic projects [1]. In order to be competitive organizations are forced to recognize changes and to be more flexible when they meet them. In this context, extending agile project management (APM) beyond software development is becoming desirable response to fast-changing and challenging business environment. Agility is a very topical issue today, however, it can be found most frequently in literature related to software development. The agile software development methodology is based on a gradual approach that is repeated. It focuses on the flexibility, acceptability of change, continuous advancement and strong interaction.

There is a slowly emerging recognition that APM have something to offer within the wider project landscape and motivation for this research came from the fact that not many empirically grounded studies at the moment exist. Based on the aforementioned this study aims:

- In the first instance, to provide academics and practitioners with a coherent overview of the strategies to introduce APM in traditional project management environment, available in literature, in this new and still under-explored area.
- In the second instance, through empirical research to answer the research question: Which are the reasons for introduction of APM and challenges in its application in and beyond software development?

2. Theoretical background

2.1. Agile project management in and beyond software domain

The agility of the organization can be defined as the ability to react quickly to changes in the dynamic business environment. Although it emerged as a concept for software development and IT projects, agility today represents one of the basic competitive advantages of contemporary organizations. Basically, agility is the optimal balance between needs for stability and adequate level of flexibility. The beginning of the APM is associated with the Agile Manifesto, a document published in 2001 that combines agile values and principles for software development. The APM is supported by the development of a set of practices, tools and techniques used to deliver value to customers, taking into account the unpredictability of the project and the customer's changing requirements [2]. On the other hand, traditional project management involves detailed and comprehensive planning and control, with the importance of defining the client's requirements, at the beginning of the project, without any subsequent changes during the project [3]. Traditional project management assumes that the circumstances that affect the project are predictable, that the requirements are clear and well understood, but the projects rarely follow sequential flow during the implementation, and clients are usually unable to define all the requirements at the beginning of the project. APM is more reliant on adapting the process and methodology of project management to the problem being solved [4], with emphasis on the delivery of parts of the project, or product, and quick adjustments as needed.

However, other types of projects share many of the challenges that APM solved in software development. While APM is generally applied by software development teams, the number of project managers and business experts who recommend the implementation of APM to manage projects and teams outside the software industry is growing. APM provides organizations with the ability to cope with dynamic development and changes in the business environment, and it is therefore important to explore the APM applicability beyond software development and IT projects.

2.2. How to introduce agile in traditional project management environment

In this section we aimed to provide an overview of strategies, available in literature, and steps to be undertaken during the implementation of APM into a traditional organization environment. We aimed to get some coherent

knowledge on how to build an environment for APM. The transition process requires hard work, intense focus, and strict discipline [5]. In Table 1 we presented a synthesis of findings from multiple studies and a description of strategies and actions for introducing APM into a traditional environment.

Table 1 Strategies and actions for introducing APM

Strategies and Actions	Rational
Learn how agile really works [6]	Agile is neither anti-methodological, nether it is methodology that fits every project. It is necessary to have a clear understanding on how it works. Agile should be used in projects characterized by conditions commonly found in software development (unknown solutions, unknown requirements, creative co-located teams, possibility to modularized work, strong and close collaboration with the client…)
Customize the agile approach carefully (Dikert et al., 2016)	Every organization is specific in its nature, and they could have encountered different challenges when implementing agile. Every organization should reflect to its own contexts when selecting agile practices to implememnt.
Build up processes rather than tailoring them down [8]	Identifying the project's needs and selection of only those process assets that seem indispensable.
Start small - piloting [6], [7]	When introducing APM, major companies most often attempt to make a complete change and to introduce APM on a large scale, but when introducing APM, gradual introduction into individual processes or departments (usually IT) is more effective.
Team autonomy and commitment to change [5], [7], [9]	The importance of team factor and some foundational principles such as the right people, commitment and dedication and adequate authority should be defined right at the outset.
Predicting leadership success in an agile environment [10]	For adequate authority, a leader's personality profile is highly important because APM focuses on people and collaboration combined with the need to embrace change.
Define specific functionality or responsibilities [8]	Define specific functionality or responsibilities that will be addressed with agile approaches.
Develop architectures [8]	Architectures must support compartmentalization of agile and traditional teams.
Realign or redefine traditional milestone reviews [8]	It is important to redefine traditional milestone reviews to better fit an iterative approach.
Evaluating risks [8]	During the project implementation, it is important to consider the risks of too much agile/traditional versus too little agile/traditional.
Apply flexibility selectively [9]	Flexibility is not a universal blessing. It could be applied to projects selectively to deal with uncertainty and changing requirements. Flexibility pays off when change is frequent.
Plan to keep looping back [9]	Beyond software development it is not easy to operate and to deal effectively with change through iterations. For projects beyond software development, it is important to find the way to modularize the work and to work iteratively.
Learn to negotiate and set expectations [5]	Negotiation and setting expectation are continuous activities in APM. The team, jointly with the client test the product after each iteration, and collects feedbacks.
Keep critical options open [9]	The Last Responsible Moment is a technique which allows project managers to identify a decision that is uncertain at the moment and that might change latter, and start collecting information to help make a better decision by the time the last responsible moment arrives.
Practice agile at the top senior and get executive support [5]–[7], [11]	Executives support is a critical factor for successful implementation of APM in every organization.
Destroy the barriers to agile behaviors [6]	People could be resistant to change and agile behavior. It is important to destroy those barriers and to get everyone on the same page.
Keep people in a learning mode through training and coaching [5], [7]	Training and coaching teams while they apply the agile methods in practice is seen as an important factor in change.

