Article

The Impact of Agile Methodology on Project Success, with a Moderating Role of Person's Job Fit in the IT Industry of Pakistan

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Abstract: Computing software plays an essential role in almost every sector of the digital age, but the process of efficient software development still faces several challenges. Effective software development methodology can be the difference between the success and failure of a software project. This research aims to evaluate the overall impact of Agile Software Development (ASD) on the individual, organizational, software development, and project management dimensions. For this purpose, we surveyed several software development professionals from a variety of backgrounds (experience, location, and job ranks) to explore the impact of ASD on the IT industry of Pakistan. Our analysis of the collected information is two folds. First, we summarized the findings from our surveys graphically clearly show the opinions of our survey respondents regarding the effectiveness of the Agile methodology for software development. Secondly, we utilized quantitative measures to analyze the same data statistically. A comparison is drawn between the graphical and statistical analysis to verify the reliability of our findings. Our findings suggest the existence of a strong relationship between effective software development and the use of Agile processes. Our analysis shows that the job fit of software development professionals and ASD are critical factors for software development project success in terms of cost, quality, stakeholders satisfaction, and time. Although the study focuses on the IT industry of Pakistan, the findings can be generalized easily to other developing IT industries worldwide.

Keywords: Agile Software Development; project success; software development methodologies

1. Introduction

1.1. Agile Methodology

The software development business nowadays is characterized by instability, as consumer requirements are rapidly changing and evolving continuously all the time. Software developers, therefore, on one hand, face the challenge of reducing the time to market their products, and on the other hand, delivering functional and creative products that customers would find useful and love to use. To achieve this goal new Software Development Methodologies focused on rapid development were introduced. For this very same purpose, the use of incremental software development was extended in the late 1990s.

Back in 2001, Agile Software Development (ASD) [1] was officially introduced to the community of software engineers through a set of four core values and twelve principles outlined in the "Agile Manifesto". The Agile manifesto comprises values and principles that help improve the Software Engineering and Development process and also have a strong influence on the development team coordination [1]. The Agile movement describes

a culture that welcomes changes and focuses on the client's requirements. Agility, or the ability to respond rapidly to dynamic requirements is a hallmark of ASD [1]. Agile methodologies focus primarily on communication and interaction with the project team members and require the project manager to be involved in project planning, implementation, and tracking. Traditional software engineering lacks the flexibility to handle changes within a project that are often needed. Agile software engineering on the contrary encourages change and therefore attracts customers with the participation of stakeholders and the development team focused on incremental and gradual growth [1]. Agile projects offer regular, usually weekly, or bi-weekly software delivery as shown in Figure 1, prioritizing the highest value specification first. Software development companies use Agile techniques not only just to help them compete, but to gain a competitive advantage. Agile processes are extremely flexible, iterative, and focused on fast and consistent software delivery. Unlike other techniques, Agile methods rely on feedback to ensure greater customer satisfaction and to use it as a control mechanism.
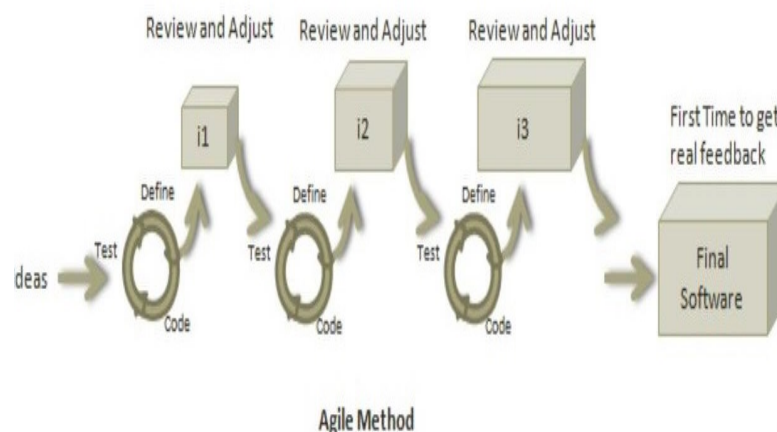
Figure 1. Agile Software Development (ASD) Methodology.

U.S. organizations wasted USD 30 billion on unused software in just four years [2]. In late 2020, Boston Consulting Group estimated that 70% of digital transformation projects didn't meet desired outcomes in the U.S [3]. According to the research of the Consortium for Information & Software Quality unsuccessful IT/software projects in the U.S accounts for USD 260 billion in 2020 (up from USD 177.5 billion in 2018) [4].

ASD aims to provide solutions to the problems faced by traditional software development approaches. Some of these promises include time and cost reduction, superior quality software, excellent code construction, and customer satisfaction. It, therefore, aims at producing market value in short iterations [5].

