APPLIED CURRENT SOFTWARE METHODOLOGY OF SOFTWARE INDUSTRIES IN BANGLADESH

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Masters of Science in Computer Science and Engineering

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APPROVAL

This thesis titled "**APPLIED CURRENT SOFTWARE METHODOLOGY OF SOFTWARE INDUSTRIES IN BANGLADESH**", submitted by **Ummee Sabreen** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of M.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 12th December 2018.

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DECLARATION

I hereby declare that, this thesis has been done by me under the supervision of **Ms. Nazmun Nessa Moon, Assistant Professor, Department of CSE,** and Daffodil International University. I also declare that neither this thesis nor any part of this thesis has been submitted elsewhere for award of any degree or diploma.

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I am greatly indebted to my beloved Parents, my father **Abdus Sattar** and my mother **Nasrin Nahar** may Allah protect them; they are always very understanding and supportive on my choices. They love me more than themselves and have sacrificed so much to support me.

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ABSTRACT

There is an obvious need to research and analyze data that is used software industry in Bangladesh. In Bangladesh there are many IT Companies and increasing day by day. There is less evidence of their usage among software practitioners in Bangladesh. While the methods have become mainstream in other regions. The purpose of this study is to investigate which method are used perspectives in Bangladeshi IT companies.

In order to reach this goal, we argue that such a study must be divided into two parts-firstly Surveying several IT Companies and secondly analysis on surveying. Nonetheless, this paper observationally explores the impression of Agile techniques utilization. As indicated by this action Theoretical research structure is presented for the last mentioned. The accentuation of the paper is on the viable system.

However, this paper empirically investigates the perceptions of Agile methods usage specially-Scrum, XP and DSDM. The emphasis of the paper is on the practical framework.

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CHAPTER 1

INTRODUCTION

1.1: Introduction

Bangladesh has billed itself on traditions of Science and Technology. Today, the number of IT companies stands more than eleven hundred according to BASIS [1]. Besides, the government set up some software technology parks in different locations. For that, huge amount of IT Firms stands in future. So, it is a perfect time to know appliance current software method which is followed internally our Software Industries. However, survey system is closely related to some other aspects. The first and foremost one is surveying data. To provide legitimate solicitations, getting surveying data and analyzing it is a rudiment. This thesis, keeps an effort to get a practical idea about usage of method during developed a project.

1.2: Motivation

Every projects have some common characteristics, in which an objective to be gained, the uniqueness of the project, the impermanent effort, and the attendance. In order to conduct a project is essential to apply some skills of project arrangement with the motive of achieving the target, especially in the case of raise projects size and tangles.

The main point of project management is investigated in detail in the writing, in the theoretical and technological point of view, including the use of methodologies for the development of Information Technologies (IT) solutions. Now there are huge of methodologies, called also software development models, which could be chosen to manage IT projects.

1.3: Fundamental of the study

In Bangladesh there are many IT Companies and increasing day by day. There is few standard of their usage into software users in Bangladesh. That’s for, to know regarding appliance software method in Bangladeshi IT companies. There are some key problems has been identified.

Firstly, the first and foremost one is data. So effective ways of communicating with the users and getting authentic response from them to get a thorough idea about their using method is main focus.

Secondly, after understanding respondent data, necessary criterion is done. Based on the criterion, the possibility of using Agile methodologies in Bangladesh can be understood. If it is possible, then necessary data which users are willing to share is collected.

Finally, Different information filtering algorithms which can be applied on user given data to provide personalized recommendation are studied. To come up with the best techniques of data mining and relevant researches are the focuses of this phase.

1.4: Research questions

1. Which programming languages they are using?

2. Which development environments they are using?

3. Did they use a formal systems development method?

4. Did they have any Requirement Analysis Team?

1.5: Expected output

1. To know which programming languages they are using

2. To know which development environments they are using.

3. To discover which formal systems development method they use.

4. To identify which Requirement Analysis Team they have.

1.6: Information design

The following description is supplied to know which chapter covers which topics and their topical discussions.

1. In 1st chapter "Introduction", the basic things of this thesis is already described.
2. In 2nd chapter "Background", a brief discussion about methods.
3. In the chapter "Research Methodology", a brief discussion will have made on how the thesis has been conducted.
4. In chapter 3 “Experimental Results And Discussion", various aspects of surveys and how the survey has been setup to understand the scenario will be elaborately discussed.
5. In the chapter “Conclusion And Recommendation", a brief summary on how the thesis can be used and continued to solve remaining problems in the statement are discussed. In the chapter "Conclusion", shows the goals of this thesis.

CHAPTER 2

BACKGROUND

2.1: Introduction

In this chapter background, I will discuss about connected work or the literatures connected to Software Development methodology of Software industries in Bangladesh. The 1st section I will discuss about prior studies, the 2nd section is definition, benefits and difficulty and conclusion.

2.2: Related Works

As computer technology offers efficient and high-performance information processing, it has got popularity over the home and office users in the whole world. By the decade of 1990, in Bangladesh, it has also taken an important role. Since during this time PCs become more user-friendly and attractive, the number of users had been increased. Besides the general users, in Bangladesh, the number of software developers has been increased as well. Many of Computer Science and Engineering graduates from public and private universities, as well as computer diplomas from training institutions, are getting employed to the local software companies. As time goes, the overall development of the skill of software developers has been increased with respect to Bangladesh.

Bangladesh stands out distinctly as a potential software-exporting nation, considering the analytical and technological ability of its people. Bangladesh is one of the potential countries where software development is to be grown as a software industry. According to Bangladesh Association of Software and Information Service (BASIS), there are around 300 plus companies, are working closely with the development of software for the local and international market for different information and communication technology services [1]. Bangladesh is a country, where the only surplus property is the human resource. Considering the earning of foreign exchanges and removing of the unemployment problem, the is software industry a very prospective field. To make this field more profitable, several plans have been done by the

government and private organizations in the last several years. The Government of Bangladesh made an in-depth study on how the software sector of the country could be designed to suit the needs of the global market. To follow up on the outcome of the study and to monitor the issues associated with the sector's growth and development, a high powered National Standing Committee (NEC) on software export has been formed. This standing committee has brought together the concerned government offices organizations and leaders of the software trade to work in unison to study the problems and prospects of the sector 2. Table 1 shows the business application nature of software service of the software industry at Bangladesh**.** It is notable that each software company in the software industry develops multiple categories of software service.

