Employee performance evaluation in agile work environment

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Abstract
Agile software development is gaining popularity, with many organizations across several industries migrating to agile methodologies. Employees are the assets of any organization and it is of utmost importance for the organization’s success to make the best use of available human resources. For this, measuring job performance through performance evaluation becomes crucial.

This study aims at investigating the limitations of annual performance appraisal when applied to agile work set-up. When the shortcomings in the current appraisal process are identified, corrective measures for eliminating such gaps are listed out as an outcome of this research study with the aim of making the appraisal system more effective.

Survey and interviews are primarily used for data collection. Several important observations are noted as a result of our study. The research findings briefly highlight the good aspects of current appraisal system in the agile work set-up. However, the main focus is to illustrate the limitations in annual performance appraisal with evidence. Consequently, proposals for a better appraisal system in agile work set-up are suggested. Some of them include: need for team performance evaluation, informal and less time-consuming appraisal process, timely and anonymous feedback from all stakeholders.

Keywords: agile work environment, performance appraisal, employee evaluation, management by objectives (MBO)
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Table of Contents

Abstract ........................................................................................................................................... 2

1. Introduction.................................................................................................................................. 6
   1.1. Background .......................................................................................................................... 6
   1.2. Importance and novelty of the study ................................................................................. 8
   1.3. Problem Formulation and Purpose ................................................................................... 9
   1.4. De-Limitation .................................................................................................................... 10
   1.5. Thesis Structure ............................................................................................................... 10

2. Theoretical Framework............................................................................................................... 11
   2.1. Performance appraisal meaning and definition ............................................................... 11
   2.2. Brief history of performance appraisal with a timeline .................................................. 12
   2.3. Objectives of performance appraisal ................................................................................ 13
   2.4. Theories on Performance appraisal .................................................................................. 13
   2.5. Performance appraisal process and its effectiveness ...................................................... 17
   2.6. Hypothesis development & research questions .............................................................. 18

3. Research Methodology ............................................................................................................. 21
   3.1. Research strategy ............................................................................................................. 21
       3.1.1. Mix-Mode Research .................................................................................................... 21
   3.2. Selected Strategy ............................................................................................................. 21
   3.3. Data Collection and Sampling ......................................................................................... 21
       3.3.1. Literature Review ....................................................................................................... 22
       3.3.2. Survey Design and Respondent Profiles ................................................................. 22
       3.3.3. Interview Design and Respondent Profiles .............................................................. 24
   3.4. Ethical Considerations ...................................................................................................... 25
   3.5. Data Analysis Methods .................................................................................................... 25
       3.5.1. Qualitative Data Analysis ......................................................................................... 25
       3.5.2. Quantitative Data Analysis ...................................................................................... 25

4. Empirical Findings and Analysis............................................................................................... 26
   4.1. Testing Hypothesis 1 ......................................................................................................... 27
   4.2. Survey and Interviews Analysis for Hypothesis 2 ........................................................... 31

5. Discussion .................................................................................................................................. 37

6. Conclusion & Future Research ................................................................................................. 41

7. References ................................................................................................................................... 42

8. Appendix A: Survey & Interview Questions with Results ...................................................... 45

9. Appendix B: SPSS Correlation Table ....................................................................................... 52
List of Figures

Figure 1. Agile Methodology (SmartsheetInc, 2018) ................................................................. 7
Figure 2. Performance Appraisal Methods (Rajkumar, 2010) .................................................... 14
Figure 3. MBO Process (Rajkumar, 2010) .............................................................................. 15
Figure 4. Appraisal Flow Chart (Appraisal, 2017) ............................................................... 17
Figure 5. Job Experience ........................................................................................................ 26
Figure 6. Job Role in Agile .................................................................................................... 26
Figure 7. Agile Annual Performance Evaluation Representation in Boxplot ....................... 27
Figure 8. Annual Appraisal profile plots with experience .................................................... 28
Figure 9. Annual Appraisal Limitations .................................................................................. 29
Figure 10. Co-operation & Team Spirit .................................................................................. 30
Figure 11. Goals & Objectives with day-to-day tasks ......................................................... 31
Figure 12. Performance Appraisal System need in Agile ..................................................... 32
Figure 13. Flexible Goals ....................................................................................................... 32
Figure 14. Development vs Performance Goals ..................................................................... 33
Figure 15. Rated based on Performance Goals ..................................................................... 34
Figure 16. Anonymous feedback from peers ......................................................................... 34
Figure 17. Receiving Feedback ............................................................................................. 35
Figure 18. Informal Performance Appraisal ........................................................................... 36

List of Tables

Table 1. Survey Measurement for performance evaluation ...................................................... 24
Table 2. Overall Mean and Standard deviations results from analysis ...................................... 28
1. Introduction

Study on employee performance evaluation has been conducted by many researchers over several decades. Performance evaluation is a part and parcel of every organization for better understanding of the needs of their employee’s development. It is not only useful for the employees to support their professional growth but also for the company to evaluate the employee’s efficiency. It is in company’s interest that their employees perform well in their roles. This thesis will study the effectiveness of current performance appraisal practices from agile work environment perspective.

1.1. Background

Employee performance evaluation

Competent and knowledgeable employees are key assets in supporting organizations to keep their competitive edge in the market. Organizations use their processes and systems to efficiently manage their assets. Employee performance evaluation is one of the core responsibilities of the leaders and a critical part of the human resource management of any organization. Performance evaluation often involve processing information which could be vague, incomplete, objective and subjective (Ahmed, et al., 2013).

The core purpose of an employee evaluation is to measure job performance. It provides the opportunity to assess employee’s goals, objectives and achievements accomplished during the year. A formal review is done every year to assess the performance, initiate a discussion for the way forward and understand opportunities for growth and professional development. It’s a two-way communication aimed to motivate and inspire employees for their professional growth. Clarification of company’s objectives are presented and expectation from the employees are clearly communicated. If done effectively, it helps in the growth of both the individual and the organization and builds a strong relationship between manager and the employee (Feldman, et al., 2011) (Ahmed, et al., 2013) (Jones, 2016). Performance appraisal effectiveness has a direct connection with employee commitment. Employee’s satisfaction with performance appraisal leads to boost motivation and helps with employee retention (Kuvaas, 2006).

Agile work environment: The ability to move quickly and easily

Agile software development is based on an incremental, iterative approach. Agile methodologies have the possibility to adapt to changing requirements over time and to have continuous feedback from the end users.

Cross-functional teams work on iterations of a product over a period, and this work is organized into a backlog that is prioritized based on business or customer value. The goal of each iteration is to produce a working product (SmartsheetInc, 2018). Solutions evolve through collaboration between self-organizing, cross-functional teams utilizing the appropriate practices for their context.
Figure 1. Agile Methodology (SmartsheetInc, 2018)

**Agile Manifesto:**

In the manifesto for agile development, items listed on the left takes priority “*over*” the items on the right (SmartsheetInc, 2018):

1. Individuals and interactions *over* processes and tools
2. Working software *over* comprehensive documentation
3. Customer collaboration *over* contract negotiation
4. Responding to change *over* following a plan

**Agile Principles:**

For Agile software development, there are 12 principles outlined based on the agile manifesto (Agilemanifesto, 2001):

1) The highest priority of agile development is customer satisfaction which can be achieved through early and continuous delivery of working software.
2) Ability to adapt to changing requirements which would benefit the customer for their competitive advantage.
3) Agile methodologies provide the possibility to deliver working software at regular short intervals.
4) Management and the teams work together on a day to day basis throughout the project.
5) The projects are built around motivated individuals. All possible support is provided to make sure to get the job done successfully.
6) Most effective communication style towards the team is face-to-face discussion.
7) Progress is measured primarily in terms of working software.
8) Agile processes promote sustainable development. All stakeholders shall benefit from a constant development.
9) Focus on technical excellence and good design enhances agility.
10) It is essential to maximize the amount of trivial work that need not be done. The aim is to focus on the key work that truly brings in value.
11) The best design, architecture and requirement emerge from self-organizing teams.
12) Regular retrospectives help to identify scope for improvements to make the team more effective and efficient.
Agile work environment is an umbrella term for software development through practices based on the principles expressed in the above agile manifesto.