Researchers have been working on improving software development methodologies for the last three decades and it has been established that the ASD methodology is a central, decisive, and dominant methodology for the success of software projects [6]. Agile innovation has reshaped information technology and has dramatically increased the success rates of software development projects over the past 25 to 30 years. ASD has enhanced software quality, the pace to market it, and strengthened the development team's morale and productivity. Effective ASD methodologies are now expanding through a variety of industries and functions, which include new concepts, principles, procedures, and benefits that are a revolutionary alternative to control style management [7]. A strategy for managing the high complexity of software developmental processes was developed in 1975, based on iterative improvement, which has now become an essential feature of Agile methodologies.

As the computing world is being revolutionized by the resurgence of Artificial Intelligence and Neural Networks, systems engineering techniques, project evaluation, supporting documentation, as well as other associated services, it has been discovered by many

software development companies that in the growth of mainstream software, the human side of software engineering has been compromised [8]. Agile methods split a procedure into short-length iterations with about the same duration and size, making iterations much simpler and reacting to changes much faster. ASD methodologies cover project risk rates and adapt better to market changes. Measurable evaluations are also necessary if ASD projects are to be effective [9]. The Agile methods of development include approaches such as Scrum, Extreme Programming, Featured Driven Design Model, and Crystal Model. They entirely work on the framework given by the Agile manifesto [9].

1.2. Person's Job Fit

In a software development project, every team member is the heart of the project but it is principally important when the ASD methodology is used. Person-job fit is defined as the fit between the individual characteristics (knowledge, skills, abilities, and needs) and the demands of the job or the needs/desires of a person and the attributes of the job [10]. The Person's job fit or match concept is to ensure that the workers have the requisite practical knowledge and competency to work on and complete successfully the tasks assigned. It has been noticed that whenever staff or an employee is a perfect fit for a specific task, the employee experiences a boost in his/her confidence and also shows an attachment toward the job at hand [11]. If the ambition and skill of the individual match those needed by the job, it is a job fit [12]. The productivity of the software development team is a significant factor in ASD [13]. A person's job fit can also be specified from the job requirements and criteria as a skilled quantity of equivalence between the skill, ability, standards and understanding, and knowledge of the employee [14]. The foundation of a highly functional organization is to appoint and engage valuable employees in their work and also help them to support the faith, and confidence, of the staff member that they fulfill the job requirements [15].

1.3. The IT Industry of Pakistan

The IT industry of Pakistan is booming and has been among one of the top fast-growing IT industries in the world for the past several years. In 2019, Pakistan was ranked no 4 for freelance development worldwide and a large number of software houses in Pakistan are working for large overseas corporations [16]. In the same year, the Pakistani IT industry exhibited an impressive 100% growth in value to USD 3.5 billion and the projection for the next 2 to 4 years was USD 7 billion [16]. In Pakistan, the majority of IT projects are outsourced from other countries, and because of cheap labor, many international firms have established their offshore companies here [17]. Nations around the globe are working on developing policies to get the maximum out of their IT industries.

The government of Pakistan realizes the potential and supports the development of the IT Industry for the global outsourcing business. These include 100% equity ownership, 100% repatriation of capital and dividends, and income tax exemption for IT export until June 2024 [17]. The Pakistan Software Export Board (PSEB) works actively to promote Pakistan's IT industry both nationally and internationally. PSEB has registered over 3000 IT companies, with expertise in custom software development, business resource planning, financial solutions, mobile content development, corporate computing, and outsourcing of business processes [16]. Pakistani software industry delivers moderate quality and is market-efficient compared to India, China, Russia, and Singapore. However, still, the quality of services, goods, and projects produced in Pakistan need to be enhanced.

Despite the great success and potential, in comparison to the international software industry, Pakistan's software industry is relatively young. This makes this talented and young industry flexible in adopting and implementing new methodologies for software development and project management. The global financial crunches and pandemics are causing great damage and suffering in Pakistan as well. Software development businesses can sustain themselves only if their projects succeed. Information Technology and Software Development are one of Pakistan's most rapidly growing industries despite the global

pandemic [17]. Agile approaches can have major quality and team efficiency benefits, but their use is neither easy nor pain-free. In Pakistan, however, Software Development Organizations are not in a good position due to their greater project failure percentage [18]. Only 15% of E-government projects succeed in Pakistan [19]. While generally 4 out of every 10 projects fail [20].

Many Software companies in Pakistan are still using traditional methods for software development and software project management, and are therefore facing project failures. The use of inappropriate technology is one major reason for project failures [19,20]. IT projects are very complex, and therefore the software companies developing them need to manage these projects efficiently and effectively. The software industry in Pakistan has faced many problems due to a lack of use of Agile strategies by software development professionals, but the Agile agenda has grown greatly. PSEB formation has also provided support to the software industry.