3. Empirical research

3.1. Research Methodology

The aim of the empirical research was to explore if APM is applied beyond software development and what are the most common reasons to introduce APM and which are the challenges encountered.

Research data was collected through the research project "Extending agile project management beyond software industry", funded by Project Management Institute (PMI), USA. Invitations to fill out the originally developed and validated questionnaire, via surveymonkey.com, were posted on PMI communities, LinkedIn and Facebook groups, and were also distributes through contact lists of various PMI chapters worldwide.

The questionnaire was structured in 5 sections with 66 questions. In first instance respondents were asked if their organization has experience with APM and if yes, whether APM is used only for software development or IT related projects or beyond. After that, according to the subjective assessment of respondents, reasons for introduction of APM, challenges and enablers in APM application were ranked. Descriptive statistics is use for analysis.

The initial questionnaire dissemination process was followed by a series of follow-up email reminders, if required. After a 2-month period, 334 responses were collected from which 227 was valid. Therefore, the study included 227 persons, 167 males (73.6%) and 60 female (26.4%), with 28 (12.3%) respondents aged 25 to 34, 81 (35.7%) from 35 to 44, 66 (29.1%) from 45 to 54, 40 (17.6%) from 55 to 64 and 1 respondent 75 or older, from 49 different countries worldwide. The sample encompassed staff with extended project management working experience. 148 respondents had 10 or more years of project management working experience (with 48 of them with 20-30 years and 8 with more than 30 years). The organizations were respondents were employed and to which all furthered questions are related varied in size with 43 (18.9%) organizations with 1-50 employees, 30 (13.2%) with 51-200 employees, 21 (9.3%) with 201-500 employees, 27 (11.9%) 501-1000 employees and 106 (46.7%) with over 1000 employees. In Table 2 the structure of industry sector by respondents is presented. It could be concluded from the Table 2 that respondents come from various industry sectors.

Table 2. Industry sector

	Frequency	**Percent**
Advertising & Marketing	1	0.4
Airlines & Aerospace (including Defence)	5	2.2
Automotive	2	0.9
Business Support & Logistics	7	3.1
Construction, Machinery, and Homes	20	8.8
Education	12	5.3
Finance & Financial Services	26	11.5
Food & Beverages	4	1.8
Government	17	7.5
Healthcare & Pharmaceuticals	9	4
Information Technologies	57	25.1
Insurance	7	3.1
Manufacturing	11	4.8
Nonprofit	2	0.9
Real Estate	2	0.9
Telecommunications	19	8.4
Transportation & Delivery	4	1.8
Utilities, Energy, and Extraction	17	7.5
Other	5	2

3.2. Results

In this section, study results are presented, using descriptive statistics. According to the research results, presented in the table 3, 135 (59.47%) of respondents declared that their organization have experience with APM out of which 85 respondents declared that their organization is using APM only in software development and IT related projects and 50 respondents declared that their organization is using APM beyond software development and IT related projects.

Table 3. Your experience with agile project management

		Frequency	Percent
Does your organization have experience with the agile project management?	No	92	40.53
	Yes	135	59.47
For how many years your organization has been using agile?	less than 1 year	21	9.3
	1-2 years	40	17.6
	3-5 years	35	15.4
	5+ years	39	17.2
	Missing	92	40.5
In your organization agile project management is...	...only used for software development or IT related projects.	85	37.44
	...used beyond software development and IT related projects.	50	22.03
Missing		92	40.53

In table 4 reasons for introducing APM are presented and ranked by respondents. A comparative overview is given in order to see the difference in reasons for APM introduction in and beyond software development. A list of reasons was created based on the reasons most commonly mentioned in literature. In software development accelerate project/product delivery was ranked as most important reason, and enhancing ability to manage changing priorities, better focus on client and increasing productivity are ranked in top reasons. On the other side reducing project cost, improving team morale and improving project visibility had the lowest rank. Beyond software development enhancing ability to manage changing priorities was ranked as most important reason, and accelerate project/product delivery, better focus on client and reducing project risk are ranked in top reasons. On the other side reducing project cost, improving team morale and enhancing delivery predictability had the lowest rank.