2.3: Research Summary

There are many types of software development methodology. For manage a project effectively, the manager or development team must experiment many software development methodologies to choose the one that will work best for the project at hand. Every methodology has different capacity and bug and exist for different reasons. There are some overview of the most popular used software development methodologies and why different methodologies attend.

2.4: Different types of Methodologies

2.4.1: Waterfall development methodology

The waterfall method is considered the traditional software development methodology. It's a strong linear method that stand of sequential phases (Requirements, design, implementation, verification, maintenance) in which distinct goals are completed. Every phase must be 100% complete before the next phase can start, and in the traditional manner there is no process for going back to modify the project or way. The fig. 2.1 shows waterfall methodologies.

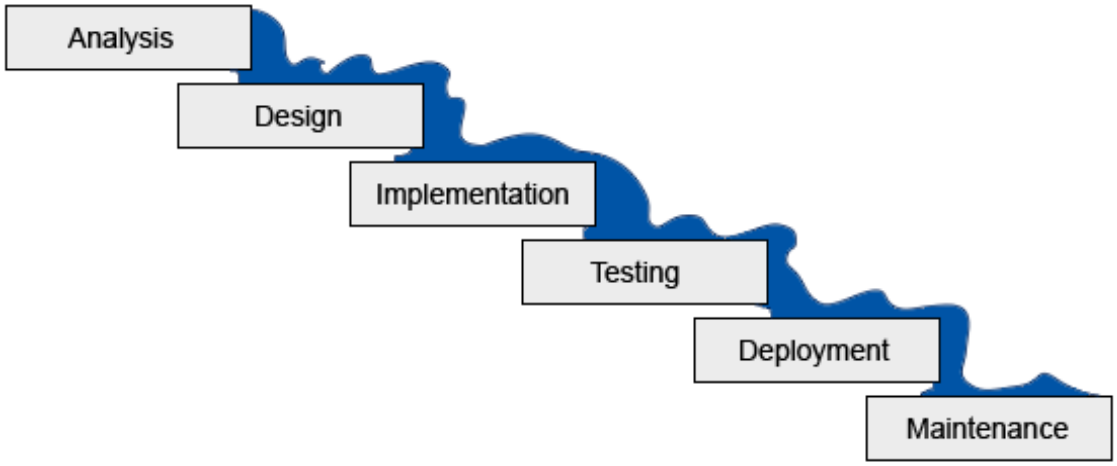

Figure 2.1: Waterfall Methodology

2.4.2: Rapid application development methodology

Rapid application development methodology (RAD) is a summarized development process that yields a high-quality system with low sending costs. In Forbes article, Scott Stainer, CEO and president of UM Technologies, said, "This RAD process allows our developers to quickly adjust to shifting requirements in a fast-paced and constantly changing market." The power to quickly adjust is what allows such a low commission cost. The rapid application development methodology contains 4 phases that is: requirements planning, user design, construction, and cutover. The user design and construction phases repeat until the user confirms that the product meets all demands. The fig. 2.2 shows rapid application development methodologies.

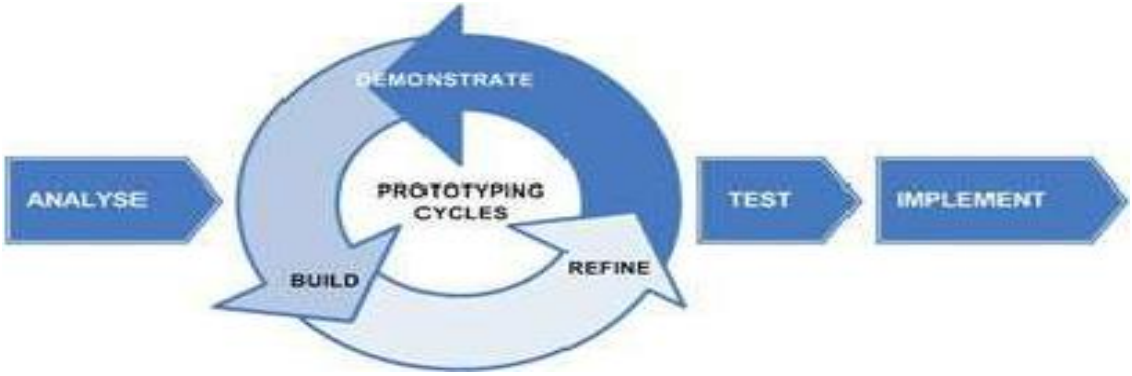

Figure 2.2: Rapid Application Development Methodology.

2.4.3: Agile development methodology (ADM)

There are many forms of the agile development methodology, along scrum, crystal, extreme programming (XP), and feature driven development (FDD). The fig. 2.3 shows agile development methodologies.

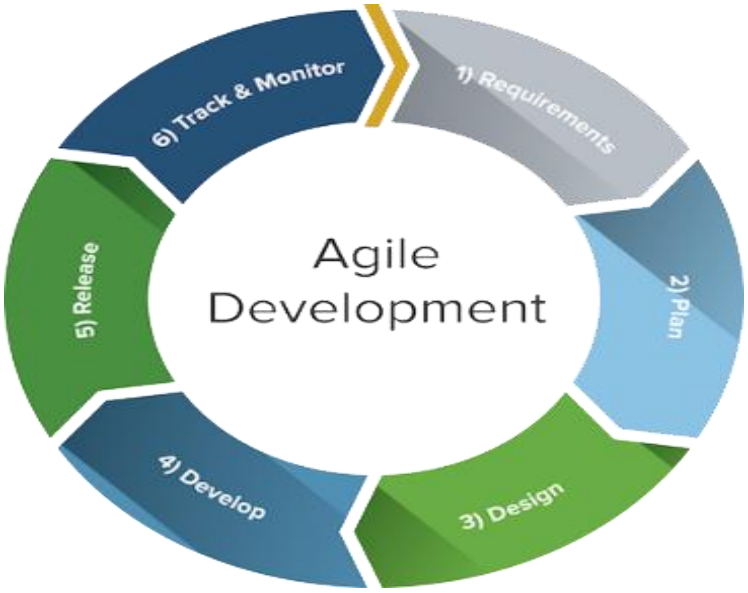

Figure: 2.3agile development Methodology

2.4.4: DevOps Development methodology

Dev Ops development is centered on organic change that improve the assistance between the departments subject for different segments of the development life cycle, such as development, quality consolation, and operations. The fig. 2.4 shows Dev Ops development methodologies.