There are several studies such as [21] on the adoption of Agile in Pakistan but its effect has not been studied thoroughly before to the best of our knowledge and therefore is unknown. Therefore, to investigate the effect of ASD on the IT industries of Pakistan, we surveyed several IT professionals from different Software Development organizations in Pakistan. The purpose of this research is to relate the project success in terms of scope, quality, time, person's job fit, stakeholders satisfaction and cost, for ASD in Pakistan. There is no unanimous consensus in the software development community on the definition of project success. For the sake of this study, we consider the classical measure of project success, i.e., on time, with in budget and quality [22] as well as stakeholders satisfaction. The outcome of this study will not only be useful for software development companies inside Pakistan but can also be used in the emerging software development industry globally.

Section 1 of this article presented an introduction to Agile, Person's Job Fit, and the IT industry in Pakistan. In the next section, Section 2 we present the related work, Section 3 Methodology, provides the details of the survey demographics, Section 4 presents the results of the survey graphically and discussions. Section 5 presents the statistical analysis of the collected data, and finally, Section 6 concludes the paper and also provides future research directions.

2. Related Work

2.1. Agile Methodology Adoption Worldwide

The world has suffered a lot financially at the hands of economic slowdowns, recessions, and because of the recent and ongoing COVID-19 pandemic. Like other industries, the IT industry has also felt its effects. IT companies have been forced to lay off employees and minimize costs through remote and off-campus operations. These changes in the way the IT companies operate, effects directly the quality of the software product. In this section, we provide an overview of different studies on Agile Adoption from the early times of Agile to contemporary times. All of these studies report different figures for Agile adoption worldwide. However, one thing that is commonly reported in these studies is that Agile adoption is increasing at a healthy rate and not just in software development but also in business development and management.

An early study of ASD methodologies adoption was performed by the Cutter Consortium in 2001, the same year the Agile manifesto was put forward. In this survey, almost 200 individuals participated from different organizations in North America, Europe, Australia, India, and elsewhere [23]. Three interesting findings were reported in this study. First, many organizations said they used at least one Agile method compared to in late 2000. Second, Agile methods performed slightly better in terms of quality delivery, the company's performance, and customer satisfaction. Third, the repetitive nature of the Agile technique helped to communicate at every level with the customer, which helps in staying in constant touch with the customer and remaining updated on their changing needs.

A few years later another study from the US and Europe [24] in 2005, showed that 14% of companies are using Agile methods, 49% of companies know about Agile methods and are interested in using them.

Another important study was conducted from 13 February to 24 March 2014, in which 114 participants took part [25]. According to this study, 10.77% of respondents termed the effect of Agile adoption on the organization as "Great Success", 32.31% termed it as "Success", 40% termed it as "Neither a success nor a failure", 4.62% termed it as failure and 1.54% termed it as "Too early to tell".

In a recent online survey from Hewelt and Packard (HP), of technology professionals and IT professionals [26], has reported that 16% of its respondents are using pure Agile, 51% are leaning towards it, 24% are using hybrid approaches and only 2% are using pure Waterfall. The majority of development teams and companies now adopt the technique, while the minority are using waterfall methods.

In a survey study from digital.ai, it has been claimed that Agile adoption within software development teams have increased from 37% to a massive 86% in 2021 [27]. Similarly, another survey conducted by CertiProf [28], found that the COVID-19 pandemic in 2020 increased the adoption of distributed agile teamwork and 72% of the teams reported that they do not work in the same location. This study also reported that in comparison to 2020 the number of professionals having less than 2 years of Agile experience (42% in 2021) has shown significant growth. In 2022, 95% of developers report having fully adopted the Agile approach while in other sectors such as marketing, sales, finance, and HR it also showed growth.

2.2. Importance of Persons Job Fit

Successful projects are a challenge in software development. One of the greatest obstacles in software development is to boost app production and at the same time avoid project failures. Speedy app development and project success should be based on development analysis and real work. The organizational culture and dynamism of the project team are considered crucial to the project's success. The best way to achieve success is to hire the right person for the right job. To achieve the project's meaningful and productive result is to generate a friendly and supportive working environment for staff in which they can grow more and boost their resources [29].

Person-job fitness is calculated by the consistency of the person with his/her role, function, or mission in the project. Research shows that there is still a gap where development analysis and actual work should be based on the concept of using the pace of development and the factor conditions associated with the success of the project. While examining and compiling the data, it was suggested that the organizational culture and dynamism of the project team are key to the success of the project [15].

Like in any complex project, teamwork is important in software development too. It represents a strong link between skilled management and good team performance. Numerous researchers have tested teamwork using team performance models [30] and explained how active development teams can work together, collaborate and communicate. Roles assigned in a software development team are important to promote meaningful collaboration [31] including Agile. The E-CARGO (Environments-Classes, Agents, Roles, Groups, and Objects) is an important model that has been proposed in the literature for Role-based collaboration [32,33].

Performance management research performed over more than 1000 organizations across 53 countries revealed that only 3 percent showed exceptional value for their overall performance management system. The organizations surveyed ranged in size and served a wide range of industries adopting conventional as well as ASD methodologies of work [34].

