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Survey on the State of Agile Practices Implementation in Pakistan

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ABSTRACT

The agile development methodologies have become increasingly popular since early 2000 and can offer significant improvements in business. There have been previous research papers showing evidence to either approval or disapproval of this assertion for the software houses in different parts of the world but so far there has been no such survey done for the software houses in Pakistan. In order to learn this and the factors that drive the adoption of agile methodology, their challenges and benefits in Pakistan I have used a survey strategy which enabled data collection from different organizations working in Pakistan. This survey reveals many questions along with the main reason for the adaptation or rejection of agile methodology in Pakistan. The survey identifies that the lack of experience and the software complexity as the biggest obstacles for the adoption of agile practices in Pakistan. This survey also reveals that the increase in software productivity, managing change and the release of quality product with in the schedule are some of the major benefits of the agile methodology. This paper presents this along with other findings accompanied by relevant data.

1. INTRODUCTION

For the past decade the world has faced a lot financial crisis and global recessions and due to this almost every industry including the technology driven has suffered the effects, being forced to downsize its employees or reduction in quality of their products and minimizing the costs. Even in Pakistan the financial effects are catastrophic. Companies can only survive if their products are successful otherwise the failure will put the company out of business. The competition in software industry is very hyper and companies want to reach the market before their competitors do. Therefore, as a result minimizing risk and reaching the market has become a curial success factor for software houses. In late 1990's a new methodology was introduced known as the Agile Methodology [1], companies that adopted the practices by this methodology presents numerous stories of success and as a result many companies have already adopted agile practices or are aspiring to adopt these practices.

As this development is still new or not fruitful for some companies especially in Pakistan, I decided to conduct a research which is survey based to create the awareness about the agile benefits and challenges during its implementation.

2. LITERATURE REVIEW

2.1 Agile Development

The agility has become a buzz word in today's modern software development process. This agile development methodology is developed for building the software related projects and was introduced in response to the frustration with the traditional techniques and methodologies. The agile development methods include process models like Scrum, extreme programming (XP), Featured Driven Development model and Crystal Model all of these work on the framework which is provided the agile manifesto [2]. So far there have been many advantages of this new development some include reduce cost, reduce time to reach market, faster ROI, fewer defects and customer satisfaction [3]. Along with these advantages there are quite a few challenges which include scope creep, involvement of an on board customer, training and highly skilled team leader and members.

Unlike the traditional development everything is about the CHANGE for the agile development. For example changes in the software being built, changes due to technology, changes to the team members and changes of all kinds that may have effect on the project being built. The agile development focuses on the rapid delivery of software and makes customer as a part of the project development team. It has therefore emphasized that the need for project planning must be limited for the development and the project plan must be flexible whereas the conventional or traditional development focuses on intensive project planning. As the agile development in about the Change therefore the cost of change in the agile development is a lot lower than the cost of change in the traditional models. (Fig 1) [4]
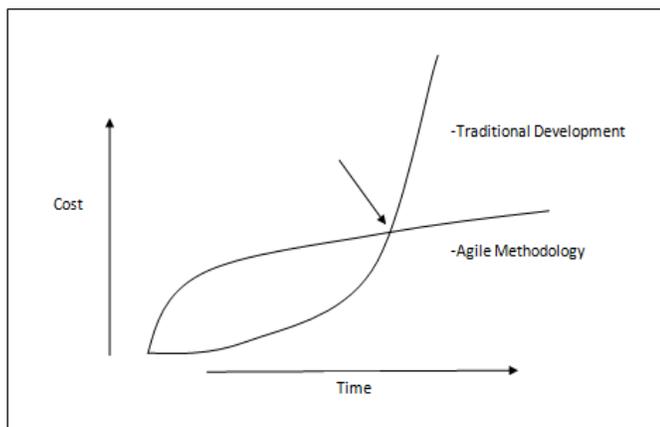
Fig 1: Comparison of Traditional with Agile

As it is clearly seen form the above figure that the cost is much greater in the traditional development as we pass through the Software Development Life Cycle (SDLC). A manifesto for agile development was also published in 2001 to define the approaches for the agile development which is also known as the lean or the test driven development. The manifesto has 12 principles [5] but it mainly focused on self organizing, motivational and cross functional teams, working software than just planning and documenting, continuous customer involvement and respond to change in requirements at any stage of the software development life cycle. The agile development also focuses more on having a team leader for collaborating and motivating his/her team members rather than a project manager for managing and planning project and team members.

