

# Study on factors affecting transition to agile and successful agile projects

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## ABSTRACT

In this paper the focus is on coming up with factors which actually determines success of agile projects in views of employees. In last few years agile methodology has been used in many industries and companies as an effective tool for meeting up the short comings of traditional development methods. Agile is an empirical process, to implement which, organizational strategy and team's mindset has to be on same lines. Here the paper tries to understand the reasons for which the companies shift to agile methodologies and in doing so if their employees are comfortable or think this as a successful transition or not. A survey has been conducted among employees in different companies in order to understand their view on the critical success factors affecting success of agile projects

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## Introduction

Agile is a mindset. It's a different way to think where the stress is not only on practices but rather in thinking like an agile team. Here you ask questions on present ways of doing work and think continuously upon ways of improvement. The focus is on why and how. The team is pushed to be self-organized. The culture is not of control but of motivation where the team is coached by the senior members. In traditional methods, there is always a cone of uncertainty. You know most about how to deliver the product at the end. So many decisions that you make at the start needs to be changed, which is very expensive as you approach the end of the product. Therefore, agile incorporates minimum amount of decisions to be taken to get started in order to have flexibility to make changes. Agile values individual interactions over processes and tools, working software over documentations, customer collaborations over contract negotiations, responding to change over following a plan.

Instead of focussing on multi-tasking where employees spend most of their time on context switching, agile lays stress on focus on high value work by the whole team. Here the teams are cross functional, there is no handoffs or lagging, the entire work is broken down into smaller tasks or batches, which decreases individual's productivity but increases overall efficiency. There are different frameworks in agile and the company or the team chooses the framework that fits best for them. Some of the most widely used frameworks are SCRUM and KANBAN. They are used along with some tools that give management proper insights and reports about the work happening on the floor such as JIRA or RALLY. It is all about getting the right people on board with proper training on the methodology. Just by changing the name of your old processes or by changing the name of positions that team members or managers hold can not make a team agile. In fact, that is one of the biggest hurdles for a team to effectively utilize all that agile provides. A manager can not become Scrum master as a manager designates tasks, but the Scrum master coaches team in completing that task. People have to learn to let go of their authoritative sides in order to work as a team contributing towards success of agile projects.

In any product, or software 45 % of features are never used, 19% are rarely used, 16% are used sometimes, 13% are often used and 7% are always used. This means only 20% of features are the most valuable part of any product. Agile says to first pay attention to this 20%. Deliver it to the customer so that the customer remains satisfied from the ongoing work. In agile, small working parts are delivered in short durations. It lets changes even late in development. The work is distributed in the whole team which is cross functional. The aim is to do the simplest work for obtaining the output. Over engineering can always be a problem. So the focus is on software refactoring, that is making improvement continuously.

The project management office plays a very important part. They see to it that not only the names are changed but the roles too. Renaming over retooling leads to questions like-Are you doing the same thing at the same time with the same people at the same place? People should have a common mindset to be ready to accept the changes and become part of the transition for the betterment of the process. Agile always Incremental transition through sprints. Sprints are nothing but small timeboxes where you need to complete the specifies tasks. There is active involvement of customers at every stage and thus results in improved collaboration with the customers. And as the customer are invited in various meetings, there is also a transparency which increases customer's or client's trust in the team. The whole work is divided into small chunks of tasks and then prioritized on the basis of their complexity and criticality. The works can be easily tracked and if any loop hole, then can be managed effectively. All this increases efficiency and productivity of the employees involved in the team.

Different teams use different frameworks but they all have user stories which is description of product's value from the user's perspective. The actions are carried out in sprints and then there is a product backlog, which is nothing but just like a bucket, where you keep on writing or adding your requirements from the product. Developers or the team pick up user stories from backlog and then work upon them according to their convenience keeping in mind the criticality of the story. Every individual can track his/her work and understand the efforts he has to spend on the

remaining work in the time left in that sprint. There are charts and reports which can show how the work is progressing which are very effective for the management to track down work on the ground.

