

Adaptation and speed: Key reasons to adopt agile project management within the IT industry

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Abstract

In the fast-paced world of changing customer demands nourished on the internet, organizations seek to gain competitive advantage through flexibility and timely delivery of goods to the market. These rapid changes make traditional project management methodologies less practical and real. Considering that the information and communications technology industry is one of the significant sectors in terms of revenue and investment in South Africa and the world at large, there was a need to move along with these changes at a sustainable pace to beat the increasing global competition. This leads to the birth of agile project management which began in the software development sector but is spilling into all industries. This paper explores how agile project management affects the speed of delivery and the organization's adaptability to the needs of the market. The research is based on the data collected by an independent management consulting firm in 2017 across 276 practitioners in the South African IT industry. The results of the survey show that most people adopt agile project methodologies with the hope of achieving a fast delivery to the market and acquiring flexibility for robust design. The results further show that when agile methodologies are adopted, it is possible to flexibly adapt to the market but the increase in speed is not significant for most of the practitioners. They also realize unexpected benefits like improved project visibility and increased morale. Agile must be strategic, ensuring goal congruence within the organization. It is recommended that organizations follow closely the agile frameworks and principles rather than chase instant benefits.

Keywords

Agile project management, Information and Communications Technology, IT industry

1. Introduction

We are in the information age. The growth and development in the Information Technology (IT) industry is at its peak and its growth is not continuing apace either. It is worth noting that between 1995 and 2014 around the world, Information and Communications Technology (ICT) Global sector report shows that the main force behind this growth is the ICT services sub-sector which includes computer-related activities and telecommunications (KenResearch 2017), which contributes 73% (Dutta, Mia 2011). The IT sector is a major employer across the whole world. This sector is valued at 4 trillion US dollars (cloudcomputing-news, 2018) which makes it one of the important industries in the world. This also means that its market share is very broad. The IT sector is inter-linked to all kinds of industries across the globe, so this also means that a large population around the globe depends on the IT sector. The IT sector is of paramount importance to the development of the world because it affects all industries including health, financial sector, security, transport and all projects. As of 2013 there were 9400 IT related organizations in South Africa which is continuing to grow (MICTSeta, 2013).

This research examines why IT companies are turning to agile project management (agile PM). This study also examines if the IT companies are meeting their expectations after implementing agile project management and why some of the expectations are not reached. The aim of the study is to identify the key reasons why IT businesses are adopting agile project management. The results of this research will help organizations especially within the IT industry to be informed about the benefits of agile project management.

2. Literature Review

A project is defined as “a temporary endeavor undertaken to create a unique service, products, or result” (PMI, 2017). From the above statement after analysis of each word, the following information could be extracted: from temporary endeavor. It implies that the project has a beginning and an end. The word temporary does not mean it is short, but it is not a permanent feature in the organization hence, it is expected to end at some point. “Undertaken” means it has some activities involved for the project to be able to be accomplished as shown in Fig 1:

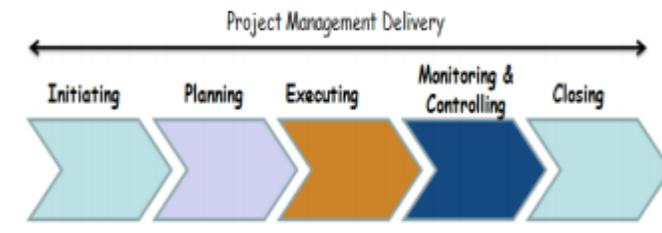


Figure 1. Traditional Project management delivery (Avanmard, and Alian, 2015).

2.1. Project Management (PM)

Project management also called traditional project management (TPM), is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements (PMBOK, 2013). (Swinnerstone 2017) describes it as the application of different skills and knowledge by human resources to pull non-human resources with the aim of achieving a certain aim.

2.2. Agile Project Management (agile PM)

Recently, agile project management has captured public attention especially practitioners and academics. It is regarded as the project management approach for today's projects. Agile PM is an approach to project management in which all stages run concurrently and the product is released in different iterations until a final product has been reached. Each iteration is released to the customer for feedback (Layton and Ostermiller, 2017; Mirzaei and Mabin, 2017). This feedback is key to customer satisfaction because the customer is involved in the project from the onset until the final iteration.

2.2.1. Agile PM roles

An agile project requires skilled, united and committed team. Agile teams consist of the following people (Shastri, Hoda, and Amor, 2017):

- Agile mentor: A person that has experience implementing agile projects that will provide advice and information.
- Scrum master: This a support structure for the developing team keeping the agile mythologies on the clear path.
- Development team: The group of people that will be assigned as team that will be doing the product.
- Product owner: The company or individual seen as the link between the customers, stakeholders and development team. Stakeholders: Anyone that has interest in the project.