This methodology also enables for the project manager to work more than just being a task organizers [6] to a team leader having excellent soft skills. As every product is built for some customer therefore this development never sustains customer from changing and introducing new requirements even when the construction finishes.

3. EARLIER SURVEY RESULTS

Some earlier surveys have also been conducted on the agile methods. In 2003 Shine Technologies [7] an Australian firm conducted a survey on the interest for the agile method. They received 131 responses of which 84.7% of their respondents indicated that they have knowledge about the agile development, 49% stated that the cost of development has reduced significantly and rest stated that the cost is almost unchanged. A high percentage of above 85 stated an increase in productivity of team, quality and satisfaction of business.

Another survey was conducted by Digital Focus [8] in 2006 concluded that 81% of IT related companies are either

using the Agile development within their organization or planning to do so. 51% want to use the agile development to be more responsive to change and 56% of all the participants reported that the barrier for adopting the agile development methodology is the lack of experience. A recent survey was conducted by VersionOne [9] between July 2011 and November 2011 from all over the world. A total of 6,042 responses were received. The survey shows that the main reason for the adoption of agile development is the "ability to manage changing customer priorities" with 84% and the major barriers in adopting this methodology is the lack of support from the management with 27% and general resistance to change with 26%.

4. MATERIAL AND METHODS

The data for this survey is collected using an online questionnaire which was filled by the software developer professionals. The questionnaire was sent to different software houses in Pakistan most of them were from Karachi, I also collected data by identifying some online communities like agile journal, agile community etc and different groups like software development Pakistan, Pasha, lean agile software development etc which were focused on the agile software development.

4.1 Data Analysis

I received 78 responses from software professionals working in different software houses of Pakistan like TPS, Kalsoft, Abott Labs, Avanza Solutions, Datasoft Solutions, Folio 3, Axact, New Horizon, TSHOP and many more. The responder's organizations are from different industries but most of them are from IT software development (54.41%), rest are from web development (13.24%), game development (8.82%) and IT service provider (10.29%) sector. Around 31% of the software houses have employees less than or equal to 50, 25% have less than or equal to 150, 20% have less than or equal to 300 and 8% have less than or equal to 500 employees. So it is quite clear that the most organizations in Pakistan that are using the agile development have organization size that is less than and equal to 50 as compare to the organizations from the rest of world where the company size is 100.

4.1.1 Understanding and Experience of Agile Methodologies

As expected around 46% of the responders have Average understanding and experience with the agile development, 30% have Extensive understanding, 16% have limited understanding and experience and just more than 7%

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have very extensive experience and understanding of the agile methodologies.

Fig2. Agile Methodology Understanding
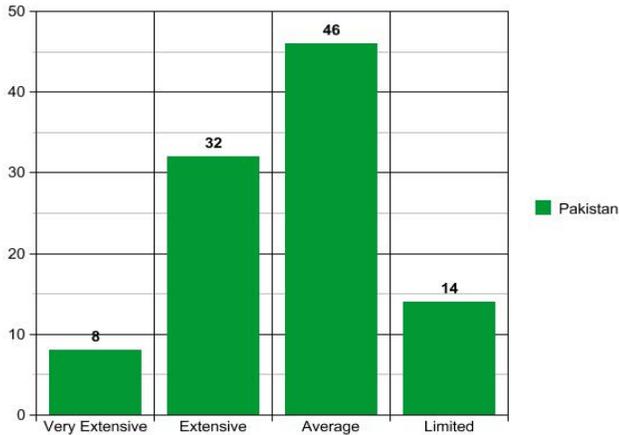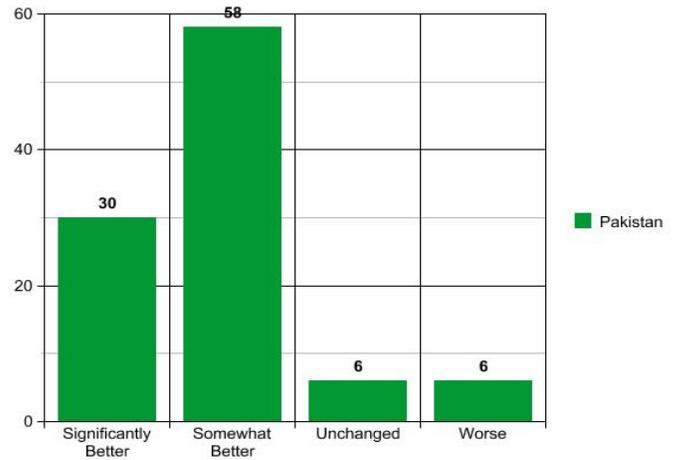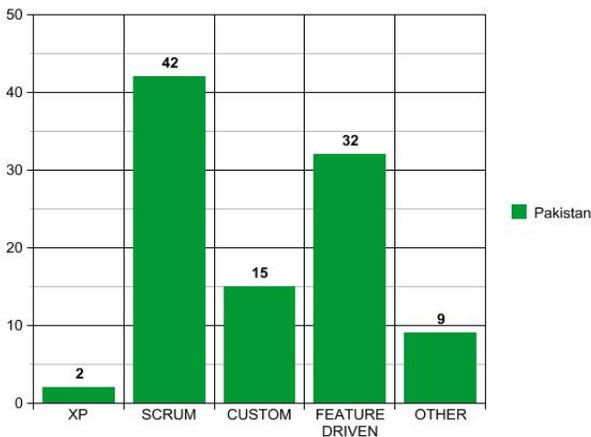
4.1.2   Process and Methods