3. Methodology

This study focuses on ASD methodology to capture knowledge management practices and standards for applying the ability to develop Agile software in distributed environ-

ments in software development organizations in Pakistan. The main purpose of this research is to establish a link between agility and project success, with a mediating role for a person's job fit. Therefore, this is mainly a correlation study in which the relationship between the use of agile software development and the success of a project was measured, with the mediating role of personal job fit. For this purpose we define the following two hypothesis. These hypothesis are tested in Sections 5.5.1 and 5.5.2, respectively.

Hypothesis 1. *The Agile approach has a positive impact on the success of a project.*
Hypothesis 2. *The job fit mediates the impact between the Agile method and project success.*

The population for this survey included all small, medium, or large IT companies registered with PSEB. For data collection, the questionnaire was distributed among around 350 IT organizations selected from the population through simple random sampling. In this regard, a total of 300 responses were received, out of which 276 responses were selected for analysis. The reason for selecting 276 questionnaires was that they offered complete and usable information for data interpretation. Before conducting the survey all involved individuals were briefed and all their concerns were answered. Two separate questionnaires were designed carefully, one each for the relationship between the use of Agile and persons job fit and a second one for project success developed using Agile. We adopted some questions from the works of Ashish [35] and Aga et al. [36] for our purpose and used them as models to design our questionnaires. Special consideration was given to the design of the questions included in the questionnaire so that the question not only seem relevant but are complete and concrete. All questions related to the variables were analyzed through a 5-point Likert ordinal scale that elaborated the nature of the analysis. Several population-based questionnaires were distributed to different software houses employees.

3.1. Survey Demographics

Various types of software engineering and IT organizations, large, medium, and small, as well as organizations in the private and public sectors, participated in this survey. A quantitative approach is used to study the different software houses & IT Industries located in Pakistan. The participants of this survey included professionals from different IT business organizations and software houses located in the major cities of Pakistan including Rawalpindi, Islamabad, Lahore, and Karachi.

3.2. Respondents' Age Distribution

Figure 2 shows the age distribution of the survey respondents. It shows that almost half of the respondents, i.e., 46% were between the age of 34–41 years old and 37% were in the age bracket 26–33.
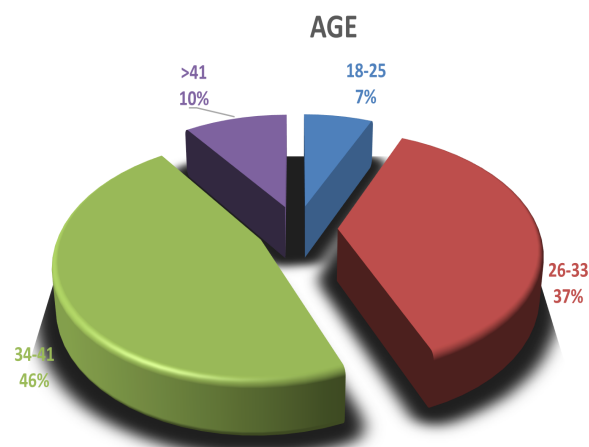

Figure 2. Age Distribution of Respondents.

3.3. Respondents' Job Experience Distribution

Figure 3 shows the distribution of the number of years of experience of the survey respondents. As shown in this figure, 43% of the respondents had 6 to 10 years of development experience, 26% had 10 years or more, and the remaining had less than 5 years of experience.
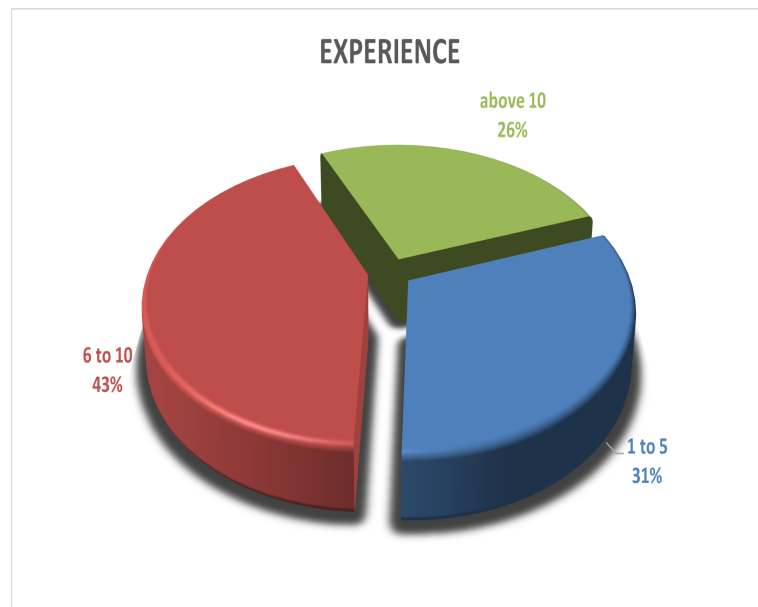

Figure 3. Experience Distribution of Respondents in years.