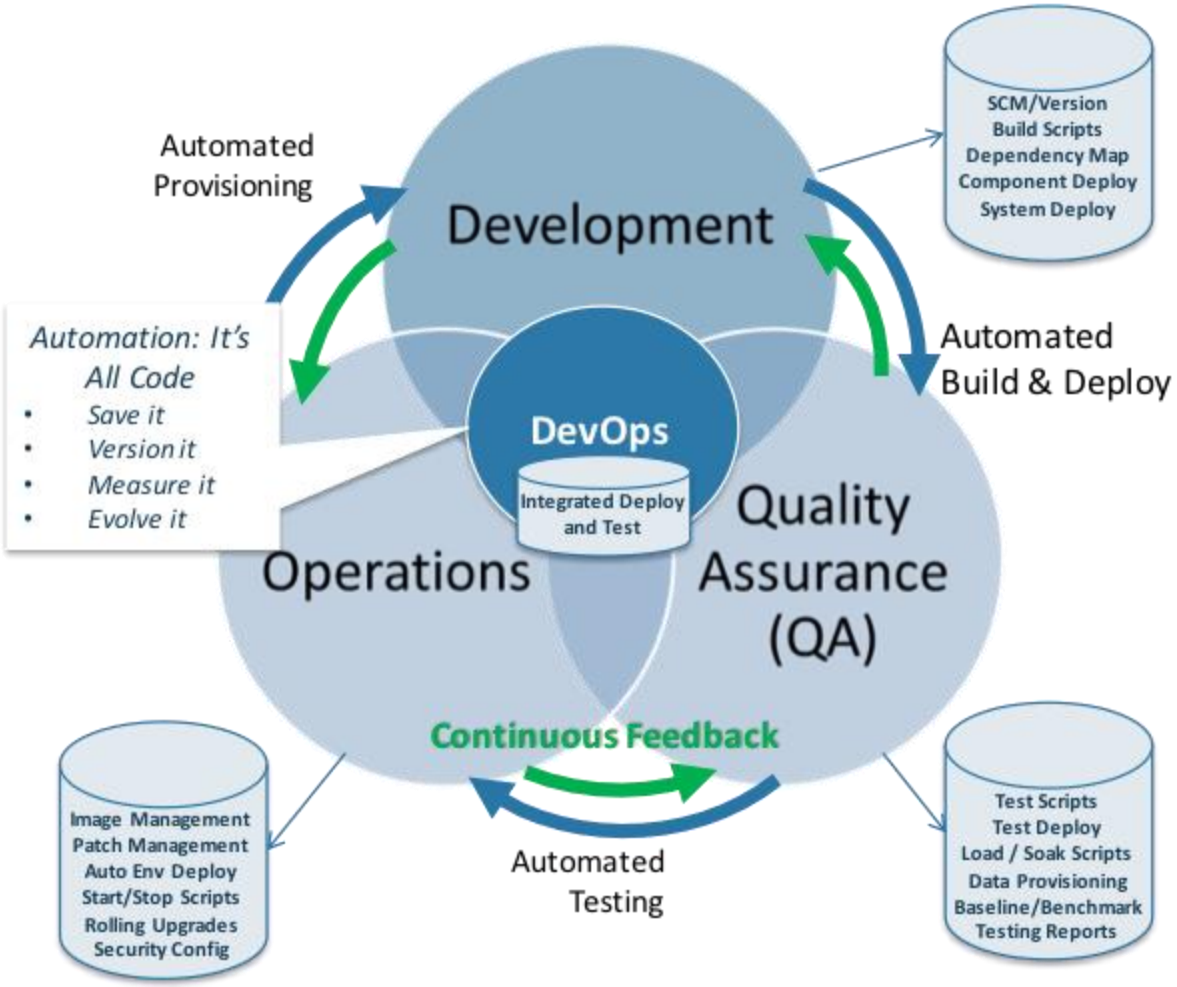

Figure: 2.4. dev Ops Methodology

2.4.5: Scrum

This methodology is limber on how little performance but the Scrum philosophy would guide a team on the part of little performance as possible. Generally a Scrum teams works co-area. Yet, there have been Scrum teams that work geographically distributed whereby team members

take part in daily meeting via speakerphone. Scrum teams are self directed and self forming teams which is shown in fig. 2.5.

