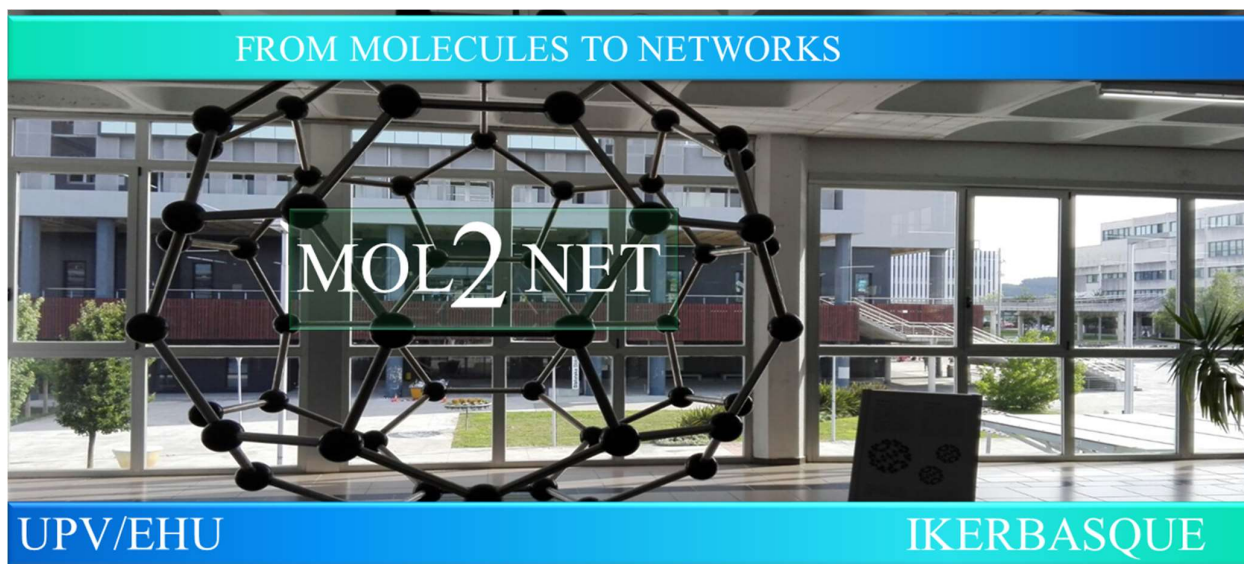




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Agile Software Development Processes Implementing Issues and Challenges with Scrum