2.2.2. Agile PM Principles

Principles play a huge part in agile project management. They are used as a guideline to project teams in their quest to implement agile methodologies in their projects. The principles are less about telling what to do than they are about giving the ability to make a good decision in a given situation. The principles (Highsmith, 2001) are as follows:

- “Highest preference is customer satisfaction through early and continuous delivery of valuable software”. It is important for the team to deliver the product faster to the customer so that they can get feedback from the customer before the final product. It is also encouraged that they continuously deliver each iteration to the client so that they may hear the voice of the customer in each client. (Sharma, Kaulgud and Duraisamy, 2016) discussed about making sure that the client receives the iterations early so that they may give their contribution in time so that the team does it right as early as possible.
- "Welcome changing requirements, even in late development". This means agile processed must not be rigid in operations, but they must be flexible in any stage even when the project is nearing performance if change is needed it must be implemented. Cobb, (2015) however warns that being flexible doesn't mean the project must be uncontrollable.

- "Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale". Project teams are more effective when there is a short time period to get the job done. Hence the project teams are expected to come up with a fully functional iterative every short period and that iterative is subject to improvement and the revision must also take a short period, (Yocum, 2015)
- "Business people and developers must work together daily throughout the project". Teamwork is very essential if agile is to be successful. The sponsors of the projects must meet the project team on a frequent basis, there must be more emphasis on collaboration over the conditions of a contract. Both parties must show equal engagement in the project so that at the end of the day all parties involved are satisfied (Sussland, 2017).
- "Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done". The whole team must be motivated, this in turn gives them extra positive energy to get the job done to perfection. Motivation paves the way for innovation (Chasanidou, 2018)
- "The most efficient and effective method of conveying information to and within a development team is face-to-face conversations". Through face to face conversations teams can communicate effectively because any misunderstandings are cleared immediately, all the confusion between matters is addressed instantly leaving less uncertainty within the team. (Knauss, Liebel and Schneider, 2017) talk about the efficiency of visualization in communication hence if face to face is difficult video calling can be the next best alternative.
- A working product is an indication of progress. it is very much important to listen to the customer to see if they are satisfied, once they are satisfied it means the product is working. Kawa and Maryniak (2018) indication the growing importance of the value of the customer in each and every supply chain hence more focus has to be put on the customer since they are the most valued stakeholders in a project.
- Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely. A sustainable pace will help the team to stay motivated while it also reduces the chances of working under pressure as the project nears due date due to an overload of work. (Tuomivaara, Lindholm, 2017) talk about the importance of recovery within team members if they are to perform optimally which in turn reduces defects.
- To enhance agility, organisations must be attentive to technical excellence always whilst also working on good design.
- It's fundamental to be simple. All processes must be as simple as possible which makes them easier to understand. Once the processes are complex agile becomes very difficult to implement and traditional methods tend to be more effective than agile methodology in complex processes (Ahimbisibwe and Cavana, 2015).
- "The best architectures, requirements, and designs emerge from self-organizing teams". With adequate instructions from management these teams are efficient and effective. Self-organizing teams are motivated individuals, flexible to changes in the phases. They assign the work for themselves and never wait for a leader to assign.
- At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

2.2.3. Reasons Why Agile is better

Agile understands that the needs of the customer are dynamic and changing. The emerging market is characterized with turbulence and uncertainty, hence there is need to diverge from the initial plan to cater for the new needs of the client (Singh A, 2014). Agile PM allows rapid response to market needs so that the new product idea can be presented as fast as possible. This is feasible because during every quick delivery, agile PM brings forth something valuable even when the product is not yet finished.

Agile PM is all about welcoming change requirements during any phase of customer's product (Olsen, 2015). By doing this Agile see and acknowledges that some brilliant ideas come up during the production phase of the project. In addition, agile PM promote risk management in order to prevent future faults and counter possible risks (Griffiths, 2012).

Customers are likely to make changes according to their budget. They can remove and add features. Nevertheless, "Agile is not about paying a lot with uncertainty, it's about paying for only what you need". So customers can control their cost when it comes to agile PM model. (Emerson, 2018)

Agile PM does the testing of its product throughout in the phase called review. Now and then quality testing ensures working software and also checks for faults. Short sprints and iteration help to identify defects during the early stages of product development. Therefore, continuous testing the product, service, or project outcome prepares it for the market. Through regular tests the team can ensure quality working software for their customers (Doig, 2015).