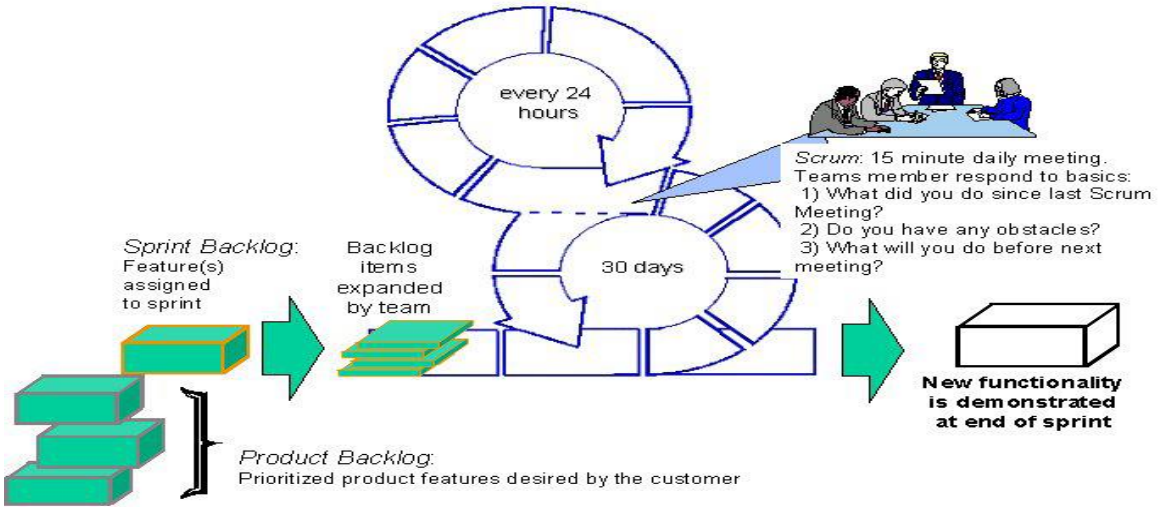

Figure: 2.5 The Scrum Process methodology

2.4.6: Extreme programming (XP)

Extreme Programming (XP) builds traced at developing a method worthy for "object-oriented projects using teams of a huge or fewer programmers in one point". This fig. 2.6 shows Extreme Programming methodologies.

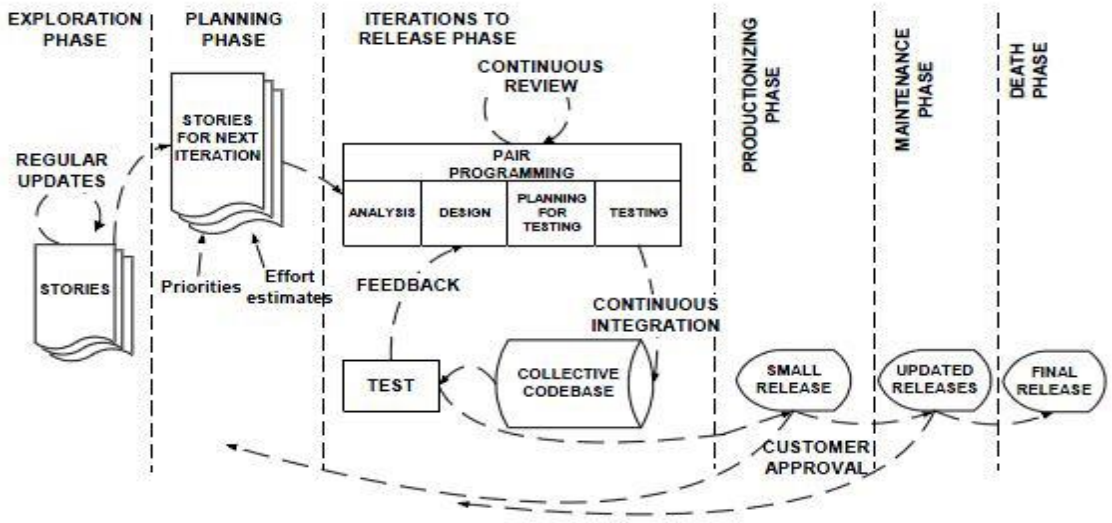

Figure: 2.6: Extreme programming process

2.5: Object of the Problem

The main focus of this research work is to primarily study on applied software development methodology on software industries in Bangladesh. A Software Development Methodology is a framework used to structure, plan, and control the process of developing an information system. In case you choose Waterfall, Iterative, Agile or some other methodology, how well you adhere to the SDM can practically condition the success or failure of a project and/or company.

2.6: Challenges

In this competitive field call for people with both industry specific skills and software development practice. There are so many factors that impact the project delivery, along the speed of technological changes and the level of competition in the world. In this topic, I am going to describe some common charge that affect specifically software project management.

2.6.1: Extremely high competition

If any software company has a good idea, chances are another company has already thought of it. The scale is extremely high both at the local and international levels, and it affects software businesses in terms of pricing, customer reach and retention, etc. PMs have to work closely with business owners and other stakeholders to identify the correct market segment and ensure the ROI of their software.

2.6.2: Old legacy systems

Software companies often spend important resources on observing and upgrading the old legacy systems. Having invested a huge of financial and open-armed resources, stakeholders become resistant and don't want to change the existing system, even when it no longer meets their needs. Instead of starting a battle and making stakeholders' more resistant, PMs should find ways to curtail their terror and convince them of all benefits a new result will bring to their business.

2.6.3: High level software expertise

When comes for software taste and hanging, the best different for business owners is innovation project managers with the related software worship. The more complex the software system is, the more exercise and the more specific skill set will be necessary for its simulacrum (e.g. think of large ERP systems).

2.6.4: Third party integration

Best companies are no longer interested in standalone solutions and look for third-party integration. Generally, it looks like implementing different systems in one project (e.g. a PM implements a financial management system with accounting and reporting modules which interface with CRM and contract management software). This puts PMs under pressure and makes them improve their practice and learn more than other software that integrates with the solution they are performance.

2.6.5: Multiple level users

All most all companies look for systems that allow various types of users – from basic users to strictly IT users. Project managers, who are responsible for the system execution, must be familiar with all types of users and know what user rights and permissions should be ascribed to each.

2.6.6: Quality testing

Every successful system execution requires numerous testing iterations to ensure that the final outcomes alien with the desired results. Project managers need to make sure all error are discovered and all things are fixed before the system goes live. This is essential to ignore additional rework and ensure customer pleasure.

CHAPTER 3

RESEARCH METHODOLOGY

3.1: Introduction

This chapter gives the road map to win the research target. This research methodology was founded on a comprehensive survey directed through structured interviews and an online survey in Software development area. Because the main thing of the study and the research is to understand usage software methodology of software industry in Bangladeshi context. To successfully conduct the thesis below steps were taken.