The scrum model is the favorite model for the agile development in Pakistan with more than 40% usage, the Feature driven development model also known as the FDDM has the usage percentage of just above 30, the combination of different models commonly known as the hybrid or the customer model has the usage of almost 15% and surprisingly the extreme programming (XP) is least used with the percentage below 5.
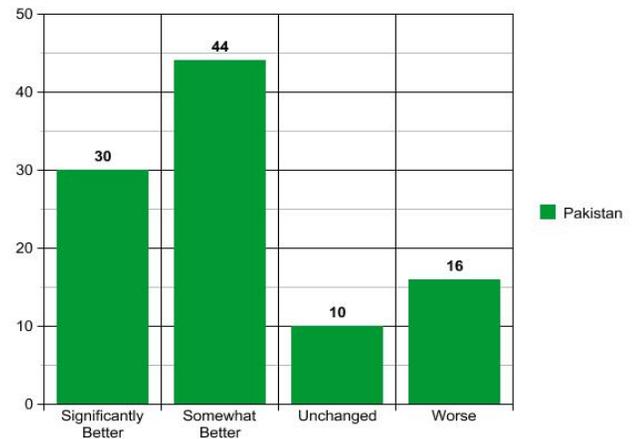

Fig3. Agile Methodology Used

4.1.3   Team Productivity

Of the respondents of my survey 28% believe that their team productivity has increased significantly 59% of my respondents believe their team productivity has increased

somewhat and a small percentage from believe that team productivity is unchanged or has gone worse at 8%.

Fig4. Productivity

4.1.4   Quality of Application

The result of responders shows that the agile development has a good effect on the overall quality of the product delivered. Of the respondents 75% claimed better or significantly better quality. 10% of the responders think that the quality is unchanged. And 15% responders claim that the qualities of their products have declined.
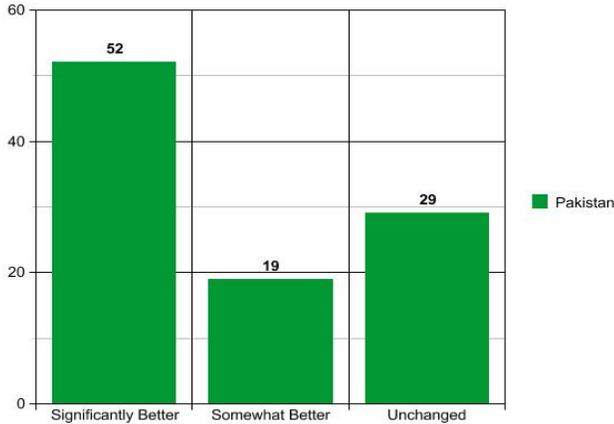

Fig5. Quality

4.1.5   Change in the Cost of Development

Around 50% of the respondents think that using the agile development the cost has been reduced by half. 20% of the responders believe that using agile development has increased their development cost. 30% responders mentioned