### Literature Review

This research paper focusses on finding out factors which affect success of agile projects and the factors that are responsible for success of the transition process from waterfall to agile methodology from employees' perspective. Talking about agile methodologies of working in software industry, it developed in 1990's as lightweight software development methods in response to overweight methods that were proving to be overly regulated and micro managed. Tsun Chow, Dac-Buu Cao (2008) researched on critical success factors in agile projects. They conducted a survey among agile professionals collecting data from 109 agile projects from 25 countries all over the globe. Reliability and factor analysis were conducted to find out the factors based on four project success categories- Time, Scope, Cost and Quality. Finally they were able to find three critical success factors- delivery strategy, agile software engineering techniques and team capability, for successful agile projects. But still cultural and organizational frameworks were not taken into consideration. Gourav Kumar and PK Bhatia (2012) explained impact of agile methodology on software development process with respect to quality within the organizational, methodical and cultural framework. They stressed upon fault detection, increased performance, flexibility in design and improvement in quality to discuss some popular frameworks like SCRUM, extreme programming and crystal methods and how fruitful they can be for organization's success. Coming to the transition to agile from old models, Taghi Javdani Gandomani, Hazura Zulzalil, Abdul Azim Abdul Ghani, Abu Bakar Md. Sultan, and Khaironi Yatim Sharif (2014) explained the role of facilitators in this methodology. They performed a study with 33 professionals in agile from 13 different countries and discusses some of the things or facilitators that needed to be given to team before the transition starts and some to be given during the transition process. Selection of right people, training and mentoring can be the best facilitators, but there was no proof and quantitative data to prove this.

Taking the management perspective into account for agile projects, Muhammad Faisal Abrar, Muhammad Sohail Khan, Sikandar Ali, Umar Ali, Muhammad Farhan Majeed, Amjad Ali, Bahruk Amin and Naseer Rashid (2019) focussed on challenges in applying agile methodologies in large scale projects and adaptation of motivators in this way from management's view. The motivators were taken or extracted from 58 research papers thoroughly researched. In this study they defined criteria for the criticality of success as 30%, the Motivators whose percentage is greater than the defined percentage; were considered as critical. This research says that some motivators need special attention because they create more attention in this agile process and their impact is also different through different decades and continents or demographic areas for project managers. So, they considered timing and positioning as important factors in defining motivators. For example, the one motivator

which may be so impactful in the previous decade, may not be so in today's era because of the cultural, social and environmental changes.

Various industries are using different frameworks of agile methodology. But the most common one is Scrum, which is used at a large scale in companies. Muhammad Asaad Subih, Babur Hayat Malik, Imran Mazhar, Izaz-ul-Hassan, Usman Sabir Tamoor Wakeel, Wajid Ali, Amina Yousaf, Bilal-bin-Ijaz (2019) compared software quality factors with Scrum model of agile methodology. They conducted a survey among software developers with years of experience in agile methodology. Here the target was only on agile methodologies related to quality factors. It focussed on how frequent scrum meetings were held and how frequent agile practices were followed in the companies. After the questionnaire, interaction with respondents were done in order to know about the surety of their answers. They identified quality factors such as correctness, reliability, portability, testability, efficiency and extensibility responsible in the Scrum methods. When question comes to selecting the best among various agile frameworks, Jimmy Molina Ríos and Nieves Pedreira-Souto (2019) analysed the approach of different agile methodologies and frameworks in order to select the best one and how to manage both their advantages and limitations within the project. As a result they came out with constant communication, flexibility, inclusion of end customer and some documentations as the major factors to determine the framework which would be best to use for the company. According to a recent study done by Carlos Tam, Eduardo Jóia da Costa Moura, Tiago Oliveira, João Varajão (2020), they came up with 5 people factor which affects the success of software development projects. The research model was based on Training, customer involvement and personal characteristics. According to them, managers are encouraged to select a highly capable team, and to promote customer involvement and collaboration, since these factors are more likely to lead an agile software development project to success.

### Research Gap

Companies always think of replacing the heavy weight traditional methodologies with agile practices in order to garner success. However, there is no fixed rule book or consensus as to what constitutes the agile method. There is an agile manifesto which was put forward in 2001, but there are many variations to it in different frameworks of agile such as SCRUM, KANBAN, Extreme Programming. These frameworks accept some principles of manifesto while disregard some of the other. So companies adapt to agile practices on the basis of their comfort. A gap has existed in understanding the difference between the theoretical and on ground practical implementation of these practices. How employees consider transitioning to agile and what if the company is transitioning just for the namesake but not actually changing their mindset or organizational strategies to adapt to agile. What factors do employees lay more stress upon for the success of agile projects. These are some of the questions which are unanswered and this research paper focusses on trying to find answers for them.

## Research Objective

Companies adapt agile, as it is known to be a successful methodology. But when a team for the first time, transition from traditional to agile methodology, there are many factors that should be taken care of from the team members' perspective. Otherwise, the transition is just for the name sake and the employees continue working as per their old routine and methods. In addition to it if the employees are not convinced of the reason for this transition, it will not be of any help. Thus, wit is needed, to determine the factors affecting successful transition. Next it should also be investigated that what are the factors that make employees think that any agile project they are working on is successful.