3.4. Respondents Gender Distribution

Figure 4 provides a look at the gender distribution of survey respondents and shows that 75% of the survey respondents were male and the remaining 25% were female.
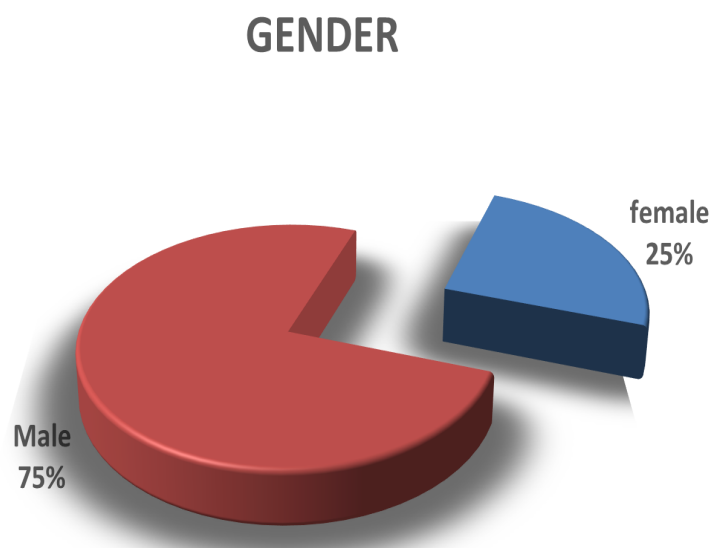

Figure 4. Gender Distribution of Respondents.

3.5. Respondents Job Role Distribution

Figure 5 shows the role distribution of the survey respondents. This figure indicates that the majority of the respondents were programmers, i.e., 23%, 14% were from IT

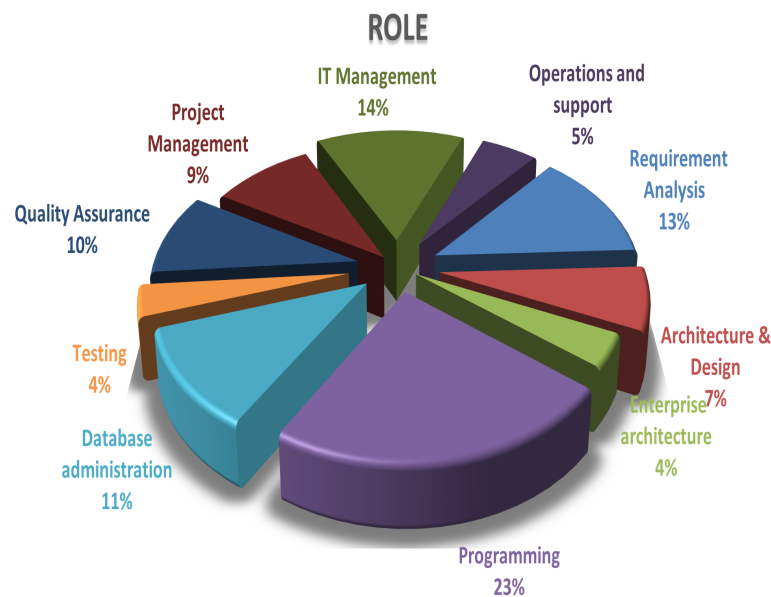management, 9% from project management, 13% from requirement analysis, and 10% from quality assurance.

ROLE

Figure 5. Role Distribution of Respondents.

4. Results and Discussions

In this section, we present the main findings of our survey. The feedback that we received from the survey participants regarding the effect of Agile on the different aspects of software development is presented here in the form of pie charts.

4.1. Productivity

Survey participants were asked to express their opinion on a five-point ordinal scale regarding the effect of Agile on the productivity of software development professionals. The responses have been plotted in Figure 6. This figure shows that 68% of our survey respondents think that Agile approaches have "Much Higher" effects on their productivity, 13% are of the view that it has a "Higher effect", 12% think that there is no effect, 4% think that the effect is somewhat lower, and 3% think that it's much lower.
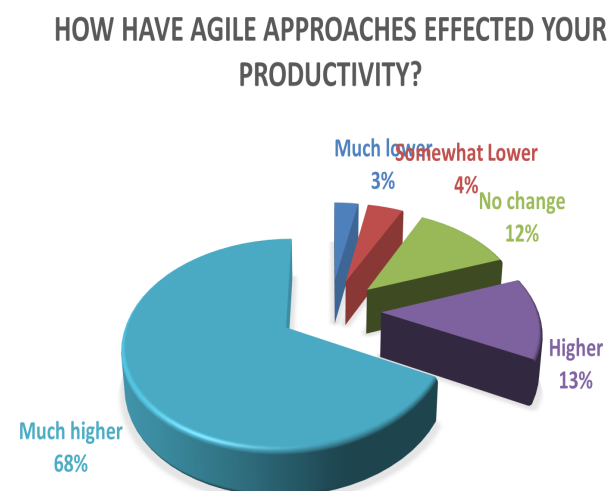
HOW HAVE AGILE APPROACHES EFFECTED YOUR PRODUCTIVITY?