1. Various papers on software methodology based on Agile Method were studied, which were published.
2. Various papers and books on survey methods were studied, there more than 30 studies were identified and 25 studies were selected for the final review.
3. The key factors which are needed to understand were identified, which are: Paper Title, Abstract, Keywords list, Literature Review, Survey and so on.
4. The questions relevant to those facts were identified.
5. Desired answers were divided into quantitative and qualitative data.
6. Based on the Agile Method specially Scrum, XP and DSDM relevant questionnaires were developed.
7. The survey setup and survey conduction plan were developed.
8. Finally, a complete set of questionnaires and survey conduction plan is proposed

Which ultimately will be used to understand usage software methodology of software industry in Bangladeshi context?

3.2: Research subject and instrumentation

Look at that a survey is only as good as a question it asks, hence the questionnaire is a critical stage in the survey research method, the all question must be relevant and right in trying to capture the essence of the research things. To achieving these ends, a researcher will be required to make several decisions:

1. How should be asked?
2. How should each question be phrased?
3. In what sequence should the questions be arranged?
4. What questionnaire layout will best serve the researcher objectives?
5. How should the questionnaire be pre-tested?
6. Does the questionnaire need to be revised?

3.3: Data collection procedure

The collection of data instrument is a questionnaire. It catch questions formulated based on the research questions (main and sub-questions), literature review and the theoretical positioning presented in this study. The questions were set in a way that examines the connection between software developers and development methodology's. Collected data were quantified, for instance, with observation to time spent of development methodology on software industry in BD.

3.4: Statistical analysis

Statistical Analysis Software is SAS, and is used all around the world in approximately 118 countries to solve complex business problems. Much of the software is either menu driven or order driven. Like another programming software, SAS has its own language that can control the program during its hanging.

The occupational at Statistics Solutions are adept in Statistical Analysis Software (SAS) and have helped thousands of doctoral candidates, master's candidates and researchers and so one. You get proven techniques that produce accurate results, now and in the future. The fig. 3.1 shows statistical analysis in software methodologies.

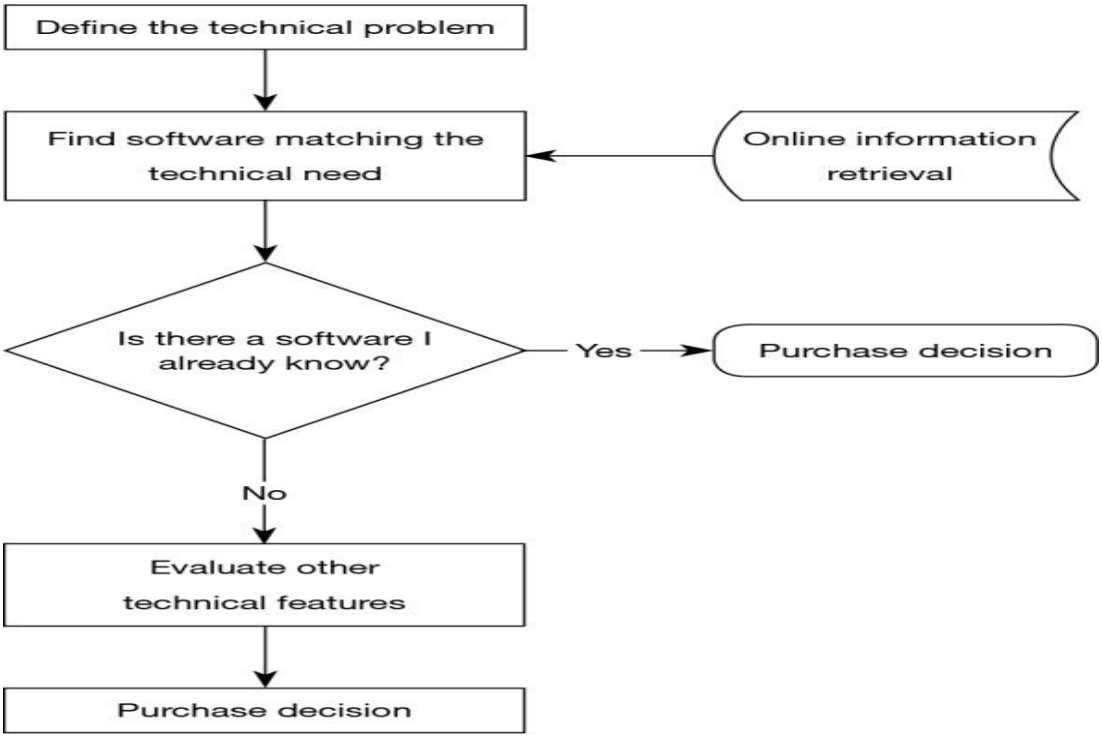

Figure 3.1: Statistical Analysis in software methodology

3.5: Reliability and validity

Protect these two aspects of a study are very important. Since reliability shows the need that a study produces results that will be affirmed consistently by subsequent same as studies, validity or trust worthiness of a study requires that the instrument applied correctly obtains the type of data that it is meant to be gathered. Researcher was given to work objectively and carefully to ensure the fact of these two aspects of research by following applicable scientific methodology. Initially, the tool was pre tested with up to 15 randomly selected software firms in Bangladesh. Doing this was viewed as a way of helping the researcher to calculate the validity of the instrument.

3.6: Research design

"A prerequisite to design a good survey instrument is deciding what is to be measured". So, a research project has some survey objectives and concepts. They are given below.

1. A survey concerns a set of objects comprising in various software firms.
2. The firms under work has one or more quantitative properties.
3. The main focus of the project is to describe the population by one or more parameters defined in terms of the quantitative properties. This may require observing as wide of the population.
4. A sample of motive is selected from the frame in conformity with a sampling design that specifies probability machinery and a sample size.
5. Watching is made on the sample in accordance with a measurement process (i.e. a measurement method and a prescription as to its use).
6. Based on the amount, a respect process is applied to compute estimates of the parameters when making conclusion from the sample to the population.
7. The general motive of the survey, as well as the main model characteristics, i.e. the focus stated.