Some reasons why companies adopt agile:
- **Faster time to market**: This is achieved by accelerating the product delivery.
- **Efficiency**: Agile methodologies help to increase productivity.
- **Early feedback from customers**: Since product development is based on incremental, iterative approach, early feedback from customers is obtained which is crucial for the project’s success.

A flexible workstyle such as agile poses several challenges with respect to human resource practices. In particular, effectiveness of performance appraisal must be assessed as they would have a direct impact on organization's success.

### 1.2. Importance and novelty of the study

Existing research journals on performance appraisals have focused on the importance of the performance evaluation in different aspects. It has focused on the process in general not to any specific work environment.

Performance management survey conducted across more than 1000 organizations spread across 53 countries indicated that only 3% reported that their overall performance management system delivers exceptional value (Mercer LLC, 2013). The organizations surveyed varied in size and represented a wide variety of industries following both traditional and agile work methodologies. This indicates the necessity to investigate the effectiveness of staff appraisal methods in general due to continuously changing work conditions and composition of teams.

(Abbas, 2014) (Malik & Aslam, 2013) have studied performance appraisal in the perspective of Pakistan. They have focused on effectiveness and motivation in this regard. Another research paper in this subject is restricted to an individual Irish Consumer services company (Farrell, 2013).

The focus of this thesis work in exploring the shortcomings of annual performance appraisal, is important, as today industry is more and more introducing agile development techniques (Harvard Business Review Analytic Services, 2015).

Agile software development is being practised in all segments: small, mid and large cap companies. The practice rate in large scale companies are 70% (Reed, 2017).

Many of the fortune 500 companies are already using agile or in the process of transformation to agile methodology since there is a perceived 80% increased speed to market (Matarelli, 2017).

For an organization’s success, individual contribution is of utmost importance. Research on employee evaluation is important since it directly impacts the effectiveness of organizations.
adopting agile methodologies. So, it is vital to assess the performance of those individuals working in agile organization.

(Qumer & Henderson-Sellers, 2008) stressed about importance of agile compliant performance evaluation. (Kieran, et al., 2011) focused on the need for agile-compliant performance evaluation and they identified it as a challenge in the organizations adopting or using the methodology. For example, when it comes to promotion/rewards, individual’s intangible efforts (such as helping a junior developer, giving advice, helping-out in stand-ups and retrospectives) in team does not payoff. It could result in frustration and demotivation for employees. Such practices which negatively impacts performance appraisal process need to be identified and corrected.

This raises a question regarding the criteria’s selected for performance evaluation in agile work environment. Due to the rapid transformation towards agile development, this study has motivated us to further explore it with respect to modern performance evaluation techniques and what criteria should be used to make it more suitable for performance evaluation in agile environment.

This thesis would contribute to enhance the literature since it focuses on how performance appraisal can be more effective in an agile organization, which is a key aspect of human resource management.

1.3. Problem Formulation and Purpose

The traditional software development process, for example, waterfall model follows defined phases which occur in sequence (Powell-Morse, 2016). Such a structured software development methodology is often quite rigid. The core principle of agile is the ability to respond to change rather than following a fixed plan. Hence, modern performance evaluation methods which are fixed over time, might not be well suited for individual performance evaluation.

In most companies, the performance appraisal is mandatory and are often carried out on an annual basis. This wouldn’t be a concern when the tasks planned by individuals could be planned on a yearly basis. When individuals are involved in work relating to short term assignments ranging from few weeks to months, the review process shall be flexible enough to accommodate the nature of the work undertaken by the employee.

According to human resource researchers, 70% of Multi-National Companies are moving away from the outdated annual review approach to performance management (Maier, 2017). Rigidity of annual appraisals is a real concern that need to be addressed in companies adopting dynamic work style such as agile.

Delayed correction is another factor leading to the in-efficiency of annual performance appraisal. Due to annual review, employees might be heading in the wrong direction. With regular review of employee performance, timely corrective action would be possible (Maier, 2017).
In this context, a question arises on the applicability of current annual performance review system with respect to agile development methodologies.

The core purpose of this research is to propose practices for effective employee evaluation that are applicable in an agile work environment. For this, we need to try to explore the following:

1. How effective is the annual individual performance evaluation when applied to agile work environment?
2. What adaptations can be made in the performance appraisal process to suit agile work environment?

The aim is to gain further understanding of whether adaptation of current performance appraisal methods help to improve the effectiveness of performance appraisal process in an agile organization. Adaptation in this context refers to the changes necessary to make it more effective in an agile organization.

We will focus on the current practices from literature and map their applicability towards agile working environment. This thesis shall attempt to achieve its purpose by analysing the effectiveness of modern performance evaluation methods when applied in an agile organization.

**1.4. De-Limitation**

This paper will not highlight any specific technique rather it will look at an overall picture for different practices and techniques used for performance appraisal.

The outcome of this research paper would be applicable for all companies working with agile methodologies. i.e, it is not restricted to companies from a specific domain or size of the organization or designation of the individual. Having said that, it would be more valuable for companies where processes for performance appraisal are not yet streamlined.

**1.5. Thesis Structure**

The remaining chapters of this study will be structured as follows. Chapter 2 will focus on the theories and practices of current performance evaluations presented in different sources like articles, books etc. The focus will be to present all the practices and analyse them corresponding to the agile working environment to find out the applicability of such practices. After doing a careful analysis of the practices, a list of suggested practices will be presented which should be applicable in agile environment. Chapter 3 will focus on the research methodologies, research design, questionnaire design and data analysis process. Chapter 4 will present the findings of the study both from surveys and interviews. Chapter 5 will have a discussion on the findings and how they relate to previous study or theory. Chapter 6 will describe the final conclusions with suggested proposals based on the findings followed by directions for future research.
2. Theoretical Framework

In this chapter selected theory will be presented to enable an understanding of the following topics that are related to the research under study:

- Performance appraisal definition
- Objectives of performance appraisal
- Theories on Performance appraisal
- Current performance appraisal process and its effectiveness
- Hypothesis and research questions

2.1. Performance appraisal meaning and definition

Performance, in the context of human resource management refers to the degree of accomplishment of the assigned tasks. To study about employee evaluation, the foundation is to understand what performance appraisal is.

Performance appraisal is also described as merit rating since it compares the merit of one individual with others. According to Flippo, performance appraisal is “an organised, recurrent, as far as humanly possible and unbiased employee’s rating in accordance with job and potentialities for a job” (Murugan, 2017).

Wendel defined it as, “Performance appraisal and review is the formal, organised assessment of how well employees are accomplishing their jobs according to defined standards and the communication of that assessment to the employees” (Murugan, 2017).

Whereas Maurice viewed it as “attempts to distinguish and reward for personnel abilities that an individual brings to his job, measured by the extent to which his output or quality of his work exceeds the minimum that is fixed as the basic rate of pay” (Francis, u.d.).

Yoder refers it as “the formal procedure used in an organization to evaluate personalities, contributions and potentials of group members” (Rajkumar, 2010).

According to Heyel it is “the process of measuring the performance and employee qualification in terms of necessities of job for which he is employed, for the management to determine including placement, promotions, providing financial rewards and other actions which require differential treatment among the members of the group as eminent from actions affecting all members equally” (Francis, u.d.).

According to Martin Fisher, “it’s a process for establishing shared understanding about what is to be achieved, and a methodology for management and development of people in a way which increases the likelihood that it will be achieved in the short or long-term” (Francis, u.d.).

From the above definitions, following features are highlighted regarding performance appraisal:

- It is a systematic, continuous and interactive process
- Process to evaluate employee’s conformance to requirements of the job.
2.2. Brief history of performance appraisal with a timeline

Annual performance appraisal exists for a reason. While we try to evaluate the effectiveness of annual performance appraisal in agile organizations, it is important to understand the history and evolution of performance appraisal (Brooks, 2016).