2.2.4. Misconceptions about agile PM

"I have never used Agile before and I'm scared it will be hard to get my entire team on board with it". Now unlike the Waterfall model the Agile model may seem to be a bit difficult to implement and understand because of its many processes and principles, but after understanding the Agile model everything will run smoothly and everyone will get the hang of it, and better results are achieved.

"I have a fixed budget. That does not work with Agile". Agile works along with your budget! The Waterfall model needs you to have a fixed budget and when alterations are made that may cross over the agreed-on budget, the team must go back to the drawing board. Now Agile lets you adapt to your budget, so basically you can remove/add features during the production and if the features cross your budget the team does not need to go back to the drawing board. Rather they find ways on how to get the feature under the budget.

"The software developers make all the decisions". People assume that the developers and the designers are the engines of the product therefore they know what's best and must take all the decisions. What people do not know is that before each iteration a planning meeting takes place whereby the stakeholders, customer determine which feature will be implemented in that iteration. Developers, designers, business people and everyone involved is present in the meeting. They offer guidelines and ideas for the stakeholder or customer.

"Teamwork is not crucial in Agile". Collaboration is very important in this model. Developers and designers need to have a very strong partnership and communication between them. Due to decision making power given to all members team work is very essential to make sure everything is moving in harmony, hence when one makes a decision they must make sure that they inform the whole team on the changes.

2.3. Difference between traditional project management and agile project management methods

Agile project management is perceived as a new method of managing high-risk and time-sensitive projects due to fact that it provides improved productivity, excellent quality, and more efficient decision making (Cui & Olsson, 2009). Furthermore, the application of agile PM leads to reduced total project costs and faster time to market, due to its framework that is based on frequent customer interaction and frequent and quick delivery cycles. Compared to the traditional project management approach and methods, defining details of agile project management methodology becomes a challenge in terms of processes, tools, and approach, especially. This ambiguity is increases even more when software-related activities (Salameh, 2014).

Both TPM and agile PM methodologies have their pros and cons, therefore, it is safe to determine and confirm that one method is better than another (Aguanno, 2004; Andersen, 2006). Yet, it is usually required to use both methods. It is important to know suitable approach to use for a project (Boehm, 2002), because it can happen that unsuitable methods will not help achieve project requirements and therefore be successful, but on the contrary, it can cause supplementary problems and lead to project failure (Shenhar, 1999). Table 1 shows the difference between TPM and agile PM based on specific characteristic:

Table 1. Difference between traditional project management and agile project management (Špundak, 2014)

Characteristic	Traditional approach	Agile approach
Requirements	clear initial requirements; low change rate	creative, innovative; requirements unclear
Users	not involved	close and frequent collaboration
Documentation	formal documentation required	tacit knowledge
Project size	bigger projects	smaller projects
Organizational support	use existing processes; bigger organizations	prepared to embrace agile approach
Team members	not accentuated; fluctuation expected; distributed team	collocated team; smaller team
System criticality	system failure consequences serious	less critical systems
Project plan	Linear	complex; iterative

3. Research methodology

This paper is based on secondary data because of limited time and funds to perform a research survey of such magnitude. This research could not be done on one organization because it is difficult to conclude the results of a broad industry based on results from one company (Oula Yliperttula, 2017). The data used was collected by IQ business in its 2017 Agile Report. The data used mixed methods that blends Qualitative and Quantitative research methods. Qualitative and Quantitative methods are two different paradigms that can complement each other if there is a right balance when they are applied together (Brannen, 2017). Quantitative data makes it easier to compare responses from different people (Marnewick, et al., 2017), while Qualitative methods try to interpret the results of a research by trying to find the reasons behind the results and the perceptions (Smith, 2015)

4. Limitations of the research

The research maybe skewed because the geographical distribution is not even as 85.5% of the participants are from Gauteng only leaving some province with no representation hence it is difficult to say it represents the entire South African population. Also, the views from a Gauteng practitioner maybe different from that of other provinces.

5. Results and Discussion

The sample size was 276 people from different IT companies across South Africa. The people were from different provinces but with Gauteng being the most represented province with 85.5% of the entire sample size. To avoid bias the interviewed people were from different job levels though they are involved in corporate project management.