Figure 6. Effect of Agile on Productivity.

4.2. Project Success

Regarding the effect of Agile on project success, participants were asked about their insight on the success rate of Agile projects. Responses received are summarized in Figure 7. From this figure, it can be observed that 41% of the survey respondents think that the success rate of Agile projects is 50% to 74%, 37% think that the success rate is 75% to 90%, 12% think the success rate of Agile projects is between 25% and 49%, and 5% think that it is less than 25%.

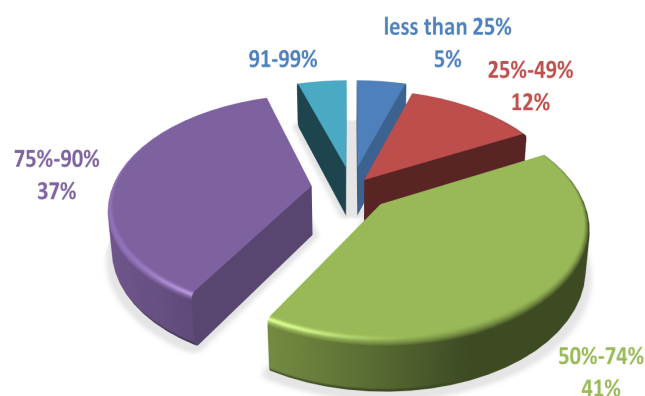## WHAT IS THE PERCENTAGE OF SUCCESSFUL AGILE PROJECTS?

Figure 7. Percentage of successful Agile projects.

4.3. Stakeholders' Satisfaction

The survey respondents' point of view regarding the satisfaction of the project stakeholders when using Agile is plotted in Figure 8. As evident from this figure, a heavy majority of 92% of our survey respondents think that Agile approaches have "Much Higher" positive effects on stakeholder satisfaction while 5% think that the effect on stakeholder satisfaction is "Higher".

HOW HAVE AGILE APPROACHES AFFECTED THE SATISFACTION OF YOUR BUSINESS STAKEHOLDERS IN THE WORK PRODUCED?
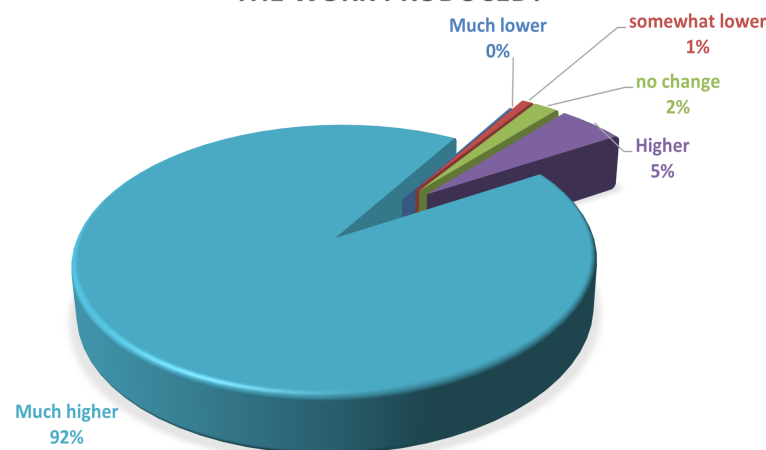
Figure 8. Effect of Agile on stakeholders satisfaction.

4.4. Product Quality

Views of the survey respondents regarding if the use of Agile has improved the quality of the delivered product, have been plotted in Figure 9. This figure shows that 13% of the respondents are of the view that Agile has a "Much Higher" effect on product quality improvement, 55% termed it as "Higher", 16% think that it does not affect product quality, 11% say its effect is "Somewhat Lower" and 4% say that the effect on product quality is "Much Lower".

HOW HAVE AGILE APPROACHES EFFECTED THE QUALITY OF THE SYSTEMS PRODUCED?

Figure 9. Effect of Agile on product quality.

4.5. Development Cost Reduction

Figure 10 summarizes the response of the survey participants regarding the effects of Agile on reducing the project development cost. This figure shows that 2% of our survey respondents think that Agile approaches have "Much Higher" effects on the reduction of development cost, the majority view, i.e., 45% is that the effect is "Higher", 18% think that there is no effect, 16% think that the effect is "Somewhat Lower" and 19% think that it is "Much Lower".