**Early 1900’s: Beginning of informal performance appraisal:**

WD Scott, a US pioneer introduced rating of the ability of workers prior to World War 1. It is widely believed that this was the introduction of the concept of performance appraisal. Although possibly the earliest documented use of performance appraisals, WD Scott’s system was not a widely-recognised concept, and it wasn’t until around mid-century that more formal appraisal systems became implemented by a large number of businesses (Brooks, 2016).

**1950s: Introduction of formal performance appraisal system:**

By the beginning of 1950’s performance management started to become popular. Mostly companies in the United States and United Kingdom started adopting merit rating for employees by 1950. By the mid 1950’s companies started using personality-based systems for formal performance appraisals. However, by the end of that decade, there were some dissent since the personality-based systems introduced bias and it monitored the person’s inherited personality rather than performance (Brooks, 2016).

**1960s: Measuring Objectives & Goals**

Concept of self-appraisal evolved by 1960’s and the appraisal system started to focus on what the individual might be able to achieve in future. This is done by setting goals and objectives so that the individuals aim to achieve them in future. 1960’s marks an important period in the history of performance appraisal since it is the beginning of management by objectives which is still in practice today (Brooks, 2016).

**1970s: Finding Flaws**

During 1970’s, a lot of criticism started to surround performance evaluation mainly due to opinion-based approach for appraisals. On the positive side, result-oriented performance appraisal emerged during 1970’s. As the 1970s progressed, many companies started including a lot more psychometrics and rating scales (Brooks, 2016).

**1980s – Early 2000s: Holistic Measures**

During this period, companies started to focus on other factors such as employee motivation, engagement, communication, learning, team-work etc in addition to result-based approach. This resulted in having a more holistic approach to performance appraisal. Such an approach is still valid in today’s modern appraisal methods (Brooks, 2016).

**2010 onwards: Modern Day Performance Management**

In recent times, performance appraisal has evolved with many companies adopting SMART technique and opting out of hierarchical approach instead giving importance to mutual feedback, peer feedback etc. Multiple sources of feedback input were sought out for evaluating employee performance. This paved way for introduction of modern appraisal technique commonly known as 360-degree feedback (Brooks, 2016).
Our basis for this thesis is that this evolution of performance appraisal should not stop. This needs more refining with the introduction of agile ways of working. We believe the appraisal process is set to evolve further when more and more companies adopt agile ways of working.

2.3. Objectives of performance appraisal
There can be two viewpoints regarding the objectives of performance appraisal (Rajkumar, 2010).

Individual viewpoint:
- To get an understanding of expectation from the organization.
- To get clarity on the tasks that need to be accomplished.
- To get feedback on the job done.
- To understand the scope of improvement.

Organizational viewpoint:
- To clarify responsibilities of individuals.
- To measure and improve performance.
- To create accountability among employees.
- To provide feedback and to identify training needs.
- To reward employees based on performance.
- To improve organizational effectiveness by mapping individual goals to organizational goals.

Effectiveness of performance appraisal is dependent on the fulfilment of the above listed objectives.

2.4. Theories on Performance appraisal
Several theories exist about performance appraisal. This research shall explore more about Goal setting theory.

Goal-setting theory:
A goal is the aim of an action or task that a person consciously desires to achieve or obtain (Latham, 2002). Locke identified five elements that needs to be considered for one to achieve the set goals (Locke & Lotham, 1979).

1. Clarity: It should be clear, specific.
2. Challenge: The goal should be challenging so that one could work towards achieving it. It should not be impossible and at the same time, it should not be too easy either.
3. Commitment: Individuals must be committed to achieving the set goals.
4. Feedback: It is important to share feedback on the progress.
5. Complexity: If the goal is too complex, it shall be broken down into smaller goals which are less complex.

Another researcher, Latham, studied the effect of goal setting in the workplace. It was found that goals affect performance through four mechanisms (Latham, 2002).
1. Goals serve as a directive function: It directs the individuals’ attention towards accomplishment of the set goals.
2. Goals serve as an energizing function: It helps to vitalizes individuals’ energy and focus towards the objectives.
3. Goals affect persistence: tougher goals lead individuals to spend more time and effort on accomplishing it.
4. Goals affect action: It helps to apply all the skills and learnings and put into action so there is a measurable outcome.

The core message of this theory is that specific and difficult goals combined with proper feedback, lead to higher performance.

The above theory on performance appraisal shall by further analysed in this thesis. The success of goal-setting has even lead to the development of even more specific procedures and applications of goal setting, such as Management by Objectives (MBO).

Performance appraisal methods are evolved based on several performance appraisal theories including goal setting theory.

Performance appraisal methods are broadly classified into two categories (Rajkumar, 2010):

- Traditional methods
- Modern methods.

![Figure 2. Performance Appraisal Methods (Rajkumar, 2010)](image)

One of the most common modern methods of performance evaluation that is applicable in current times is: Management by Objectives.
Peter Drucker conceptualized MBO in 1954. Management by objective is a process where employee and manager sit together to plan the goals for the employee’s. After a certain time-period, manager evaluates the performance of the employee based on the accomplishment of defined goals.

This is a participative style of goal setting where the essence is to determine joint objectives and to provide feedback on the accomplishments. According to this model, setting a challenging goal is an enabler and a motivator for employees to perform better.

**Steps involved in MBO process:**

![MBO Process](image)

Figure 3. MBO Process (Rajkumar, 2010)

The first step is to determine organizational objectives. Once it is established, the next step is to communicate organizational objectives to employees. Kenneth Blanchard and Spencer Johnson helped to evolve the goal setting theory from academics to practical application into the area of management and leadership. The mnemonic SMART goals were coined which originally denoted Specific and Measurable, Motivating, Attainable, Relevant and Track-able (Ken Blanchard, 1985). Over time, the acronym has changed to denote: Specific, Measurable, Assignable, Realistic, and Time-Related.

The idea is to stimulate the participation of employees in the determining of objectives. Once it is done, it shall be monitored for progress. Then the results are evaluated, and employees are rewarded for their achievements.

According to (Cappelli & Conyon, 2017) (Anon., 2017), SMART technique is successfully used among many companies for objective based performance appraisals. Managers are
invigorated towards setting goals and performance standards in the beginning of each appraisal cycle.

Rodgers and Hunter (Hunter, 1991) concluded that MBO programmes (a specific approach to performance appraisal and management), when properly implemented and when supported by top management, had an almost universal positive effect on productivity.

The key difference between Locke’s goal-setting theory and MBO principle is that MBO does not allow management to determine the objectives by themselves. The objectives are decided based on acceptance from both employees and management. Per goal setting theory, employee is told what needs to be done. In practice, both styles co-exist in today’s companies. i.e., most companies follow a hybrid approach of different available techniques and provide annual performance rating for the employee’s performance.

Despite its popularity, MBO is not exempt from critics. Deming sees MBO as “an attempt to manage without knowledge of what to do” (Baudin, 2012).

Edwards Deming in his book “Out of the Crisis” outlines 14-point management philosophy to improve a company’s effectiveness. (Deming, 2000) Advocates to eliminate the practice of management by objectives. He encourages organizations to abandon objectives in favour of leadership. According to him, a leader with an understanding of systems was more likely to guide workers to an appropriate solution than the incentive of an objective.

When implementing MBO, it is common to set goals on an annual basis. This may not be ideal in agile work style when the tasks undertaken are for shorter sprints and not planned for a year ahead. Psychologist, Rodney Brim's highlighted the following weaknesses with regards to MBO (Rodney Brim, 2004):

1. Under MBO, the emphasis is on goal setting rather than on working a plan. It is common that people set goals but fail to follow them through completion.
2. MBO, underestimates the environmental factors, including availability of resources and the crucial role of management participation.
3. Inadequate attention to unforeseeable changes or emergencies sometimes make objectives irrelevant.
4. Human nature is neglected in the MBO process.