CHAPTER 4

EXPERIMENTAL RESULTS AND DISCUSSION

4.1: Introduction

In this chapter I will cover the presentation of data analysis and purpose of survey results. The data exploration and purpose were based on the research objectives. Presentation and solution of the collected data was computed using rotation and share.

4.2: Experimental results

While to show the distribution of the respondents on the many questions. Tables and graphs were used in the section of data. The answer have same questionnaire given them the sample size of the companies was 50 respondents, while the target companies is 60.

4.3: Descriptive analysis

4.3.1: The survey objective:

Understanding the usage regarding the choice of specific agile methodology.

Table 4.1: Communicant between Research Questions and Survey Questions.

Part of questionnaire	1st	2nd	3rd	4th	5th

Survey Question	7	4	6	3	3
Research Question	5	3	6	2	3

A table is useful for identifying redundant or unnecessary questions in the questionnaire or unusual research questions. The table 4.1 shows Communicant between Research Questions and Survey Questions.

4.3.2: The Target population:

Profile of Software Industry in Bangladesh. The next step in the survey process is to define the population to be studied or the target population for the survey. The target companies or the group of persons or other units for whom the study results will apply. In Bangladesh, maximum IT companies are established after 2000-2018. While a few amount IT companies are established before 2000. A little amount of IT companies is not certified from BASIS, besides all companies are citified. Not only certified BASIS but also they follow CMMI maturity level. Table 4.2 shows "Profile" of Software Industry in Bangladesh.

Table 4.2: "Profile" of Software Industry in Bangladesh.

Serial No.	Company Name*	Address	Established Year		CMMI Level	ISO Certified	IP Maintain	BASIS Certified
			Before 2000	2000-2017				
1.	RAIT Ltd.	Dhaka		✓	Level-1	✓	Copyrights, Trade Secret Patent	✓
2.	IPCP Services	Dhaka	✓		Level-2	✓		✓

3.	MKB Technologies	Rangpur		✓	Level-3	✓	Copyrights	✓
4.	ZSI Bd.	Rangpur		✓	Level-4	✓		✓
5.	Banglalink	Dhaka	✓		Level-5	✓	Copyrights, Trade Secret	✓
6.	PCN (Pvt) Ltd.	Dhaka	✓		Level-5	✓		✓

4.3.3: The mode of administration:

Collecting specified research motive and identified the target population, the step-in the process is to determine the mode of administration for the survey. For developing the survey, two types of interviews were conveyed.

4.3.4: Face to face interview survey

Face to face interview technique implies the paper questionnaire and the presence of the interviewer. Totally,25 software companies were initially selected for the survey. There were 16 companies that responded. Only 8 of them didn't respond the survey. The fig. shows face to face interview survey.

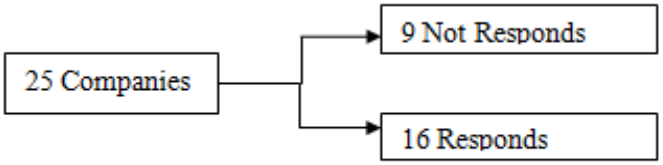

Fig. 4.1: Face-to-face interview survey

4.3.5: Online Survey (Mail & Telephone):

In this surveys paper questionnaires are sent to the answered by mail, totally 10 software companies were initially selected for the survey. There were 4 companies that responded. Only 6 of them didn't respond the survey. The fig. 4.2 shows online survey.

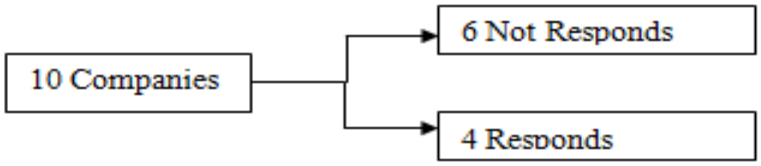

Fig. 4.2: Online Survey (Mail & Telephone)

4.4: Analysis

4.4.1: Adoption of SDM

The answered person were asked whether or not they were subsequent a Software Development Method.

Table 4.3: Adoption of SDM.

Answer	**Number**	**Percent**
Yes	13	65%
No	2	10%
We use techniques and tools, but no method.	5	25%

As displayed in Figure-4.4, 65% of the respondents are currently using and involved with Agile methodologies in their developing process. These shows that almost 3/5 of the companies are adopting Agile methodologies as a working practice. However 10% has responded that Agile

methodologies is not being used in their development process. And 25% companies are used their own techniques and tools. The fig. 4.3 and table 4.3 shows percentage of SDM.

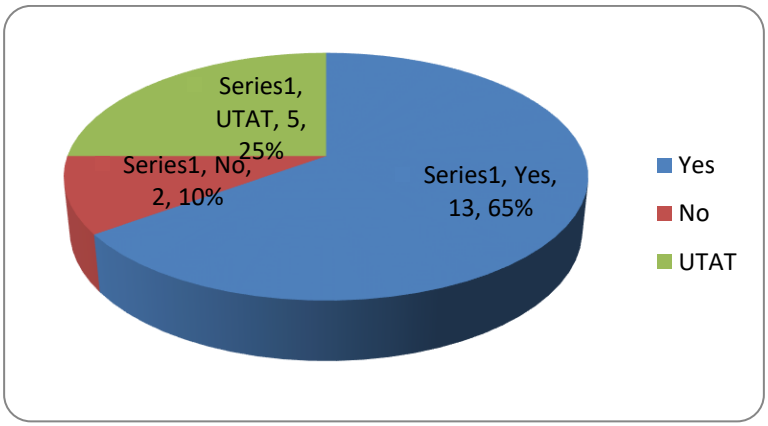

Figure 4.3: Percentage of SDM (UTAT=Use Techniques And Tools

4.4.2: Adoption of Scrum

The respondents that answered 'yes 'were then asked the questionnaire. The result is shown in table-4.2 .When visible the data of the separate practices of Scrum, the appreciated Scrum practices into the respondents that had actually used the practices were [13]: 1.Role of Product Owner 2.Customer Involvement 3.Role of Design Team 4.Team Size of SW Developers 5. Significance of Framework.