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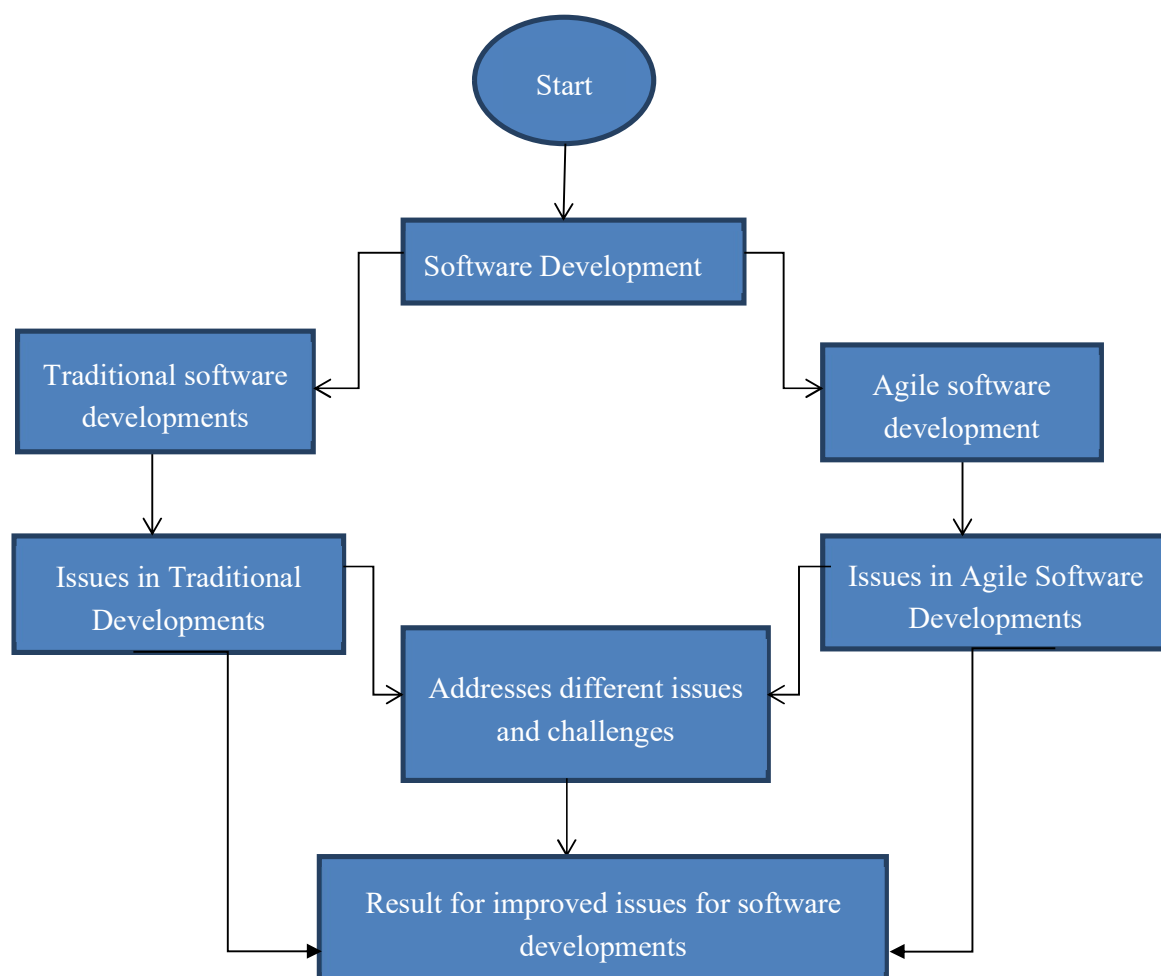
Abstract.

This study aimed to examine the main issues and challenges related to adopting Scrum to carry out the agile process. Our lives can be made better by being agile. It enables the product's speedier, better, and memory-efficient release. The lower danger compared to the traditional It equips Pakistan's software sector with the tools needed to raise the quality of timely delivery of goods. The Scrum methodology is thus a strategy for managing ongoing software development projects instead of finished products. Software businesses need assistance with communication and cost-cutting. Domains are now necessary to develop the Pakistani business. The agile manifesto listed the 12 fundamental tenets for successful client partnerships. Trust is the foundation of a successful team construct when members are spread out throughout a project for a project. Accordingly, it was

found that static and dynamic testing enhanced software market adoption and that 65% of industries utilizing agile methodologies were growing faster than traditional development. Utilizing the Scrum framework, agile approaches are employed to handle the extensive research for the entire project. The class management projects fully integrate with the scrum process to discover the traditional difficulties. The information was gathered through email questionnaires, teams from software companies, on-site observations, and semi-structured face-to-face interviews. In the initial round, Scrum assists over 85% of individuals in achieving their professional goals. Using the statistical tool, the data analysis for the last step was completed during the second round of data gathering. It employed SPSS to evaluate the complexity of Scrum-based agile and traditional models, team experience, and communication barriers between team members.

Keywords: Software Engineering, Agile Manifesto, Scrum, SPSS.

Graphical Abstract



Introduction

Agile describes a person's propensity for mobility and actions and skills in this area. It is crucial in a setting where mobile applications are quickly developing. The new agile methodology has generated a

sizable body of literature and discussion. The reference [1] Agile techniques are a challenging and costly process for small businesses. Pakistan's software industry needed help with organizational culture, historical logging, and documentation. Software companies use agile methodologies to analyze the problem. The use of Scrum tools improves project quality and aids in problem identification. Our technology facilitates practical resource and time management.