Another notable limitation to MBO is that it could develop conflicting objectives. In Agile organization, conflicting of objectives are dangerous as it is counterproductive for the team’s progress.
2.5. Performance appraisal process and its effectiveness

Common performance evaluation process followed in most companies:

The above flowchart is applicable to the modern methods of performance appraisal in practice today. In a nut-shell, almost every company has a template or an evaluation form which the employee is expected to fill in. This is where the goals and objectives for that year is set by the employee. In addition to employee’s input, manager/supervisor communicates their expectation towards the employee. There is a discussion and eventually an agreement on the plan for the coming year. Different companies have different mechanism and frequency for sharing feedback. At the end of the year, it will be time for self-evaluation from the employee, followed by an evaluation from the manager. This is where the performance rating is set by the manager and communicated to the employee.

Time after time, the effectiveness of the performance appraisal system is questioned. This is mainly due to the following characteristics of the evaluation process (Appraisal, 2017):

**Transparency**

Individual performance evaluation is not transparent, open and collaborative. Reason is that sensitive information is being discussed in performance evaluation process. Since it is closed approach, team members will be unaware of other’s goals and objectives. So, it could be difficult to work together cohesively as a team (Appraisal, 2017).

**Hierarchical Judgement**
Irrespective of the self-evaluation, individuals are always rated upon by the managers. This could lead to partiality depending on manager’s preferences of one individual over other (Appraisal, 2017).

**Performance Appraisals are Annual**

Annual appraisal system is perceived to not have a close link with the day to day tasks undertaken by the individuals. There is a disconnection between their regular work and the yearly goals and objectives (Appraisal, 2017).

**Individual focus**

Since the individuals are rated, we could say that the whole process is individual focused rather than team focus (Appraisal, 2017).

Farrell highlights that the main reason for the ineffectiveness performance appraisal is because both supervisors and subordinates dislike the whole process (Farrell, 2013).

Choi’s report asserts that performance appraisal process could be detrimental mainly because of the following two problems (Long, et al., 2013):

1. **Employee satisfaction:** A poorly executed performance evaluation could lead to employee dissatisfaction and frustration. This would contribute negatively for the growth of the individual and the organization.

2. **Perceived fairness:** Fairness of the process is crucial for the success of performance appraisal. If employee perceives that the evaluation is unfair, it can potentially damage the relationship with the manager, affect employee’s morale and have other negative consequences. (Prather, 2010)

It is mainly due to these shortcomings, we intend to study the proposals for effective performance appraisal system in agile work environment. It is worth noting that in recent times, less structured “non-traditional” appraisal systems are getting popular. These systems have less emphasis on ratings or rankings. Instead, it has more focus on developmental aspects of the individual.

DeNisi and Pritchard suggest that frequent appraisal and feedback help to improve the motivation of employees thereby having a positive impact on their performance. Since conducting more than one performance appraisal per year is less than likely, the suggestion was to integrate informal appraisal and feedback as an integral part of the system (Pritchard, 2006).

### 2.6. Hypothesis development & research questions

The theories and methods of performance appraisal have been constantly evolving as and when the ways of working changes. So, with agile ways of working, it is important to understand effective ways of measuring individual performance.
Agile ways of working are a complete transformation compared to the traditional ways. There is not much literature review available when it relates to performance evaluation in agile work environment. This is precisely the reason why we chose to explore this area further.

The aim is to address an important gap about performance evaluation in agile work environment i.e., will the current performance evaluation process work effectively when the ways of working change?

The research questions –

1. How effective is the annual individual performance evaluation when applied to agile work environment?
2. What adaptations can be made in the performance appraisal process to suite agile work environment?

are going to be further supported by the following research hypothesis:

**H1:** The current practices of annual performance appraisal have shortcomings which contributes to ineffectiveness when applied to agile work environment.

**H2:** To meet the objectives of performance appraisal and to make it more efficient, the current appraisal process need to be modified to adapt to agile methodologies.

The above proposed research questions and hypothesis were constructed after a thorough literature review performed during this thesis work and summarized in the previous sections of this chapter.

When we talk about agile, it’s a collective effort by individuals to complete a common goal. i.e., the focus is on the team and not on the individuals. The responsibility of the individual is to actively collaborate with the team and contribute for the team’s objectives. It is important to note that the primary focus is on the team performance and not the individual’s.

Taking an overview, it feels assessing individual’s might be “anti-agile”. Because in this case, the focus shifts to individual instead of the team. But, if there are no individual assessment, then the challenge is to establish a process to differentiate high performers and mediocre performers.

One option could be to appraise the teams instead of the individual. However, appraising teams has its own challenges:

a. Comparing two different team’s might be unfair since the tasks undertaken by them are not identical. For example: one team that are responsible for a complex work package might not complete the work undertaken by them. While a team responsible for an easier task might complete the work ahead with quality and ahead of time. In such a scenario, what metrics could be used to evaluate the teams? If the teams are not estimating, developing, testing and tracking the same work items, theoretically, it is not appropriate to compare the performance of teams.
b. Assessing the teams, might draw conflict between the teams and could affect the morale of the teams negatively.

C. Most companies follow pay for performance model. If teams are appraised, would it mean a team-related distribution of salary system?

A proposal would be that teams could appraise themselves every retrospective. This would enable to identify team’s capabilities and scope for improvement in future.
3. Research Methodology

3.1. Research strategy

According to Creswell, “the researcher brings to the choice of a research design assumptions about knowledge claims. In addition, operating at a more applied level are strategies of inquiry that provides specific direction for procedures in a research design” (W.Creswell, 2014). Another way to define it as “general plan of how the researcher will go about answering the research questions” (Saunders, et al., 2009). Following are the selected research strategies which are used for the study according to research requirement.

- **Interviews** are considered to be highly flexible and it could be formal or informal based on the required outcome. Interviews are carried out in three types: structured, semi-structured and un-structured. Predetermined questions set are used with strict format and sequence in structured interviews. Whereas in un-structured, it might start with few questions but later can have deeper understanding based on interviewee’s response (Mack, et al., 2011).

- **Surveys** are used to analyse a sample data from a population focusing on the cross-sectional and longitudinal studies. They are conducted either based on questionnaires or structured interviews (W.Creswell, 2014).

These research strategies can be divided into three main approaches, qualitative, quantitative and mix-mode approach.

3.1.1. Mix-Mode Research

Mix-mode approach as name suggests uses a mix of both qualitative and quantitative approaches. The basis in this approach starts from the realistic grounds and for better understanding of the problem, data collection is done either instantaneously or sequentially. The data collection process aims for both numeric and textual essence for coping both qualitative and quantitative representations (W.Creswell, 2014).

3.2. Selected Strategy

For achieving our research goals, we have selected a mix-mode approach to have a deep understanding of the problem. By using the concurrent triangulation, data collection will be done at the same time for surveys and interviews.

3.3. Data Collection and Sampling

Current performance appraisal techniques will be studied from agile environment perspective. For this study around 10 software and telecommunication companies in Sweden are selected where agile is being practiced. All the respondents for interviews and survey’s will be fully working in agile environment. According to Saunders (Saunders, et al., 2009), for a multi-method approach, it’s wise to have questionnaire for data collection. That’s the main strategy to get more in depth and relevant data for agile practitioners. We aim to spread the questionnaire to selected companies for the accuracy of the data instead of spreading it across different networks like social media, online-portal etc.
The overall sample size was targeted to 150 with a focus on targeting the right people to get accurate information. This will be achieved by using the single-staged sampling procedure (W. Creswell, 2014) where agile organizations are selected. Later individual’s respondent profiles from the organizations are selected based on their working experience in agile environment. We used cluster technique for respondent’s selection based on job role perspective (team member, scrum master, product owner and manager). We will try to stay on topic by asking the right questions related to performance appraisals in both surveys and interviews. In surveys, we will primarily use close ended questions whereas, Interviews will begin with close ended questions followed by open ended ones where detailed information will be extracted. After gathering all the data, it will be processed according to research questions for finding the relevant information. Later SPSS will be used for further analysis of the data.

3.3.1. Literature Review
The research begins with the understanding of the current practices of performance appraisal. Different methods and techniques which are used in current performance appraisal were studied to understand how and when they are used. Research questions from section 2.6 were used to explore the study.