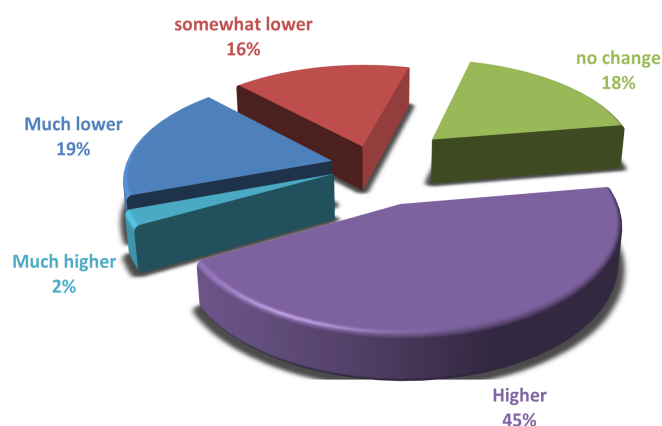**HOW HAVE AGILE APPROACHES AFFECTED THE COST OF DEVELOPMENT?**

Figure 10. Effect of Agile on development cost reduction.

5. Statistical Analysis

To summarize the data collected as part of the survey more meaningfully we analyzed it with statistical tools. The background information and the corresponding results obtained from this analysis are presented here.

5.1. Descriptive Statistics

Descriptive statistics is a summary of statistics. It provides us with an understanding of the data distribution, defines the outliers, and reveals the associations between variables. Descriptive statistics gives us a single table of statistics, for several variables. Descriptive data contain essential details such as sample size, minimum and maximum values, average values, and standard data differences. In Table 1, the First column contains details of the variables. The second contains the size, the third defines the minimum value, the fourth defines the maximum value, the fifth is the sum of values, the sixth columns inform about the mean, and the seventh informs about the Standard deviation.

Table 1. Descriptive analysis.

Variables	N	Min	Max	Sum	Mean	SD
Agile Methodology	276	1.00	5.00	509.00	1.8442	0.66960
Person job fit	276	1.00	3.90	602.30	2.1822	0.40865
Project Success	276	1.20	4.00	646.40	2.3058	0.45579
Valid N	276					

5.2. One-Way ANOVA

The one-way ANOVA compares the means of the groups of data you are interested in and determines whether any of those means are statistically significantly different from each other [37]. It tests the null hypothesis. Mathematically, it is given by the following expression.

$$H_O : \mu_1 = \mu_2 = \mu_3 \ldots\ldots = \mu_k \tag{1}$$

where μ is the group mean and k is the total number of groups. If one-way ANOVA results are statistically significant, the Alternative Hypothesis (HA) is accepted, which suggests that there are at least two group means that are statistically significantly different from each other. The difference in the means is captured in the F-static or F-Value. The F-value also determines the P-value; which is the probability of getting a result at least as extreme as the one that was observed, given that the null hypothesis is true.

An ANOVA control is a way to see if the results of a survey or experiments are important. This helps you to see if the null hypothesis is rejected or if the alternate theory is adopted. As part of our analysis to see if the age of the professional, project size, the size of the project team, the project manager's experience, the duration of the project, the level of education, and gender distribution affect the project's performance, these variables were classified as covariates.

Table 2 summarizes the F and Significance values of the ANOVA test for Gender, Experience, Qualification, and Age. From this table, it can be observed that the significance value for all of these variables is greater than 0.05 (the critical value), and therefore based on our data, they do not influence the dependent variable, i.e., Success of the Project.

Table 2. ANOVA table.

Covariates	F Value	Significance Value
Gender	2.029	0.155
Age	0.778	0.067
Qualification	0.708	0.548
Experience	2.491	0.085

5.3. Realiability Analysis

The reliability test is about whether a measurement is free from random error. Evaluation of reliability is determined by the proportion of systemic variation in a scale. Where measurements are repeated several times. Therefore, if the reliability measurement relation is strong, the scale yields consistent outcomes and is thus accurate.

To perform reliability analysis for our collected data we calculated the Cronbach coefficient. Cronbach's alpha is a measure of internal consistency and shows how closely related a set of items are as a group [38]. The value of the Cronbach coefficient varies from 0 to 1, Cronbach's alpha at $\alpha < 0.5$ is unacceptable, at $0.5 \leq \alpha < 0.6$ is poor, at $0.6 \leq \alpha < 0.7$ is questionable, at $0.7 \leq \alpha < 0.8$ is acceptable, at $0.8 \leq \alpha < 0.9$ is Good, at $0.9 \leq \alpha$ is Excellent [38]. Mathematically,

$$\alpha = \frac{N\bar{c}}{\bar{v} + (N-1)\bar{c}} \tag{2}$$

where N is the number of items in the group, $\bar{c}$ is the average covariance between paired items, and $\bar{v}$ is the average variance. Table 3 reports the Cronbach's coefficients calculated for Agile methodology use, person-job fit, and project success. From this table, it can be noticed that the internal consistency of the project's success is excellently reliable (Cronbachs value of 0.852), that of Agile methodology is acceptably reliable (Cronbach value of 0.742), and for person-job fit, the internal consistency is unreliable (Cronbach value of 0.569).

Table 3. Cronbach's coefficients for project success, Agile methodology use, and person's job fit.