Additionally, try to minimize the distance between the management team and the customer. The three stages of SCRUM Transparency, investigation, and customization make each module's characteristics readily apparent, making the task easier. Utilize technologies to improve organizational culture in Pakistan's software industry and adapt the development process to meet demand. With later new tools, they became even more efficient. Different The team of IT professionals ran into problems with software development techniques. The Pakistani software industry has recommended the scrum paradigm for success in IT marketplaces because it emphasizes the quality and timeliness of development projects. To succeed in the software sector, you need a model. Businesses in the software industry have examined how out-of-date assumptions indicate that outcomes are subpar and provide the product provided to end-user needs [2].

Software companies swiftly embrace RUP, Scrum, and Extreme Programming frameworks and agile methodologies (Rational Unified Process). It develops software in a way that is driven by plans. Produce top-notch software on time to please clients. The XSR model combines the three models of XP, RUP, and SCRUM into one. The testing process is necessary for Kanban, Crystal, and Scrum Lean to proceed in the particular scenario. In order to improve the methods that XP and Scrum are used to build software products, many industries are working separately and using a hybrid approach [3].

The agile methodology raises productivity and contentment. This practice demonstrates the advancement of strategies and plans for concluding the planning phase in the market base. Despite claims that agile development yields the best outcomes for the lowest cost, several evaluations and conclusions are available. As an illustration, QA (Quality Assurance) is used to assess each stage of the software development process at the beginning in order to identify and correct any problems and flaws and improve the program's quality. Agile development necessitates a variety of human roles for quality assurance. Software goods frequently adhere to the traditional models because they need to be more suitable for the product in terms of technology and usage of requirements product offered at a time. The estimate is therefore obtained early in the development life cycle [4].

Software development is a significant component of the Pakistani software industry. Initiatives to incorporate innovative techniques and methods in software development have been made. One major drawback of software development is the need for increased communication between end users

and developers. The Pakistani software industry has challenges producing high-quality software and fixing this issue. The developed country has already given its software industry new, cutting-edge methods. It has introduced cutting-edge approaches to the Pakistani software industry to fulfill customer needs for software manufacturing. The agile methodology can significantly contribute to the expansion of Pakistan's software industry [5].

Materials and Methods

The core data from agile development initiatives will be used to construct the model structure and parameters. Data from nine firms will be used to construct and refine the model. These companies will employ Extreme Programming (XP), Scrum, or a combination of the two approaches [6]. We will also employ secondary data sources, which provide access to in-depth discussions about agile principles and approaches. These resources include agile development-specific online communities and project documentation. The description of our model refers to the relevant data sources used to build it [7]. The SD model developed in this study includes all of the agile planning, short iterations, customer involvement, refactoring, unit testing, and pair programming techniques. These approaches are grouped into four sub-models or sectors: customer participation, change management, agile planning and control, and refactoring and design quality. Human.”

Resource management and software production subsystems are necessary for agile development. Due to space restrictions, we only provide concise descriptions of each subsystem and focus mainly on refactoring and design quality. In our study, the human resource subsystem system is significantly extended by the modeling of pair programming, which is unique to agile development. A description can be found in the online supplement [8].

Results and Discussion

Table 1: Project Size and Complexity

Size of Project	Easy	Very Easy	Difficult	Very Difficult	Total
Large	5	0	0	0	5
Medium	0	5	0	0	5
Small	0	0	1	0	1
Very Large	0	0	0	3	3
Total	5	5	1	3	14

Table 2: Project Size and Functionality

Size of Project	Few	Very Few	Medium	Large	Total
Large	1	0	0	0	1
Medium	0	4	1	0	5
Small	0	0	0	1	1
Very Large	0	0	0	2	2
Total	1	4	1	3	9

Table 3: Project Size and Experience

Size of Project	T.D	Initial.D	Medium.D	Experience.D	Total
Large	2	0	0	0	2
Medium	1	4	0	0	5
Small	0	0	3	0	3
Very Large	0	0	0	2	2
Total	3	4	3	2	12