3.3.2. Survey Design and Respondent Profiles
Surveys will mainly focus on questions to identify the effectiveness of current annual performance appraisal techniques/methods. It will also focus on proposals for better performance appraisal in agile environment. Survey respondents will be mainly working in agile environment and will include:

- **Team members** (Agile team members): Individuals in the team are the key ones who works on the tasks and are appraised on their performance. The rationale for selection is to have a view of how and when they are individually appraised in agile team.

- **Scrum Master**: Scrum master is the expediter or motivator of the team by keeping track of agile practices. Also making sure to solve the obstructions that come around the team and making sure the teams doesn’t overcommit. From scrum master’s view, we would like to observe how he/she views performance appraisal.

- **Manager (Immediate)**: Manager’s perspective on how they evaluate an employee who is working in agile environment as compared to the employee who don’t work with agile practices. It will be useful to understand what factors are used for the performance evaluation.

- **Product Owner**: As product owners are the soul of the project for managing all the task’s requirements and backlog. To have an idea of how he/she evaluates performance of individuals or team.

An online survey questionnaire, hosted by Survey Planet (www.surveyplanet.com) was used to gather and organize data from respondents. An organized and standardized survey was provided to all respondents with same questions ordered via a link through email. By doing so, any unintentional bias in distributing survey is eliminated. The respondents are informed about the full anonymity of the survey (Yin, 2014). The first section of the survey questionnaire (Appendix A: Survey & Interview Questions) Q1 till Q4, comprises of demographics data.
which includes age, gender, experience, and role. Experience and role were used to further analyse the data trends to see how it could impact the overall thinking about performance evaluation. The second part from Q5 till Q18, focuses on the effectiveness of annual performance appraisal in agile whereas from Q19 till Q26 focuses on need for performance evaluation system in agile teams. All the questions were closed-ended except last question about getting more information from respondents regarding performance evaluation in agile. All the closed-ended questions were given the options to choose from “Strongly disagree” to “Strongly agree”.

According to good practices of (KELLEY, et al., 2003), survey questionnaire was piloted with few members to have a better understanding to avoid any ambiguities in instructions and questions. Adjustments were adopted according to the responses from pilot respondents. To achieve high response rate, the survey was kept open for 3 weeks and a reminder was sent every week to get timely response.

Survey questionnaire:

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Measurement</th>
<th>Source of previous research</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Annual performance appraisal system has limitations and there are scope for improvements.*</td>
<td>(OTHMAN, 2014)</td>
</tr>
<tr>
<td>6</td>
<td>Annual performance appraisal helps to improve job performance.*</td>
<td>(Owusu-Boateng, 2014)</td>
</tr>
<tr>
<td>7</td>
<td>Performance appraisal process encourages co-operation &amp; team spirit.*</td>
<td>(Dechev, 2010)</td>
</tr>
<tr>
<td>8</td>
<td>Performance appraisal process supports the company’s strategy.*</td>
<td>(Dechev, 2010)</td>
</tr>
<tr>
<td>9</td>
<td>I clearly understand the purpose of performance appraisal.*</td>
<td>(Farrell, 2013)</td>
</tr>
<tr>
<td>10</td>
<td>Performance appraisal provides opportunity to better understand what I should be doing.*</td>
<td>(Farrell, 2013)</td>
</tr>
<tr>
<td>11</td>
<td>The appraisals facilitate growth and learning.*</td>
<td>Own question (no reference to previous research paper available)</td>
</tr>
<tr>
<td>12</td>
<td>I feel more motivated after performance appraisal.*</td>
<td>(Farrell, 2013)</td>
</tr>
<tr>
<td>13</td>
<td>Performance appraisal helps people set and achieve meaningful goals.*</td>
<td>Own question (no reference to previous research paper available)</td>
</tr>
<tr>
<td>14</td>
<td>Performance goals are clearly defined in the appraisal process.*</td>
<td>Own question (no reference to previous research paper available)</td>
</tr>
<tr>
<td>15</td>
<td>The goals and objectives has direct link to my day to day tasks.*</td>
<td>Own question (no reference to previous research paper available)</td>
</tr>
<tr>
<td>16</td>
<td>Progress towards goals are reviewed at regular intervals.*</td>
<td>Own question (no reference to previous research paper available)</td>
</tr>
</tbody>
</table>
17 Performance appraisal process facilitates regular feedback regarding my performance.* 

18 The appraisal data are used as inputs for recognition and encouragement of high performers.* 

19 Performance appraisal system is needed in an Agile organization.* 

20 Goals shall be flexible depending on the business needs.* 

21 Individuals shall only have development goals and not performance goals.* 

22 Teams shall have performance goals and rated based on the performance.* 

23 I prefer anonymous feedback from peers, supervisor, or senior leadership.* 

24 How often do you like to receive feedback on goals?* 

25 I prefer informal (less time consuming and dynamic) performance appraisal.* 

26 Do you have any suggestions for improving performance appraisal in an Agile work environment?* 

Table 1. Survey Measurement for performance evaluation

For hypothesis 1 testing, questions 5-18 were used in statistical analysis as well as analysed independently. The main purpose of analysing independently is to observe if we are getting different results in both analysis for hypothesis 1. For hypothesis 2, survey questions 19-26 were used for identifying the correlation between annual appraisal (category for statistical analysis from questions 5-18) and agile complaint performance appraisal (questions 19-26).

3.3.3. Interview Design and Respondent Profiles

There were focused interviews as well which were began with some basic questions about respondents, followed by further questions to extract information pertaining to performance appraisal in agile environment. Focus of the interviews was to obtain an in-depth view about performance appraisal in agile work setup. Therefore, managers were primarily chosen for conducting the interviews.

Apart from the closed-ended questions, few open-ended questions were selected to have a deep insight about performance evaluation. Same questions were asked to all the interviewee’s and where the permission of the interviewee was sought, such interviews were recorded for transcribing the interviewee’s responses. Each interview took about 30 – 45 minutes.
3.4. Ethical Considerations
Ethical considerations should be considered while involving individuals in the study (Yin, 2014).

All participants in this study were informed by our contact person in the chosen company and were briefed about the aim of the study. The participation in the survey was on voluntarily basis and no participants were forced to attempt the survey. The survey was hosted online, and it was fully anonymous, no personal data was collected like name, email address etc. Even demographics questions (age, experience, gender and job role) were not mandatory.

3.5. Data Analysis Methods
The data gained from survey and interviews is filtered out to get the useful information to support the research questions and hypothesis which were presented in section 2.5. The choice of the empirical methods was considered by the theory presented in Chapter 2, where we aimed to have a performance evaluation based on agile development environment. The data was analyzed to gain the understanding of annual and agile performance evaluation.

3.5.1. Qualitative Data Analysis
Qualitative data is gathered through face to face interviews and data screening is done by using a three-step process. The data screening process starts with cleaning and organizing of the data. Then, a suitable interpretation of the data is needed to understand it in a better way. In third step, the findings will be mapped with theories defined in chapter 2 with respect to agile working environment (Yin, 2014).

3.5.2. Quantitative Data Analysis
According to (Christensen, 2007), after getting the quantitative data, it should be coded in a suitable numerical form for further statistical analysis. After the survey was closed, individual responses were collected in an Excel file. All the close ended questions were coded in numerical format for further analysis on the data. The survey was spread to 150 people, out of which 102 people have responded to survey which gave us overall 68% response rate. Questions were categorized mainly for annual appraisal in agile which were analyzed with demographic questions using SPSS through descriptive statistics by having mean and standard deviation. There were no visible outliers found in data.
4. Empirical Findings and Analysis
This chapter explains the analysis of the data collected from survey and interviews.

Experience and Job Role descriptive statistics
Figure.5 and Figure.6 shows the descriptive statistics of experience and job role.

Figure 5. Job Experience
From the job experience figure 5, people have dispersed years of experience. The minimum number of respondents are 19 with less experience (individuals with 0-5 years of experience) and 35 respondents have 6-10 years of experience. Whereas respondents with 11-15 and 16 or more years of experience are 20 and 27 respectively.

Figure 6. Job Role in Agile
For job role (Figure 6), majority of respondents work as Team member (Developer or Test Engineer) which represents almost 61% of the population. The lowest population was for product owners and scrum master/manager have 17 and 16 respondents respectively.