5.1. Reasons why companies are Adopting Agile project Management

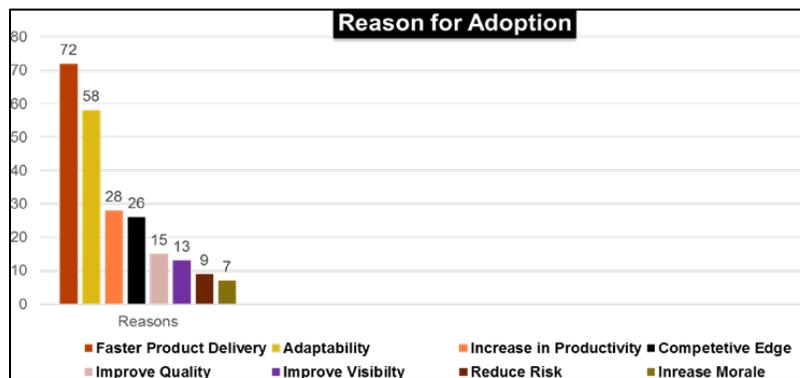


Figure 2. Reason why IT companies should adopt agile PM (IQ Business, 2017)

From the graph one could see that 72% of the entire population chose agile project management because they wanted a faster product delivery to keep up with the pace of competition. Also 58% of the population chose Agile project management because they wanted flexibility for them to easily adapt to the market. It became an imperative for the organizations to adapt to the needs of the market to survive. 28% of the sample population chose agile project management because they want to increase the productivity of the company. The need for productivity is important because companies are moving towards a low-cost approach while at the same time trying to increase the outputs. This in the long run will increase the company's profitability hence increasing survival.

Twenty six percent of the respondents chose agile project management because they wanted a competitive edge over their rivals. Due to globalization companies no longer have boundaries and companies are spreading across different nations. This has led to fierce competition in all countries due to faster movement of technology across the globe. In a bid to beat competition South African companies are adopting agile project management.

A mere 15% chose Agile project management due to the need to increase quality. With fierce competition there arose a need to satisfy the customer and organizations are moving towards quality improvement. Companies are using agile project management as a tool for quality improvement because it involves frequent customer interaction and the market is also involved in the design of the project making it a satisfying product to the market because it meets the needs of the population. Companies try to increase speed adaptability and productivity without compromising the quality but rather increasing it.

13% of the population adopted Agile project management because they want it to increase project visibility. Visibility will make the entire process discernable to all stakeholders in the project. It brings transparency to the customer, to the company, as well as to the project team hence reducing uncertainty. 9% wanted to reduce the risk in the project. A visible project is less risky because everyone is involved in the whole process from start to the end. Companies are more likely to choose project teams that offer less risk so that their investment is not in danger.

Furthermore, 7% adopt agile to increase morale, they believe that if everyone is involved in the whole project and also having power to make decisions they are likely increase in morale and motivation, this will lead to a happy workforce which is united towards the common goal.

5.2. Benefits realized

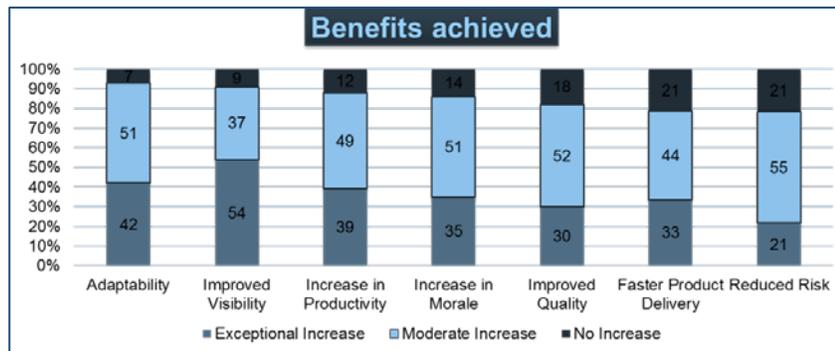


Figure 3. Benefits achieved (IQ Business, 2017)