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that the cost is almost the same by using either of the techniques (traditional and agile).
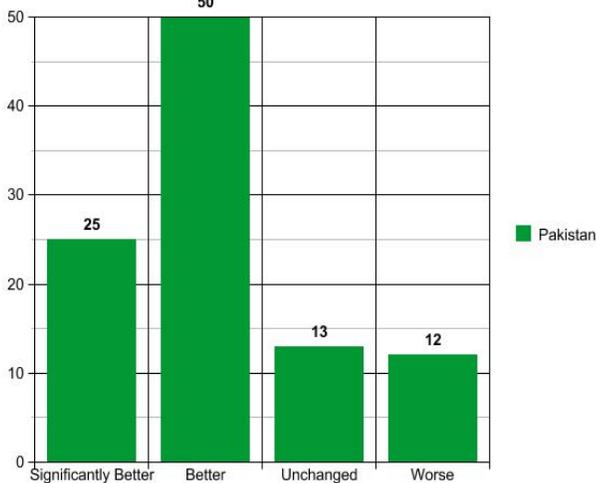

Fig6. Cost

4.1.6   Business Satisfaction

The most astonishing part of this survey is that more than 75% of the responders believe that using the agile methodologies have improved or significantly improved their business satisfaction with customers and a small percentage of 25 think that the agile methodology have no effect or have worsen effect on their business satisfaction level.
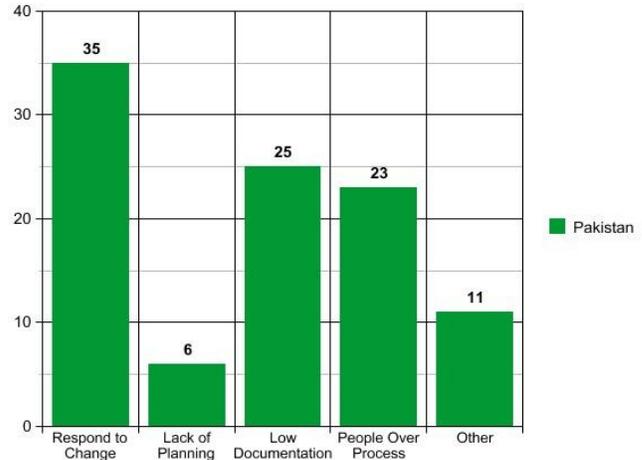

Fig7. Business Satisfaction

4.1.7   Positive Feature of Agile Development

"Respond to change over plan" is the most positive feature in the agile development claimed by the responders with 35%. The lack of planning with 7% is the least positive feature of the agile development; this feature can also be considered as the negative feature of the agile development. The Low Documentation feature with 25% is the second most positive feature.
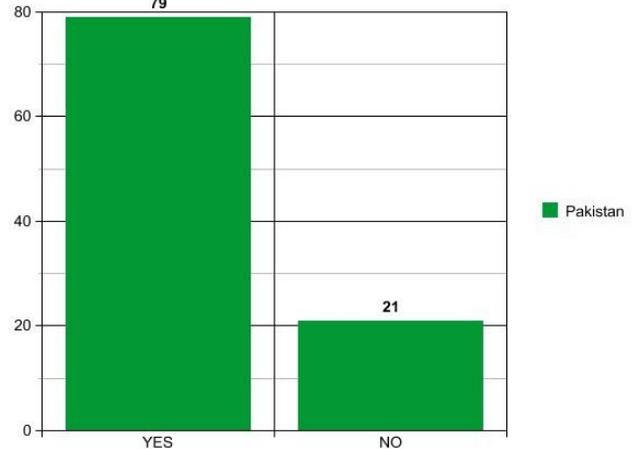

Fig8. Positive Features

4.1.8   Use Agile Model in the Next Year?

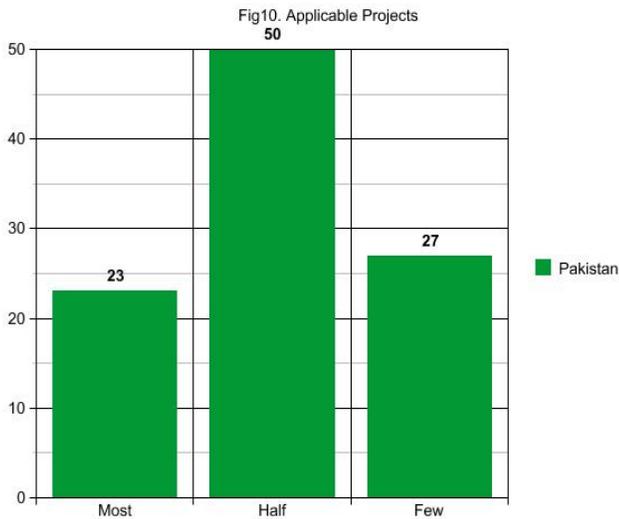An overwhelming 80% of the responders will continue or adopt the agile development in the next year.