In Figure 7, all survey questions related to “Hypothesis 1” are plotted to show the respondents responses. From these boxplots, it also visible that there were no visible outliers in the data. The average response for each question is represented by a red line.

4.1. Testing Hypothesis 1

Data analysis was done by using the “Anova (4*4)” using two factor variables, to investigate the effectiveness of the annual performance evaluation in agile work environment. The survey questions starting from Q5 till Q18 were used to investigate hypothesis 1. All these questions were categorized and named as “Annual Appraisal”. In analysis, “Annual Appraisal” is used as the dependent variable along with factor variables (experience and job role). Each factor variable has 4 levels. Below table provides the information of analysis for all the questions included in this category with experience and job role with mean and standard deviation.
<table>
<thead>
<tr>
<th>Experience</th>
<th>Team Member</th>
<th>Scrum Master</th>
<th>Product Owner</th>
<th>Manager</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>2.61 (0.67)</td>
<td>2.75 (0.35)</td>
<td>.</td>
<td>.</td>
<td>2.63 (0.64)</td>
</tr>
<tr>
<td>6-10</td>
<td>2.80 (0.59)</td>
<td>2.31 (0.59)</td>
<td>3.00</td>
<td>3.00</td>
<td>2.70 (0.61)</td>
</tr>
<tr>
<td>11-15</td>
<td>2.88 (0.36)</td>
<td>2.25 (1.06)</td>
<td>2.33 (0.58)</td>
<td>2.00</td>
<td>2.65 (0.54)</td>
</tr>
<tr>
<td>16+</td>
<td>2.50 (0.50)</td>
<td>2.50 (0.41)</td>
<td>3.20 (0.76)</td>
<td>2.88</td>
<td>2.76 (0.54)</td>
</tr>
<tr>
<td>Total</td>
<td>2.73 (0.57)</td>
<td>2.41 (0.55)</td>
<td>2.78 (0.70)</td>
<td>2.78</td>
<td>2.78 (0.55)</td>
</tr>
</tbody>
</table>

Table 2. Overall Mean and Standard deviations results from analysis

From the results, there is no significance found for proving Hypothesis 1. The main effect for experience was not significant with $f(3, 87) = 1.40, p = .24, \eta^2_p (partial eta square) = .05$, Observed power = 0.36. Whereas the main effect for the job role was also not significant with $f(3, 87) = .87, p = .46, \eta^2_p (partial eta square) = .03$, Observed power = 0.23. We can also observe interaction effect between experience and job role is also not significant $f(7, 87) = 1.60, p = .15, \eta^2_p (partial eta square) = .11$, Observed power = 0.63. Figure.8 and Figure.9 shows graphical representation of both factors.

Figure 8. Annual Appraisal profile plots with experience
After statistical analysis, survey results (Questions 5-18) were individually analyzed. It is important to note that limitations in the annual appraisal system are not directly quantifiable. So, the opinions of the respondents are carefully analyzed to point out the shortcomings in the appraisal system. Some interesting findings from the individual questions analysis related to effectiveness, help to highlight the gaps in annual performance appraisal.

Majority of the respondents (70%) feel that annual performance appraisal is not effective in agile environment and has limitations (Figure 9). While 30% feel that it’s somehow coping with the agile environment. This result is in accordance with the theoretical findings highlighted in section 2.5 about the performance appraisal effectiveness. An ineffective appraisal process means, that the objectives specified in section 2.4 are not fulfilled.
The survey results show that annual performance appraisal doesn’t encourage team spirit (Figure 10) and there is a lack of cooperation between teams. Majority (57%) of the respondents feel that way, while 43% are against it. A main characteristic of annual appraisal is its individual focus (Appraisal, 2017). The above survey result is in-line with the theoretical view highlighted in section 2.5 about the nature of performance appraisal that, more emphasis is given to individual evaluation and not team evaluation. Due to this, it is possible that the team’s productivity could be impacted. One of the limitation of MBO as highlighted in section 2.4 is that, conflicting individual objectives could be detrimental to team’s progress. The survey results also indicate the same view.
Another interesting fact (Figure 11) that there is a disconnection between goals and objectives with day-to-day tasks. About 63% respondents agreed that there is a disconnection while 37% believe otherwise.

(Rodney Brim, 2004) suggested that inadequate attention to unforeseeable changes sometimes make objectives irrelevant. Agile methodologies embrace frequent changes to requirements. So, setting objectives on an annual basis makes it obsolete.

As highlighted in section 2.5, above survey result re-confirms that there is a disconnection between employee’s regular work and the yearly goals and objectives.

4.2. Survey and Interviews Analysis for Hypothesis 2
Survey Findings: The main questions aimed at testing hypothesis 2 were Q19 till Q26 in the survey.
Considering the benefits of performance appraisal, majority of the respondents (76.5%) believe that it is necessary to have performance appraisal in agile organization (Figure 12).

Figure 12. Performance Appraisal System need in Agile

Figure 13. Flexible Goals
There is almost a unanimous view (90.2%) that the goals shall be flexible (Figure 13) according to the business needs. This is a major shift in thinking with regards to annual appraisals where the goals are set once a year.

From section 2.4, while implementing MBO it’s common to set goals on an annual basis. As from the findings, it’s observed that focus should be on team goals not on individuals due to nature of agile methodology. Goals that are defined on an annual basis but will contradict the nature of agile. In MBO, the process starts with defining organizational goals and then employee goals are set. This process has more sense when used in an annual performance appraisal where focus is on individuals. Whereas it’s a bit contradictory in terms of agile methodology where focus of objective settings should be based on the team rather than individuals.

According to (Rodney Brim, 2004), in MBO “due to focus on definition instead of working plan, there are chances that fails to follow up on goals”. From the findings and nature of agile methodology, the concerned MBO weakness could be limited due to continuous follow up and feedback about the progress of set goals.

![Figure 14. Development vs Performance Goals](image)

Majority of respondents (67.7%) feel that in an agile team, the individuals shall only have development goals and not performance goals (Figure 14). This is a complete deviation from the current annual performance process, where less importance is given for development goals and more on performance goals.
83.3% of respondents is of the strong view that teams shall have performance goals and rated based on the performance (Figure 15). This again indicates that in an agile set up, team performance takes precedence over individual performance.
Anonymous feedback is a useful technique to get a feeling of what others think about an individual. About 72% feel that it’s very important to have anonymous feedback while 28% don’t feel that it’s necessary to have anonymous feedback (Figure 16). Goal setting theory evidently stresses about the feedback mechanism. For higher performance, constructive feedback is necessary which directs the employee behaviour in the right direction. It provides possibility to clarify things and control parameters that enable the individual in attaining the set goals (Locke & Lotham, 1979).

Having a continuous feedback provides the opportunity to improve and keep track of the set goals. About 43% feel that it’s very important to have monthly feedback for their set goals. There is also a group of 28% respondents who prefer having feedback on quarterly basis (Figure 17).

An aspect of MBO which caught our attention is “continuous monitoring of performance and progress”. It’s evident from the findings that using MBO in annual performance appraisal does not consider much about this step. Rather it’s done normally 2-3 times in a year. But it’s more applicable in agile environment where focus is on continuous short development cycles (sprint) and feedback.

During annual performance appraisal, the feedback is given after performance evaluation which is also in line with section 2.4 MBO process, where feedback is given after performance evaluation/review. But it’s not optimal in agile environment where there is a need for sharing continuous feedback. To make MBO more suitable in agile in this regard, there is a need to align the feedback process on a continuous basis and should not be dependent on the performance review or evaluation. As from the above findings, feedback should be provided on monthly basis so MBO feedback system should be aligned with that.
85.3% of respondents vote for having an informal and less time-consuming performance appraisal process (Figure 18). This is not a surprise, since agile is all about working on the backlog for delivering a working product over processes and bureaucracy that could slow down the development. (Pritchard, 2006) highlighted the importance of having an informal appraisal. The survey result just mirrors the same opinion.