Objective I- To determine factors affecting successful transition from traditional to agile projects.

Objective II – To determine what are the factors according to employees that they consider for success of agile projects they work on.

## Hypothesis

Below are the hypothesis formed for first objective and the second objective is to find the factors, so does not require any hypothesis.

1. **Ho:** Work Experience duration of employees do not have any impact during transition to agile.

**Ha:** Work Experience duration of employees' impact transitioning to agile.

2. **Ho:** Agile training and use of new tools do not have any impact during transition to agile.

**Ha:** Agile training and use of new tools impact transition to agile

## Research Methodology

As per the objective of this research paper, the focus is on factors affecting success of agile projects and factors that play an important role in satisfaction of employees when they transfer from traditional to agile projects. A survey was conducted among employees from different IT firms asking relevant questions to both groups who are from the beginning working on agile and those who have transformed to agile methodologies. Questions are the framework for any research work. Through the answers of this survey it has been aimed to measure the various factors affecting employee's satisfaction level with agile projects they work on and thus the success of these projects. The target group are work experience people who have some experience on working in agile projects, designations ranging from business analyst, Developers, testers to designers. The questions in the survey are related to people, process, organizational changes and strategies applied in companies for adaptation to agile.

In first scenario where the aim is to find out how employees cope up with transformation to agile methodology, the dependent variable is taken up as employees' perspective of success or failure of change into the new methodology. And the independent variables which affect this decision or conclusion of employees are their work experience, ability to adapt to agile practices, ability to adapt to new agile tools,

change in organization's culture/strategies, training provided to employees on this, adherence to agile practices, customer satisfaction and reduction in error. Correlation between independent variables and dependent variables are taken into care. The data collected is at first cleaned and prepared for further testing. All the NA variables are either removed or replaced by the mean of all answers for that particular question. Multicollinearity is checked and is tried to remove. Then logistic regression has been performed on these variables to decide upon which factors lead to employee's decision of their acceptance as success or failure of this transition. Then the paper comes up after the regression analysis with a model which is best fit for this situation and when laid stress upon can result in better employee satisfaction during this transition. In survey employees had to answer question like, if they were given adequate and suitable training before transitioning them to agile. Or questions where they have to answer whether agile practices are being diligently followed in their company or not after transition, or just for the namesake they are being called as agile. Models are made and quantitative study is done with the help of R software.

For the second objective to determine factors which affect success of agile projects, different set of questions were mentioned in the questionnaire. Some of the research questions were related to their work experience, their views on how the work methodology has changed in terms of quick completion of tasks, quality work, flexibility, collaboration among employees. Also, the survey measured if this is how the employees wanted to work and how did they rank the change in process and strategies in the organization. The employees self-evaluated themselves on the scale on the scale of 1-5 on the basis of their knowledge about agile methodology. The survey also had questions that the theoretical advantages from agile like customer satisfaction, error reduction, improved interpersonal communication, improved productivity, time reduction all are actually met in the eyes of employees or not. Because they are the ones who are working on floor about it. The same process is again followed. Data collected is cleaned up for NA values or duplicate values, it's checked for multicollinearity and then logistic regression is done to come up with the best model in order to determine the main factors showing success of agile projects from employees' perspective.

## Data Analysis

Analysis of all the data collected from questionnaire is done to obtain relevant conclusions.

### Objective 1

For the first objective which deals with transferring from traditional agile models, the data was analysed based on independent and dependent factors. There is no magic to create an agile transition. It is trickier to implement. Some positive and negative correlations were found between the variables worth mentioning-

- There is a negative correlation between independent variable 'work experience' and dependent variable 'Result'.

- There is a high positive correlation between variables ‘customer satisfaction’ and ‘reduction in errors’.
- There is a negative correlation between variables ‘work experience’ and ‘reduction in errors’. That is, the more the employees are experienced they do not find transferring to new methods resulting in less error.
- There is a negative correlation between variables ‘work experience’ and ‘customer satisfaction’. That is, the more the employees are experienced they do not find transitioning to agile methods resulting in more customer satisfaction.
- There is a high correlation between variables ‘Training’ and ‘Adapting to new agile tools’. That is if employees are provided adequate training before, they are more comfortable working on the new tools.
- The highest correlation of the dependent variable ‘Result’ is with independent variable ‘Reduction in errors’, that is if people feel that their errors have reduced after transitioning to agile, they have a positive response towards agile.
- The data collected also showed that most of the companies who for the first time are transitioning to agile have used SCRUM, which is an empirical process control framework, easy to understand and use.