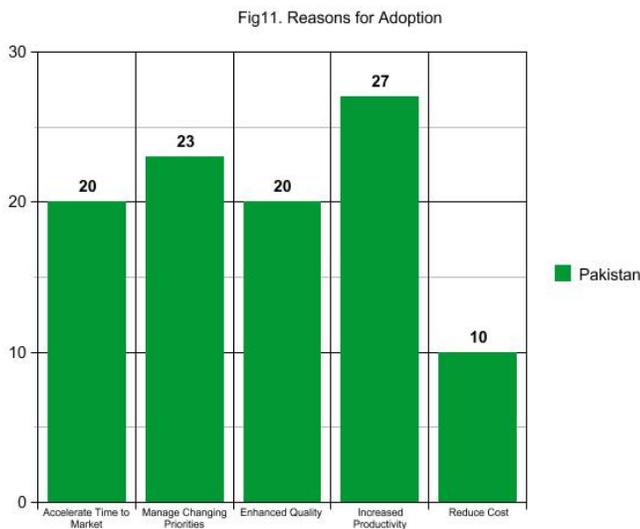Fig9. Use of Agile Development in Next Year

4.1.9   Size of Applicable Projects

Only 23% of the responders believe that the agile processes are applicable to almost all the projects. 50% responders believe that half of the projects can be done though agile development. 27% of the responders think that the agile practices are applicable to only few projects.

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Fig10. Applicable Projects

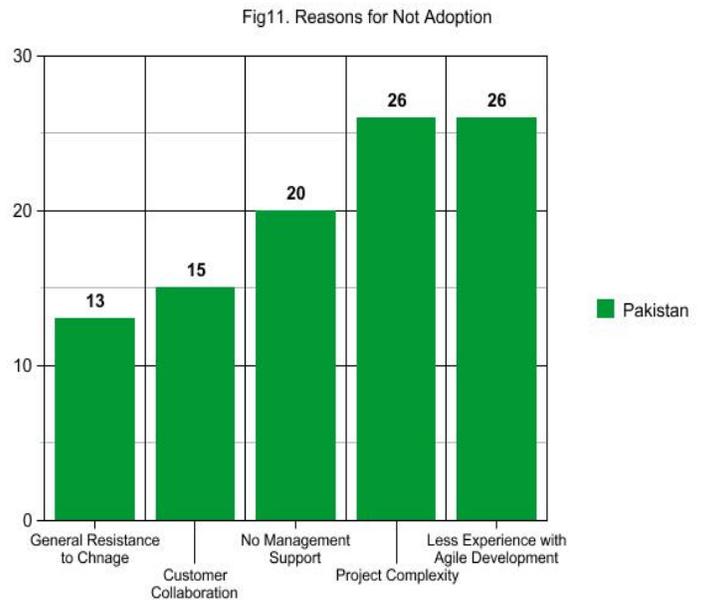### 4.1.10 Main Reason for the Adoption of Agile Methodology

The main reason for the adoption of agile development in Pakistan is the increase in productivity (28%) which is followed by Manage Changing Priorities (23%) followed by Accelerate Time to market (20%) followed by enhance quality (19%) and Reduce cost with almost 10%, cost is the least important reason for the adoption for agile methodology with only around 5%.

Fig11. Reasons for Adoption

4.1.11 Reasons for Not Using Agile Methodology

When asked responders what is the main reason for not adopting the agile development the result was rather predictable as the responders mentioned the lack of experience

as the hurdle for not adopting the agile methodology. Along with this some other reasons are project complexity, support from management and customer collaboration are also stated for not adopting the agile methodology.

Fig11. Reasons for Not Adoption

5. CONCLUSION

There is an increasing trend in the use of the agile methodology as more and more companies around the world including Pakistan are using agile practices in order to increase their productivity and to minimize the time to reach market. During this survey I have analyzed that one of the main reason for not adopting the agile practices in Pakistan is the lack of experience of project managers and team leaders in the agile methodologies and unlike the rest of the world team leaders they are not familiar with some titles such as the Agile Coach, Chief Agilest and Scrum Master. Although many articles and research papers have been written about the similar topic but almost none of them are related to the Pakistani environment, therefore there is a strong need of more empirical studies in this domain. To conclude my findings I would like to state that without a doubt using the agile methodologies brings significant benefits to the organization and with the current economic situation in Pakistan it is best for the software houses to train their team leaders and staff with the agile practices in order to overcome the biggest obstacle which is the "Lack of experience in agile development".

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