**Interviews Findings:** Interviews were also conducted to explore in detail, the need of performance appraisal system and if any adaptions are needed to make it effective in an agile organization. One of the important aspect found in interviews is that, organization which were using agile setup still had annual performance appraisal system. There is no specific appraisal system for Agile which can be used according to agile methodology. From the interviews and survey questions (Q19 till Q26) results confirmed that there is a need of performance appraisal system in agile organization. From the correlation results between “need of performance appraisal” (Q19) till “informal performance appraisal” (Q25) with annual appraisal, it also shows a significance between annual appraisal and “team performance goals” (Q22). Correlation results also shows a positive significance between “individual’s development goals” (Q21) and “informal performance appraisal” (Q25). Complete correlation table can be found in Appendix B.
5. Discussion

The content of this chapter is presented after analyzing the survey data and the interview content. Proposals for performing performance appraisal in agile teams are also presented in this chapter.

The purpose of this study is to analyze the effectiveness of annual performance appraisal system in an agile environment and to identify the best practices for a performance appraisal system tailored for agile environment.

Companies implement performance appraisal system tailored to their needs after considering various merits and de-merits. From the survey findings some of the good practices of annual performance appraisal were observed. Complete survey results can be found in Appendix A.

It is evident that, performance appraisal helps to better understand what employees should be doing and to improve their job performance, i.e. performance appraisal process acts as a performance enhancer. Also, appraisals facilitate growth and learning, and employees are motivated after the performance appraisal. Individual professional growth and motivation are key purposes of having a performance evaluation system. Having an evaluation system that supports individual development is beneficial from an organizational point of view.

Another interesting factor observed is that, performance appraisal helps to set clear and achievable goals. This finding strongly supports in favor of having modern performance appraisal method such as MBO in an agile work environment. Survey findings also supports MBO rewards process, in which after a successful appraisal, employees are rewarded according to their performance. Results also indicate that the individuals should mainly focus on their development goals not on performance goals. That’s quite understandable since agile methodology focuses on the team and not on an individual. In this scenario, it’s quite reasonable to have development goals on individual level, so that teams can contribute to meet the performance goals.

Survey results highlight the need for having a performance appraisal system and implies that such factors of performance evaluation work well when implemented in agile work set up. So, it would be in the best interest of organization and the employee that such practices shall continue in performance evaluation agile organization.

As highlighted in section 4.1, survey findings indicate that there are some shortcomings in the annual appraisal process which could be improved. One such aspect is about co-operation & team spirit where it is observed that, annual performance appraisal doesn’t encourage or boost cooperation and team spirit. Not to our surprise, majority of survey respondents (56.9%) believe that annual appraisal is individual focused. Agile is a team centric approach. So, individual focus takes a back seat while team’s objectives and priorities are given more importance. According to (Kieran, et al., 2011), “developing team-based performance evaluation with indicators tuned to agile attributes can foster team collaboration and use of agile practices”.

From interviews finding, in current annual performance system, focus is on individual goals and not on team goals. This is not a team centred approach. Teams have a responsibility to deliver. So, it’s a collective responsibility of individuals in the team to work on the team goals. Due to the individual nature of annual performance appraisal, there is a need to have
collaborative team goals. The team shall sit together and discuss the team objectives. Once it is decided, the individual goals shall be drafted which should be a sub-set of the team goals. The result of the survey indicates that, majority of the respondents feel that individuals shall only have development goals and not performance goals.

This will ensure two things:

1) Team members agree and dedicate themselves to a common objective.
2) Individual employees contribute towards collaborative objectives rather than conflicting or competing objectives.

For the problem under discussion, there is a strong correlation between the theoretical solution and the research findings. To be specific, some of theoretical solutions to the problem under discussion highlighted in section 2.5 are as follows:

- Teams could appraise themselves in every retrospective.
- Teams could be appraised instead of the individual.

It is important to note that the research findings are in-line with the above mentioned theoretical solutions.

To measure the relevance of goals mentioned in performance appraisal with day-to-day tasks, 61.8% of respondents believe that there is a complete disconnect between goals and everyday tasks. The results are not surprising, given the fact of the dynamic nature of agile work environment. In annual appraisal, goals are more rigid and set once a year. Agile ways of working which embraces change therefore the nature of tasks undertaken also change rapidly over time. So, if the employees must satisfy the appraisal goals, they might be undertaking tasks those are not considered important for the team. This would be detrimental to the team’s progress.

Survey results clearly indicate that the current annual appraisal system has limitations and scope for improvements exist. It implies that annual performance appraisal is not fully benefiting the individuals and the organization in agile environment. This is the core of the thesis, to verify the effectiveness of annual performance appraisal in agile organizations. The survey was not company specific. It was distributed to people working in several different organizations, but everyone working in agile teams. So, the limitations observed are not company specific.

From the correlation results between the annual appraisal and questions (from Q19 till Q26) shows a strong direction for an agile compliant performance appraisal system (Q19). Above result indicate that there is a huge scope of improvement in the current implementation of performance appraisal which is in line with hypothesis 1 of this thesis.

From interviews there is also strong recommendation to have an appraisal system for agile work environment which supports our Hypothesis2 regarding an agile compliant appraisal system. Our finding is also in-line with the study of (Kieran, et al., 2011) where they focused on the challenges while adopting agile in organizations and stressed on “the need for agile-compliant performance evaluation”.

From interviews finding, there is a need to have combination of both objective and subjective measures while having performance appraisals. In section 2.4, MBO process is described in which, after successful definition of organizational goals, employee’s objectives are defined.
There is no focus given on subjective measures while having a performance appraisal in MBO process. Due to the need of having subjective measures as a part of employee performance appraisal, MBO needs to adopt this change for a successful performance evaluation in agile.

Subjective factors refer towards assessing an individual based on being a team player, a knowledge sharer and a motivator which should have more reflection in the performance appraisal. (Frederiksen, et al., 2017) Study has also shown positive effects of having subjective measures for performance evaluation and believe that “subjective performance measures contain important information about employee performance”. (Kieran, et al., 2011) also stressed on having “higher weighting for mentoring, voluntary contributions”. Whereas objective views based on facts are also important, but it cannot be the only factor to evaluate employees. For example, if the number of commits or number of lines of code are considered a factor for evaluation, it might lead to unnecessary coding or commits, just to show good results in the objective evaluation. We believe that measuring lines of code as a performance criterion is practically unfair and leads to demotivate employees. The drawback of having such criteria will lead to bad quality code and developers will focus only to have more lines of code without considering the quality of the product. It is more important to evaluate, how the individual contributed to the team’s objectives in a subjective manner. To remove any kind of bias, tools shall help to have pre-defined set of parameters (for example: customer focus, interpersonal skills, breaking the barriers etc) for evaluation. Performance appraisal in agile should be a mix of objectives and subjective measures.

While transforming from traditional to agile development, companies might have changed their processes or strategies to cope with agile development. But it’s observed from interviews that companies are lacking behind or have limitations in their tools used for performance appraisal process. The tools are open only during a specific window of time to input data like goals, self-assessment, manager rating etc. However, the feedback information is kept outside of the tool. So, key information concerning continuous feedback is lost in the current appraisal process. A need for proper feedback mechanism on continuous basis is highlighted, which is missing in the current annual performance appraisal. By having a continuous feedback, employees have a better chance to develop themselves even in their everyday tasks. It is important that the tools can capture continuous flow of information. This shall help to log all useful information as and when available. This will be a key enabler for continuous improvement. Our findings are in-line with (Kieran, et al., 2011) in terms of having a continuous feedback mechanism where “team members evaluate one other (as opposed to managers appraising subordinates), thus capturing voluntary contributions and mentorship”. Getting timely feedback is also vital and plays an important role for the individual to keep align with organization expectations. From survey results, most respondents prefer to receive anonymous feedback from peers, supervisors or senior leadership. Moreover, the culture of feedback sharing shall be continuous and constructive. Survey results indicate that most people prefer a monthly feedback system. In the current performance evaluation setup, feedback is obtained mainly on the goals linked to the employee and not on the day-to-day tasks undertaken by him/her. This is a huge gap in the feedback sharing mechanism which need to be addressed in agile organization to become more effective.