Logistic regression was performed on the data available taking ‘Result’ that is employees perspective on success or failure of this transition as the dependent variable.

**Model 1-**

Dependent variable- Result

Independent Variables- Work Experience, Adapting Agile Practices, Adapting new agile tools, Change in organizational culture, Training, Continuous Adherence to agile practices, Customer satisfaction, Reduction in error.

Here a confidence interval of 90% is used. In the below model output it can be seen that the alpha value is >0.5, so the null hypothesis can not be rejected. But here the model is overfitted. And in order to improve the accuracy of the model and avoid overfitting, some other model will be taken into consideration with less set of independent variables.

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	480.47	274643.01	0.002	0.999
Work.Experience	-84.84	39213.01	-0.002	0.998
Adapting.agile.practices	-167.69	90029.72	-0.002	0.999
Adapting.new.agile.tools	256.53	165510.95	0.002	0.999
Change.in.organization.s.culture	-42.28	25004.76	-0.002	0.999
training1	-425.02	201681.20	-0.002	0.998
Adherence.to.agile.practices	-40.29	34434.32	-0.001	0.999
Customer.satisfaction	-87.15	83642.24	-0.001	0.999
Reduction.in.error	253.48	118912.84	0.002	0.998

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 3.5924e+01 on 28 degrees of freedom  
 Residual deviance: 1.0406e-08 on 20 degrees of freedom  
 (1 observation deleted due to missingness)  
 AIC: 18

**Model 2- (Confidence Interval 90%)**

Dependent variable- Result

Independent Variable- Work Experience, Adapting new agile tools, training, Reduction in error.

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-3.7957	3.7087	-1.023	0.3061
Work.Experience	-0.9902	0.5513	-1.796	0.0725
Adapting.new.agile.tools	3.4738	2.0917	1.661	0.0968
training	-6.2012	4.0143	-1.545	0.1224
Reduction.in.error	2.4959	1.2819	1.947	0.0515

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 36.652 on 29 degrees of freedom  
 Residual deviance: 17.617 on 25 degrees of freedom  
 AIC: 27.617

Here it can be seen that alpha value, that is Pr(>|z|) values for 90% confidence interval are all less than or approximately equal to 0.1. Therefore, null hypothesis can be rejected and can accept the alternate hypothesis. Here it is seen that work experience and adapting to new tools along with proper training impacts employees’ assessment of successful transition on a very large extent. Also ‘adapting new agile tools’ and ‘reduction in error’, have good impacts on the final result.

Null deviance shows how well the result can be predicted only with the help of intercept and by including the independent variables the residual deviance decreases to 17.61 by losing 4 degrees of freedom. This model is accepted and null hypothesis is rejected.

The accuracy for this model is 87.5%, which is good for any model to be accepted.

**Objective 2**

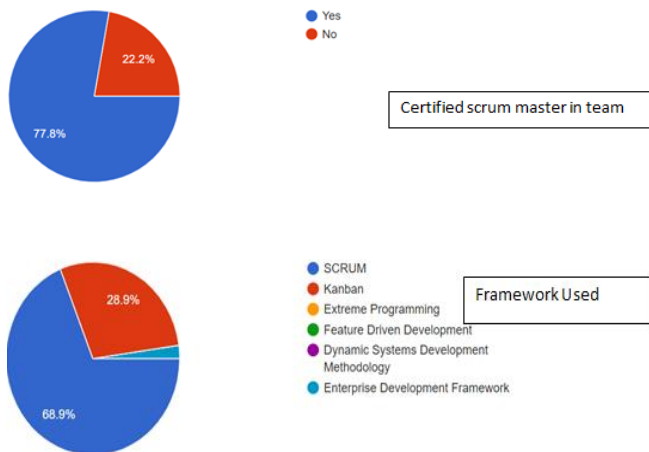
For the second objective to determine factors affecting success of an agile project, the following independent and dependent variables are taken into consideration.

Dependent variable- Result

Independent variable- Work experience, Quick tasks, flexibility, Quality work, increases collaboration, Fits my way, Certified Scrum Master, adherence to agile practices, self- evaluation, agile floor, Predicting efforts, customer relationship, error reduction, Time saving.