Table 4. Reasons to introduce APM

Reasons for introducing APM				
	In software development		**Beyond software development**	
	Responses		Responses	
	N	Percent	N	Percent
Accelerate project/product delivery	61	17.30%	31	12.90%
Enhance ability to manage changing priorities	45	12.70%	34	14.10%
Increase productivity	27	7.60%	22	9.10%
Enhance project/product quality	22	6.20%	19	7.90%
Enhance delivery predictability	24	6.80%	13	5.40%
Enhanced client relationship	26	7.40%	19	7.90%
Better focus on client	36	10.20%	24	10.00%
Improve project visibility	21	5.90%	14	5.80%
Reduce project risk	32	9.10%	18	7.50%
Reduce project cost	14	4.00%	12	5.00%
Better manage teams	25	7.10%	19	7.90%
Improve team morale	20	5.70%	16	6.60%
Total	353	100.00%	241	100.00%

In Table 5 challenges APM application are presented and ranked by respondents. A comparative overview is given in order to see the difference in challenges encountered in and beyond software development. A list of challenges was created based on the most commonly mentioned APM challenges in literature. In software development work prioritization and alignment among stakeholders on what to build next was ranked as most

important reason, and insufficient time for testing, long feedback loops, incompatibility of agile methods with organizational processes and functions are ranked in top reasons. On the other side excessive preparation/planning, low transparency in project status, progress, and performance, lack of project management strategy, formal guidelines and standard processes and inability to handle interruptions and urgent requests had the lowest rank. Beyond software development work prioritization and alignment among stakeholders on what to build next was ranked as most important reason, and incompatibility of agile methods with organizational processes and functions, lack of predictability of business value delivered and visibility to client value at all levels (business, project, team, customer), lack of project management strategy, formal guidelines and standard processes in top reasons. On the other side insufficient time for testing, inability to handle interruptions and urgent requests had the lowest rank.

Table 5. Challenges in APM application

	Challenges introducing APM			
	In software development		**Beyond software development**	
	Responses		Responses	
	N	Percent	N	Percent
Excessive preparation/planning	15	5.60%	7	5.30%
Work prioritization and alignment among stakeholders on what to build next	41	15.20%	28	21.20%
Insufficient time for testing	32	11.90%	6	4.50%
Inability to handle interruptions and urgent requests	23	8.60%	8	6.10%
Long feedback loops	32	11.90%	11	8.30%
Unclear definition of roles in project team	25	9.30%	12	9.10%
Lack of predictability of business value delivered and visibility to client value at all levels (business, project, team, customer)	31	11.50%	16	12.10%
Incompatibility of agile methods with organizational processes and functions	33	12.30%	19	14.40%
Low transparency in project status, progress, and performance	16	5.90%	10	7.60%
Lack of project management strategy, formal guidelines and standard processes	21	7.80%	15	11.40%
Total	269	100.00%	132	100.00%

4. Discussion and Conclusion

While some scholars regard the APM and traditional project management as antagonistic [12] a significant number of them [13][14] argue that the two are not mutually exclusive but complementary. Highsmith, a strong advocate and establisher of Agile manifesto, has pointed out that even though agile practice began in the software development area, and continues to have wide application there, all of the principles are applicable to other types of projects [15].

With regard to strategies that should follow the introduction of APM in traditional environment, they, are not very radical and innovative but they amount to quite a different style and, although claimed to be beneficial, the adoption of an APM will probably meet with some resistance from the organization's cultural norms [9]. Predominantly mentioned is the lack of commitment and involvement by senior management and the allocation of teams to multiple projects [16]. APM takes time and requires a change in culture since, in many ways, it is contrary to traditional managerial structure and how traditional project management works [17]. It requires having the right agile culture and the right alignment at the management and team levels. It requires a change in how the organization works and will manifest itself in different ways in every organization depending of the project characteristics and project environment. Even though APM is gaining popularity and the number of organizations applying agile in and beyond software development is growing, many organizations are still sceptical due to the inability or unwillingness to apply the methodology, lack of management support, agile principles at odds with the company's operating model [20], alignment to existing processes, commitment of staff and resource allocation.

In our study we wanted to identify if APM is applied beyond software development by respondents in our sample, consisted of project management professionals worldwide. Interesting fact is that out of 227 respondents 135 declared that their organization has been using APM with 50 (22.3%) of them declared they have been using APM beyond software development. Even though APM is not yet grounded beyond software development nor in theory or practice, this percent has shown that the application of APM beyond software industry exist and that it's not negligible. In our study the reasons to introduce APM are ranked, and in and beyond software development. Most common reasons are accelerating project/product delivery and enhancing ability to manage changing priorities. On the other hand, most important challenges encountered by respondents using APM in and beyond software development are work prioritization, alignment among stakeholders on what to build next, insufficient time for testing, long feedback loops, incompatibility of agile methods with organizational processes and functions. It could be concluded that there is not much difference in respondents' subjective perception of reasons and challenges in and beyond software development.

We would like to encourage a wider empirical research on the use of APM outside the software development. Future research should examine how to effectively adapt the APM to a specific organization or specific project. It would also be helpful to examine what are the success factors in introducing APM into the traditional environment, and on the other hand, what problems APM has caused.

Acknowledgements

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