Most understood Scrum practice seemed to be the daily scrum meeting(65%) as shown in Table-4.4.They also used Burn down Chart for completing the project and divided into small group if the team size is large.

Table 4.4: Adoption of Scrum.

Scrum Activities	**No. of Responses**	**Percent**
Role of Product Owner	15	23%
Customer Involvement	12	19%
Role of Design Team	8	13%
Team Size of SW Developers	13	20%
Significance of Framework	16	25%
Total	64	100%

4.4.3 Adoption of XP

Compared with Scrum, the appreciated XP practices into the respondents that had actually applied the exercise were: 1. Role of Tracker 2. Customer Involvement 3. Role of Programmer 4. Team Size of SW Developers 5. Significance of Method as shown in Table-4.5. The most used practices of XP are the 40 h week (65%) and pair programming (67%) as shown in Table-4.5, all of which can be examined in any process methodology of software development where agile or traditional.

Table 4.5: Adoption of XP.

XP Activities	**No. of Responses**	**Percent**
Role of Tracker	1	4%
Customer Involvement	3	11%
Role of Programmer	7	26%

Team Size of SW Developers	3	11%
Significance of Method	13	48%
Total	27	100%

4.4.4 Adoption of DSDM

Table-4.6 shows, the results on fundamental activities of the DSDM development process. The appreciated DSDM examine into the respondents that had actually examined the practices were: 1.Delivery Time 2.Resource 3.Functionality.Negative experiences were reported of DSDM practices- Delivery Time (57% negative responses) and Resource (57% negative responses) as shown in Table-4.6. Because maximum respondents shared their opinion that it depends on project size.

Table 4.6: Adoption of DSDM.

DSDM Activities		**No. of Responses**	**Percent**
Delivery Time	Fixed	3	15%
Resource	Fixed	3	15%
Functionality	Changeable	14	70%
Total		20	100%

The main cause of survey decision that different types of agile methods are used in Bangladeshi IT Companies. It was found that “Scrum” was leading the way at 58%, followed by “XP” at 24% and “DSDM” at 18% as shown in Figure 4.4.

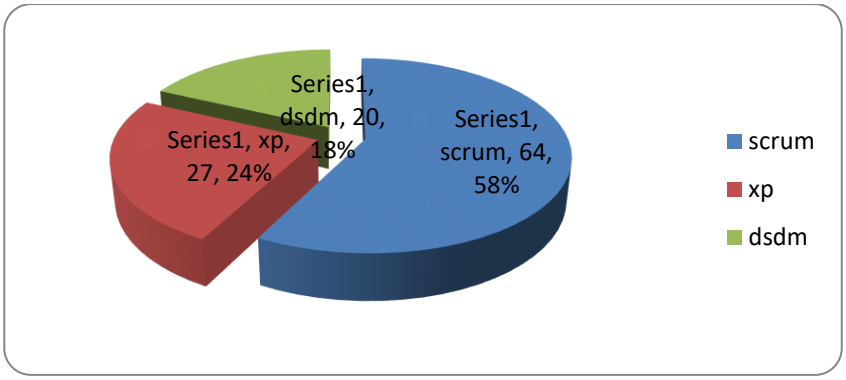

Figure 4.4: The percentages of different agile methods used by the respondents.

4.5: Summary

In this chapter I discussed about results of the survey of the results of the survey include exploration of empiric results, and also descriptive experiment, in this research questions I get huge responses that makes research to become helpful the result.

CHAPTER 5
SUMMARY OF THE STUDY, CONCLUSION AND RECOMMENDATIONS

5.1: Introduction

In this summary chapter I will discuss the noticing of the final results, conclusion and recommendation of this survey, 1st it will be discussed about major decision of each study as confirmed in the research motive, 2nd the conclusion from the noticing of the study, lastly the researchers will give hint and recommendation of this study areas for further research.

5.2: Summary of the study

When the researcher found, focused on to discuss the questions asked the defendant.

Table 5.1: Questionnaire with dataset.

Question	Dataset
Do you follow Software Development Method?	Yes=65%(13) No=10% (2) They use techniques and tools, but no method.= 25% (5)
Who gathers user stories?	a) Product owner=71%(15) b) Tracker=19%(1) c)Others=10%(2)
How about your customer involvement?	a) once and again=70%(12) b) on-site customer=18%(3) c)Others=12%(2)

Who makes the planning/design part?	a) Design team=50%(8) b) Programmer=44%(7) c) Others:=6%(1)
What is the number of software developers in the development department?	a) 1-10 =68%(13) b) 11-20=16%(3) c) 21-50=5%(1) d) 50+=11%(2)
Which is significant according to development/coding?	a) method=6%(1) b) framework=18%(3) c) all of the above=76%(13)
Do you held daily Scrum meeting?	a) Yes=65%(11) b) No=35%(6)
Do you use Burndown Chart for completing the project?	a) Yes=44%(7) b) No=56%(9)
If the team size is large, than what you do?	a) divided into small group=75%(12) b) unchangeable=25%(4)
Approximate working hour per-week.	a) 30 hours=6%(1) b) 40” =65%(11) c) 50” =12%(2) d) others:6%(3)

Do you allow pair-programming?	a) Yes=67%(10) b) No=33%(5)
According to your project, which is changeable/fixed?	a)Time(Changeable=57%(4), Fixed=43%(3))
	b) Cost(Changeable=57%(4), Fixed= 43%(3))
	c) Functionality/scope (Changeable=93%(14), Fixed =7%(1))

Table 5.2: Questionnaire with dataset for company.