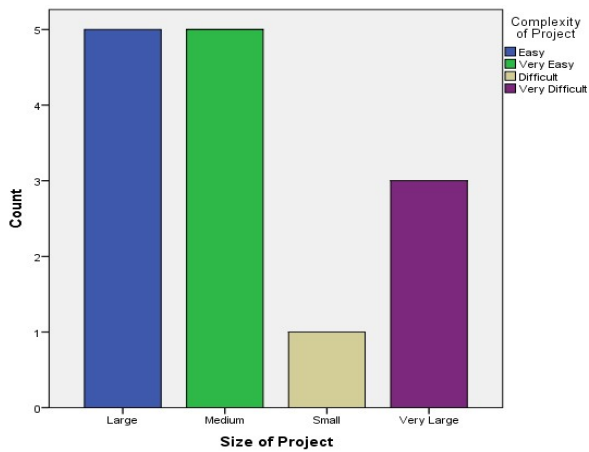


Figure 1: Stacked Bar Project Size and Complexity

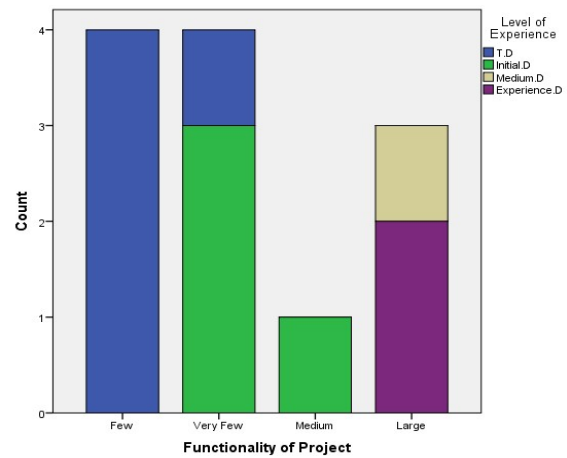


Figure 2: Stacked Bar Chart Project Functionality and Experience

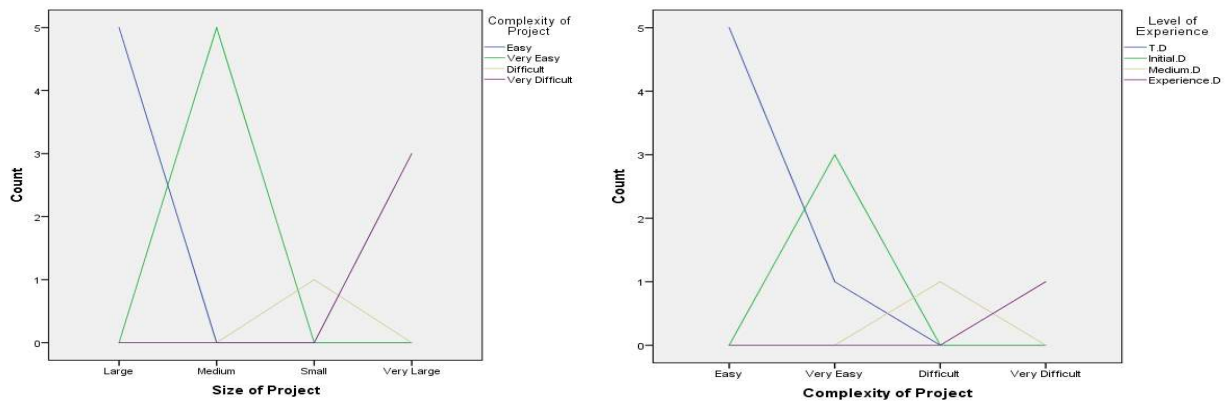


Figure 3: Line Chart

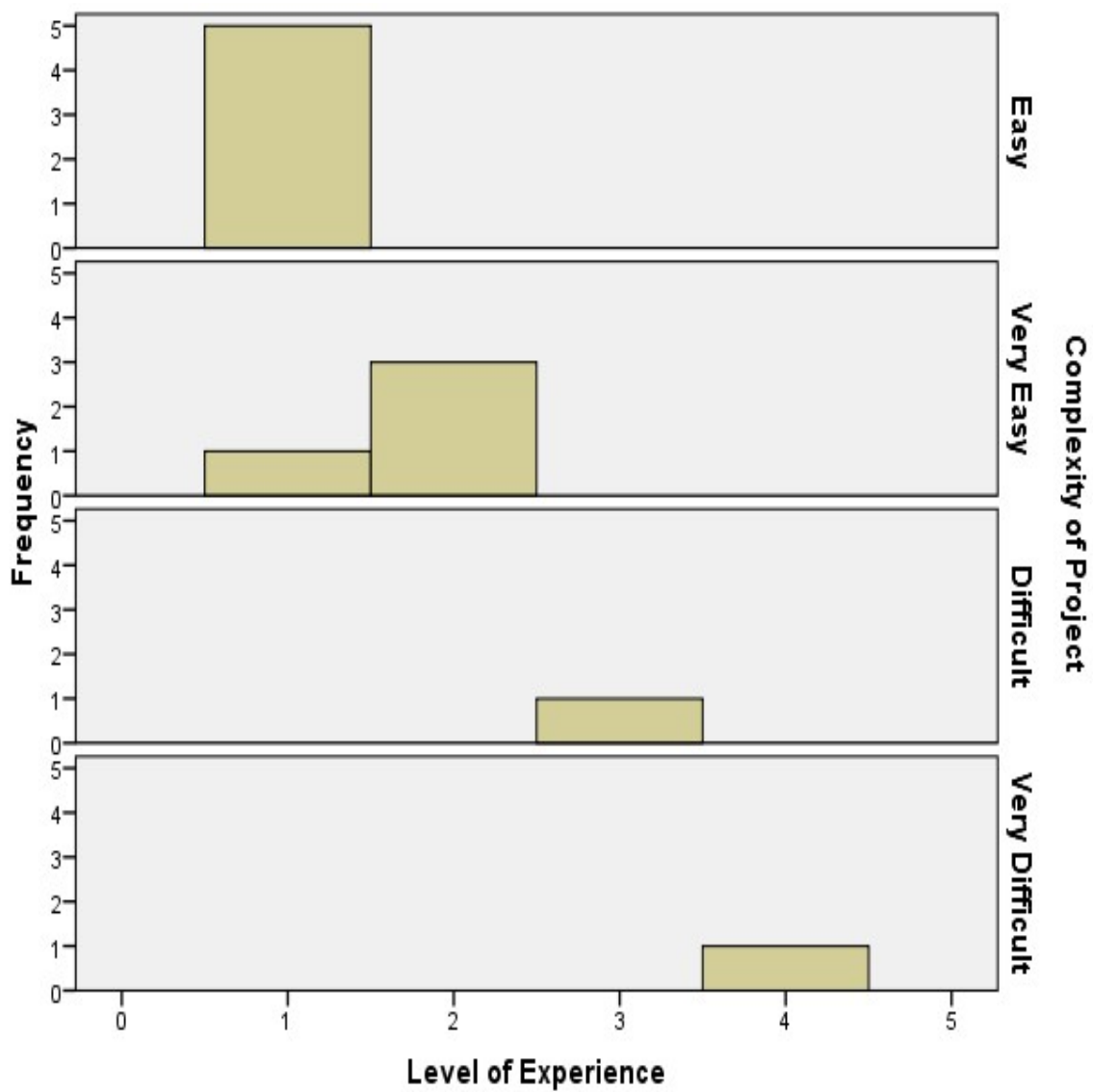


Figure 4: Histogram

Table 4: Traditional vs Agile Implementing the Performance Factor

Project Size	Complexity	Functionality	Time	Team Experience
52	0	0	0	0
0	75	0	0	0
0	0	75	0	0
0	0	0	61	0
0	0	0	0	75

Conclusions

This study explores the critical categories of issues and difficulties that, when applied to agile techniques, may influence the pricing and performance of the software business. These key categories of problems and difficulties include the following: The process of continually delivering relevant software requirements that are adjusted in response to the client's demands is called "agile development," which is a general word for the process. Extreme Programming (XP), Scrum, Crystal, Lean, and FDD are among the most well-known agile approaches. Dynamic System Development Method (DSDM) is another well-known agile methodology (Feature Driven Development). Agile is implemented and utilized to enable the effective execution of complicated missions as well as large and small projects. Using the SPSS statistics tool and various class management projects, one may evaluate the results of putting the Scrum methodology into reality and determine its effects. Agile is a general model that demonstrates superior performance evaluation to traditional methods and identifies the best software in terms of effectiveness, quality, and accuracy up until the software product is delivered. Agile is a model that was developed by the agile software development community.

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