Another aspect found with ineffectiveness of annual appraisal system is about rewards and recognition (for example bonus) which are linked with individual performance. As agile is a team centric approach, a more diverse and focused emphasis required on team/company performance rather than individual performance. Currently, employees are rewarded based on
their performance on defined goals for previous year. In Agile performance evaluation, the suggestion is to not have the individual performance as a main factor while delivering monetary rewards.

The performance evaluation flow shall not be annual. The accelerated pace of today’s business world makes the annual performance review system ineffective. Just like agile development, performance appraisal, shall also be iterative and incremental. It means, for those working in agile teams, there shall be a possibility to review individual performance at shorter intervals (for example: after every iterative development cycle or monthly) rather than annually. The implementation of such system is although practically comes with complexities due to high resource consumption (such as time and money) involved in the performance appraisal process. In current annual performance appraisal system, there is hardly any possibility to reflect and retrospect on self-contribution. The only possibility is during annual self-assessment which is not efficient since it is done annually.

One of the aim of a performance appraisal system is to have motivated individuals. Significant percentage of respondents (43.2%) felt that they are not motivated after performance appraisal. This leads us to believe that there is a scope of improvement in the current annual appraisal system linked to motivation. Motivated individuals lead to continuous engagement from employees which in turn increases productivity. So, continuous engagement of individuals is crucial for any efficient organization.

According to Agile manifesto: “At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly” (Agilemanifesto, 2001). This is an important aspect linked to performance evaluation of individuals. Infrastructure shall be developed to ensure that there is possibility of exchanging information within the team in both open and anonymous manner. This will help team members to comment about others work and help in the individual’s development. This infrastructure is not in place in most organizational setup. While evaluating an employee, manager collects information from other employees within the team and pass it on to the concerned employee. This is not the optimal way for feedback sharing as it is not direct and frequent. According to (Selvarajan & Cloninger, 2012), their study supports the need of feedback rich performance appraisal and tends to be more accurate. They also stressed that frequent appraisals are perceived to be more accurate.

For the development of the individuals, the proposal is to have self-reflection after every iterative development cycle. This will help to identify training needs and share information about individual contribution for each iteration. This will also motivate individuals to continuously improve and record all the work, so any information on individual contribution is not lost which is usually the case with annual appraisal system. This will act as a foundation for continuous engagement from employees.
6. Conclusion & Future Research

This study aimed to determine the effectiveness of annual performance appraisal in agile development environment. It also aimed to identify the need of an agile complaint performance appraisal. In case of ineffectiveness/limitations, what aspects could be considered to make it suitable to use in agile environment.

In modern era of IT industry, agile development is becoming more prevalent and organizations are moving to agile for faster development and continuous delivery. The findings from our research concluded that annual performance appraisal has shortcomings while conducted in agile environment. Due to limitations and inefficiency, there is a need to have better performance appraisal system for agile organizations. To make it suitable, we have highlighted the recommendations which could be adopted for agile environment. The study found that while transforming to agile, companies don’t upgrade performance evaluation tools to align with its working methodology.

There is a need to upgrade these tools to handle continuous feedback, more frequent and anonymous feedback is required as found in both surveys and interviews. Along with this, performance evaluation should be a mix of objective and subjective metrics. Teams should have collaborative goals and individuals focus on achieving those goals. Individual goals should be a sub-set of the team’s goals and should have a culture of reflect and develop.

As found in our analysis, there is huge scope for improvement regarding performance appraisal in agile teams. It would be best to evaluate the implications during transformation phase while setting up agile ways of working.

This study aimed to access diverse set of people working in agile teams to reflect on the performance appraisal system. Due to limited time, the study population for the survey was kept nominal. In future, attempt could be made to increase the sampling population to get comprehensive feedback as possible.

This thesis has some solid proposals for handling performance appraisal in agile organizations. Further research could be done to propose a framework for performance appraisal based on the proposals from this current research. The next step would be to validate the effectiveness of such framework. Due to the sensitivity of topic, this research has not focussed on studying the relationship between salary and the performance appraisal system. This is a major restriction in this thesis which could be explored in future research.
7. References


[Accessed 29 05 2018].


[Accessed 13 03 2018].


[Accessed 18 02 2018].


8. Appendix A: Survey & Interview Questions with Results

Q1: Please specify your age

- Under 30 years old: 20
- 31 - 39 years old: 42
- 40 - 49 years old: 25
- 50 years or older: 12

Q2: Please specify your sex

- Male: 57
- Female: 45
- Other (Don't want to specify): 0

Q3: Please specify your years of work experience

- 0 - 5 years: 19
- 6 - 10 years: 35
- 11 - 15 years: 20
- 16 years or more: 27

Q4: Please specify your job role

- Team member (Developer, Test Engineer etc.): 62
- Scrum Master: 17
- Product Owner: 2
- Manager: 16
Q13: Performance appraisal helps people set and achieve meaningful goals.

- Strongly disagree: 9.3%
- Somewhat disagree: 22.5%
- Somewhat agree: 20.6%
- Strongly agree: 47.1%

Totals: 15

Q14: Performance goals are clearly defined in the appraisal process.

- Strongly disagree: 11.6%
- Somewhat disagree: 29.6%
- Somewhat agree: 40.2%
- Strongly agree: 18.6%

Totals: 12

Q15: The goals and objectives have a direct link to my day to day tasks.

- Strongly disagree: 25.5%
- Somewhat disagree: 36.3%
- Somewhat agree: 26.5%
- Strongly agree: 11.8%

Totals: 26

Q16: Progress towards goals are reviewed at regular intervals.

- Strongly disagree: 19.6%
- Somewhat disagree: 13.7%
- Somewhat agree: 38.2%
- Strongly agree: 26.4%

Totals: 29
Q17. Performance appraisal process facilitates regular feedback regarding my performance.

- Strongly disagree: 19
- Somewhat disagree: 29
- Somewhat agree: 20
- Strongly agree: 26

Q18. The appraisal data are used as inputs for recognition and encouragement of high performers.

- Strongly disagree: 15
- Somewhat disagree: 24
- Somewhat agree: 25
- Strongly agree: 29

Q19. Performance appraisal system is needed in an Agile organization.

- Strongly disagree: 7
- Somewhat disagree: 17
- Somewhat agree: 23
- Strongly agree: 45

Q20. Goals shall be flexible depending on the business needs.

- Strongly disagree: 5
- Somewhat disagree: 5
- Somewhat agree: 31
- Strongly agree: 61
Individuals shall only have development goals and not performance goals.

Teams shall have performance goals and be rated based on performance.

I prefer anonymous feedback from peers, supervisor, or senior leadership.

How often do you like to receive feedback on goals?
<table>
<thead>
<tr>
<th>Question</th>
<th>Choices</th>
<th>Total(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you change performance appraisal while transferring from traditional to individual?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you have team or individual performance appraisal?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you feel it’s important to have performance appraisal?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you think, it helps you to develop employees?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your current performance appraisal process supports agile?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you have all processes and tools for performance appraisal?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. Appendix B: SPSS Correlation Table

<table>
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<tr>
<th></th>
<th>Annual_Appraisal</th>
<th>G19 - Performance appraisal systems are aligned with the business needs</th>
<th>G20 - Goals shall be flexible and changing based on the business needs</th>
<th>G21 - Individual's development goals and not performance goals</th>
<th>G22 - Teams shall have performance goals and be rated based on the performance</th>
<th>G23 - How often do you like to receive feedback from peers, superiors, or senior leadership?</th>
<th>G24 - How often do you like to receive feedback on goals?</th>
<th>G25 - How often do you like to receive feedback on goals?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Correlation</strong></td>
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<td>.240</td>
<td>.045</td>
<td>.969</td>
<td>.144</td>
<td>.036</td>
</tr>
<tr>
<td><strong>Sig. (2-tailed)</strong></td>
<td>.004</td>
<td>.012</td>
<td>.012</td>
<td>.012</td>
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<td>.000</td>
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<td><strong>N</strong></td>
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