Question	**Dataset**
Established Date	a)Before 2000 =15%(3) b)2000-2017 =85%(17)

What is your company/organization's main industrial section?	a) Authority b) e-commerce c) Usability, HCI d) Health and medicine sector e) IT Consultancy =80%(16) f) Financial sector =5%(1) g)Telecommunication h) Game =10%(2) i) Others =5%(1)
Please select the total number of employees in your company/organization.	a) 1-20 =45%(9) b) 21-50=40%(8) c) 51+ =15%(3)
CMMI stages maturity level:	a)Level-1(Initial) =20%(4) b)Level-2(Managed) =25%(5) c)Level-3(Defined) =30%(6) d)Level-4(Quantitatively)=20%(4) e)Level-5(Optimizing) =5%(1)
Membership of BASIS:	a)Yes =60%(12) b)No =40%(8)

5.3: Conclusion

The motive of this study was to exhibit conviction about the appliance of agile development methodologies in software industry in Bangladesh. In early discussion, agile is argued one of the most popular software model and development Methodologies. Generally, Scrum (58%), XP (24%) and DSDM (18%) are one of the most popular software model and development Methodology in Bangladesh. Anyway, actually speaking it could be argued on the basis of the results of this study that studded software development firms look to be able to apply the three agile methods, Namely Scrum, XP and DSDM and their individual examine in their projects and report fairly positive results of their application.

As explained previously, the result shows that the software industry in Bangladesh is methodological and technological. This study adds evidence not only IT Industry in Bangladesh but also the knowledge of software engineering and software process.

We accept that there are limit of research. Because there are some company policies, some firms did not want to share their information. In hindsight, we recognized that the questionnaire could have been raised. More general question on the method activities could have generated more information on this issue. Yet, although my survey report represent a most of the Bangladeshi software development area.

5.4 Recommendations and Future work

In this research, there have some possibility to future relevant to this research, which can be hope for further extensions. Now we know which methodologies are used, and to learn how to identify and alleviate some of the more specific problems they face deploying agile method. The results of my study set to understanding of how agile methodologies are being implemented in the software firms.

My finding results show that there is a positive trend to appliance software development methodology, the importance of appliance current software methodology is perceived to develop the project. It would be interesting to explore the future. My survey executes that company's

access software development methodology and that's for need to know about the usability of software development methodologies. It also would be interesting to explore the future.

The recommendations are:

1. There need to be developed their skills about software development methodology.
2. Need to establish of viable training facilities.
3. Need to improve their working environment.

There need to know about the usability of software development methodologies.

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APPENDICES

Questioner

Company/Organization Name

……..

1.Established Date:…….

Serial	Questionnaire	Option/Choice	Intimation
2..	What is your company/organization's main industrial section?	a) Business process outsource b) Internet, e-commerce c) Software Development Firm d) Health and medicine sector e) IT Consultancy f) Financial sector. g) Telecommunication h) Game	

		i) Others	
3.	Please select the total number of employees in your company/organization.	a) 1-10 b) 11-50 c) 51-250 d) Others	
4.	Company Size	a)Small b)Medium c)Large	

5.Which programming languages are you using?

	not	sometimes	average	extensively
C#				
Java				
C++				
C				
PHP				

ASP/AJAX				
Other: …				

6.Which development environments are you using?

	not	sometimes	average	extensively
Visual Studio				
Eclipse				
Net beans				
J Developer				
Dreamweaver / IT IntelliJ IDEA Ultimate				
Other: …				

7.CMMI stages maturity level:

a)Level-1(Initial) b)Level-2(Managed)

c)Level-3(Defined) d)Level-4(Quantitatively)

d)Level-5(Optimizing)

8.Example:

a)Small project name:……..……

Duration:…….…….……...

b)Large project name:……..……

Duration:…….….

9.Do you use a formal systems development method?

- Yes
- No
- We use techniques and tools, but no method.

Part-A: About Requirements Analysis			
Serial.	Questionnaire	Option/Choice	Intimation
1.1	Do you have any Requirement Analysis Team?	a) Yes b) No	

1.2	If Q-1.1 is ‘Yes’, than how many?	a) 1-5 b) 6-10 c) Others(please specify:….....)	
1.3	If Q-1.1 is ‘No’, than who analyze?	a) Development team b) Others(…….)	
1.4	Who gathers user stories?	a) Product owner(Team leader) b) Tracker (Programmer) c) Product Manager d) Others (.....)	
1.5	How about your customer involvement?	a) on-site customer b) once and again c) just once d) Others(.....)	
1.6	Do you have fixed deadlines for requirements analysis?	a) Yes b) No	
1.7	If Q-1.6 is ‘Yes’, than how long?	a) 1-5 weeks b) 6-10 ” c) Others(plz	

		specify:……)	
Part-B: About Planning/Design			
2.1	Do you held daily meeting?	a) Yes b) No	
2.2	If Q-2.1 is 'Yes', than how long?	a) 1-20 min b) 21-40 " c) 41-60 " d) Others(……...)	
2.3	If Q-2.1 is 'Yes', than what is the main purpose of this meeting?	a) Activities since last meeting b) Obstacles faced c) Activities to perform before next meeting d) All of the above	
2.4	Who makes the planning/design part?	a) Design team b) Programmer c) Others(……..)	
Part-C: About Development/Coding			
3.1	What is the number of software	a) 1-10	

	developers in the development department?	b) 11-20 c) 21-50 d) 50+	
3.2	If the team size is large, than what you do?	a) divided into small group b) unchangeable	
3.3	Which is significant according to development/coding?	a) method b) framework c) all of the above	
3.4	Approximate duration for completing the development/coding part.	a) 1 month b) 2 months c) three ” d) others(……)	
3.5	Do you allow pair-programming?	a) Yes b) No	
3.6	Approximate working hour per-week.	a) 30 hours b) 40 ” c) 50 ” d) others(…….....)	
Part-D: Testing			
4.1	Before launching a Swede you test	a) Unit Test	a) Yes

	which is mentioned?	b) System Test c) Integration Test d) Acceptance Test e) all of the above	b) No
4.2	Do you implement unit test before coding?	a) Yes b) No	
4.3	Can anyone change any part of the code at any time?	a) Yes b) No	
Part-E: Miscellaneous			
5.1	Do you use Burn down Chart for completing the project?	a) Yes b) No	
5.2	Do you allow excessive overtime?	a) Yes b) No	
5.3	According to your project, which is changeable/unchangeable?	a) Time and Cost b) Functionality/scope c) all of the above d) none of the above	