Fig 3. shows the actual benefits that the companies realized after adopting to agile project management. The main benefit that the companies are realizing is adaptability to the market, the graph shows that 92% saw an increase in adaptability when they adopted to Agile however it is worth noting that only 42% realized a significant increase and 7 percent saw no increase at all. 91% of the practitioners so an increase in the visibility of the projects, 54% saw a very significant increase in project visibility which is a very high number as compared to all the other figures. It is remarkable considering that only 9% saw no increase in project feasibility 88% of the sample saw an increase in productivity in their projects this can prove that Agile methods leads to an increase in productivity and also just a mere 12% saw no increase in productivity which is a good number considering the size of the sample. 86% of sample saw an increase in team morale this is mainly due to increased decision making, visibility and member involvement. It is a good return considering that only 7% expected an increase in morale when they adopted the methodology. 30% saw an incredible increase in quality while 52% saw a moderate increase in quality it is somehow worrying that only 30% saw a significant increase considering the importance of quality in every product and service something has to be done to improve the quality of a product whenever we use agile project management. This is because the main concept that led to the development Agile project management is continuous improvement. 21% saw no improvement in the speed of delivery. The statistic is not worrying until you realize that only 33% of the in sample saw a significant increase in product delivery, from these results we can see that the increase of speeds is not guaranteed in every agile project. We must note that a lot of factors affect the speed of delivery, some of the factors may include rates of acceptance of change in the organization, communication, leadership, resource availability and member commitment. 21% of the sample saw a significant decrease in risk while 65% didn't see a significant decrease in project risk, this is because people are still yet to accept the methodologies and they are unwilling to reduce the risk of the project until the methods have been tried and tested and have proven to be efficient. This is likely to have been reduced by social acceptance rather than methods efficiency.

6. Recommendations

IT companies are recommended to follow the agile PM principles and Frameworks for successful implementation, so in this instance they are advised to follow the principles so that when they implement they may still be able to reap full benefits. The main reason why they may not be able to enjoy full benefits is because they are after the gains rather than the ideology, it is not only a practice, but it is a philosophy (Shore, 2007).

From the concept of speed companies must focus on faster reaction to market than faster completion of projects. This means they must react to the needs of the market quickly other than focus on speed of project completion which can compromise quality. Agile must be strategic hence they must not focus on short-term goals.

Companies are also encouraged to foster the agile culture into their organizations so that they may be able to use agile on a day to day basis which brings continuity and, in the end, enhances speed due to constant use hence familiarity. Changing organizational culture may also include changing people's life or way of life (Knipe 1999). The main reason for adopting agile PM management must be customer satisfaction because it is the basis of agile PM development. Companies are therefore encouraged not to follow profit motives only but to meet the needs of the customer. Agile is there for more customer engagement.

Before implementation of agile PM methodology companies must try to introduce change management into the company with this can be done by hiring a change management practitioner. The general resistance to change has made Agile methods to be hard to use in project, agile is highly related to change hence resistance to change is more like resistance to agile PM which focus on frequent product change to meet the changing priorities of the market. Companies must also investigate agile PM Critical Success Factors and focus on them so that they may be able to successfully implement Agile Project Management into their organizations.

The results show that they are not reaping full benefits as compared to successful companies in developed countries. Hence the problem might be with the implementation of the methodology. Other ways for successful implementation can be Agile Training at all levels in the project team.

7. Recommendations for future research

Further studies on adoption of agile project management by other enterprises outside the IT industry is recommended to increase the value and generalizability of the research. This is because Agile Project Management is lagging in other industries while its adoption in the IT industry is largely overwhelming. Much study must be done on why the Adoption is slow in other industries other than the IT Industry. It is valuable to have more representation of other provinces to counter against culture factors, since South Africa is a very diverse country. Hence, a wider geographical distribution of the participants is recommended.

8. Conclusion

The ever-changing customer demands require a methodology that can assist the companies to keep up with these changes without affecting the quality of services but on the contrary make the organization flexible to changes. Traditional project management are too rigid hence they make it difficult for companies to respond to changes in the market. To keep up with the market companies are adopting agile project management which is more flexible and is modernised to meet the demands of the market while the market is evolving.

For successful implementation, the organisation must stick to the principles of the agile PM which are easy to understand and simple to follow. At the same time, they must keep up with the basic processes if they want to implement agile PM. Without basic processes agile PM can lead to chaos (Stare, 2013). Furthermore, organisations must not dump the basic project management principles when adopting agile PM but they must combine them with agile PM principles because they do not oppose each other but they actually complement each other. The agile PM methodology must be adopted bit by bit to give the whole team time to adapt to the methodology.

Through the figures from the survey and the literature review, agile PM is not a simple practice of running projects without planning, but it is a whole new philosophy that needs thorough analysis and understanding before it is adopted. If agile PM is well planned and implemented well it has many benefits that include flexibility to the market, faster market response, improved productivity, improved quality of service and increased visibility of the project. The study shows that the most realized result of agile PM is the adaptability of a company to the rapid markets hence it proves that agile PM can help organisations to be flexible to any possible changes in the market. Agile PM has penetrated the IT industry but it's yet to find its feet in other industries, whether it is South Africa or abroad. Studies could be conducted to see why it's not penetrating faster in the other industries.

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