Variables	Items	Cronbach's Alpha
Project Success	9	0.852
Agile Methodology Use	8	0.742
Person's Job Fit	8	0.569

5.4. Correlations Analysis

A statistical tool for measuring connection or the relationship strength between two consecutive numerical variables is called correlation analysis. Correlation is measured between independent variables (IVs) and the dependent variables (DVs). Correlation coefficients, therefore, provide a statistical perspective on how the linear relationship between IVs and DVs is directed and strengthened.

Pearson's correlation coefficient measures the statistical relationship, or association, between two continuous variables [39] and varies between -1 and $+1$ to show a positive or negative correlation. Table 4 provides the valid ranges for positive correlation. Given paired data consisting of n pairs, r_{xy} is defined as:

$$r_{xy} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2}\sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2}} \tag{3}$$

Table 4. Correlation type and its numerical ranges.

Correlation Type	Numerical Range
Weak Correlation	0.0–0.4
Moderate Correlation	0.4–0.6
High Correlation	0.6–0.8
Multi Correlation	More than 0.8

In our case $N = 276$ and $p < 0.001$, the theoretical correlations for Agile methodology use, person-job fit, and project success are presented in Table 5. It can be observed from this table that all these variables are significantly correlated with each other ($r \geq 0.959$ for all cases) and are measured as (Multi-Collinearity).

Table 5. Correlation for project success, Agile methodology use and person's job fit

Variables	Agile Methodology Use	Person's Job Fit	Project Success
Agile Methodology Use	1	0.959	0.988
Person's Job Fit	0.959	1	0.963
Project Success	0.988	0.963	1

5.5. Regression Analysis

To know the mutual impact of different variables in this study, we performed a regression analysis of our data. Regression analysis is a group of statistical techniques used to evaluate associations between a dependent variable and one or more independent variables. The dependent variable (or the outcome variable) is the variable that we want to predict. The variable we use to anticipate the value of the other variables is referred to as the independent variable (or the predictor). Gender, age, education and experience are used as demographics. We control demographic values in regression analysis. We used regression analysis to test our two research hypothesis introduced in Section 3, using SPSS as a tool. The testing results of are as follows

5.5.1. Hypothesis 1: The Agile Approach Has a Positive Impact on the Success of a Project

For Hypothesis 1, the regression analysis results are summarized in Table 6. This table, shows a strong relation between Agile Methodologies' Effectiveness and project success, because the value of β is 0.690 significant value of $p \leq 0.001$. Hypothesis 1 is acceptable since the results indicate that there is a 0.698 unit change in project success when there is a 1 unit change in Agile methodology effectiveness.

Table 6. Correlation for project success, Agile methodology use, and person's job fit.

	β	R^2	Sig p
Step I Model			
Step II Agile Methodology	0.690	0.476	0.00
Step III Moderator	0.990	0.980	0.00

5.5.2. Hypothesis 2: The Job Fit Mediates the Impact between the Agile Method and Project Success

For Hypothesis 2, If the job fit is strong, the relation between the Agile approach and project success would be amplified. From Table 6 we can observe this relation ship. Results of the regression analysis in this table show that the person's job fit moderates the relation between Agile methodology and project success, as the value of β is 0.990 at the significance level of $p \leq 0.001$. The results indicate that the success of the project was caused by a 0.980 unit change in project success when person-job fit has moderated the relationship between Agile and project success. Therefore, our research Hypothesis 2, the job fit mediates the impact between the Agile method and project success, is also accepted.

6. Conclusions

In this research, we examined Agile methodology and its influence on the entire project development and project success in the software industry of Pakistan. For this purpose, a survey study was performed and well-designed questionnaires were distributed to around 350 IT organizations selected through simple random sampling. In response to the survey, 300 responses were received from a diverse set of IT professionals working in the Agile teams of various software houses located in different cities. From the 300 responses, only 276 were used for analysis as they offered complete information. The collected data were

analyzed both graphically and statistically. From the graphical insights of our collected data in Section 3, we can safely conclude that Agile methods play a key role in the successful implementation of software projects and that person's job fit moderates the relationship between agile methodology and project success. The statistical treatment of our collected data in Section 5, reiterates that our data are dependable and therefore our conclusions are reliable. In the future, this work could be extended to study the internal dynamics of Agile teams such as job role changes, main or common roles in Agile teams, characteristics of a successful Agile team, and maximum and minimum number of Agile team members.

Author Contributions: Conceptualization, M.Q.K. and R.W.; methodology, R.W.; software, R.W.; validation, R.W. and F.M.; formal analysis, R.W.; investigation, R.W.; resources, A.B.A. and Y.I.C.; data curation, R.W. and F.M.; writing—original draft preparation, R.W.; writing—review and editing, M.Q.K.; visualization, R.W.; supervision, M.Q.K. and R.O.; project administration, M.Q.K.; funding acquisition, A.B.A. and Y.I.C. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Abbreviations

The following abbreviations are used in this manuscript:

ASD	Agile Software Development
PSEB	Pakistan Software Export Board
IVs	Independent Variables
DVs	Dependent Variables

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