On the answer to certified scrum master following was the result. Now scrum master is the one who is the foundation member of the team and who leads and coaches the team. So, in 77.8% cases the team had certified scrum master who knows all about agile methodologies. But still there were 22.2% cases where a previous team member from the team was made the scrum master. Just name of the role changed but the person continued doing his/her previous work or responsibilities. What could have been the result of this is

that the team became agile only on paper but continued it's old practices.



Different teams follow different frameworks, and the reach of this questionnaire shows below results. Two frameworks mostly used in companies are SCRUM and KANBAN. Both of these are light weight and easy to follow frameworks. For a company or a team who for the first time is going to adapt agile methodology, should adapt an easy one so that along with a flexible agile tool, so that employees do not waste much of their time in understanding the tool, but should instead spend more time on learning about the methodologies and way of doing work. They involve various roles such as Scrum master, product owner, the team itself, along with various regular updates such as sprint review meeting, sprint retrospective meeting, daily stand ups and update of regular work on task board or KANBAN board.

After going through the correlation between these variables, some interesting points to mention are deduced-

- Work experience has positive correlation with the overall result of success of agile projects
- Quicker completion of tasks has high positive correlation with agile seating pattern on floors.
- Improved collaboration too has high positive correlation with agile seating patterns.
- 'Fits employees' way of doing work' has a negative correlation with certified scrum master.

**Model 1-**

Here the below mentioned independent variables were taken, giving the following output. But it is seen that the alpha values for all variables are not less that 0.1 and also the model is overfitted. So in next model it is tried to make the model best fit.

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-7.6064	6.2205	-1.223	0.2214
Work.Experience	0.5331	0.2891	1.844	0.0651
Quick.tasks	-1.2093	2.2085	-0.548	0.5840
Quality.work	6.1843	3.9234	1.576	0.1150
Certified.Scrum.Master	-1.7964	2.1864	-0.822	0.4113
Agile.seating.and.floor	2.2175	1.4027	1.581	0.1139
Predict.the.efforts	-3.7038	2.0445	-1.812	0.0701
Customer.relation.improved	3.3363	6.1385	0.544	0.5868
Customer.satisfaction	3.7931	7.0408	0.539	0.5901
Error.reduction	-1.8562	3.4400	-0.540	0.5895
More.Productive	-7.2113	4.9445	-1.458	0.1447

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 48.114 on 35 degrees of freedom  
 Residual deviance: 21.720 on 25 degrees of freedom  
 AIC: 43.72

**Model 2 (90% confidence interval)**

Many models were made and after analysing all of them, the below model was selected which best describes and affects the result.

Dependent variable- Result

Independent variable- Work Experience, Certified Scrum master, Agile seating, Predicting the efforts, Customer satisfaction, Error reduction, Being more productive.

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-1.4919	3.8135	-0.391	0.6956
Work.Experience	0.4381	0.2191	1.999	0.0456 *
Certified.Scrum.Master	-0.8296	1.4257	-0.582	0.5607
Agile.seating.and.floor	0.2864	0.6019	0.476	0.6342
Predict.the.efforts	-2.0469	1.0439	-1.961	0.0499 *
Customer.satisfaction	3.2577	2.1662	1.504	0.1326
Error.reduction	1.0959	1.0272	1.067	0.2860
More.Productive	-2.4359	2.0180	-1.207	0.2274

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 48.114 on 35 degrees of freedom  
 Residual deviance: 33.217 on 28 degrees of freedom  
 AIC: 49.217

The null deviance when only the intercept is taken into consideration is 48.114 which reduces on introduction of variables. That is, with the help of these variables the dependent variable 'Result' can be more correctly predicted.

**Suggested model-**

1. For transitioning from traditional to waterfall model, work experience plays a very important role. As work experienced employees are as an asset for the company, and sometimes they are not comfortable in

changing their ways of doing work. So management has to explain them the reasons for this transition and also the benefits at both individual and organizational level. In addition to this, training employees on agile before the transition takes place, is an important factor to be taken care of for building up confidence of employees in agile. Reduction in errors due to new agile tools prove to be a success factor for this transition, and so practical demonstration of this is important to make employees comfortable to the new transition.

2. Factors influencing success of agile projects from employee's perspective, which management should take care of to ensure success are given below. These factors when taken care of increases employee's efficiency and in turn the productivity of whole project.



### Findings

In relation to the first objective of this paper, to determine factors affecting successful transition from traditional to agile projects, we are able to know the employee's take on agile methodologies, and how they are impacted by transitioning from a waterfall to an agile model for the first time. The following are the related findings to it-

1. Factors which affect employees perspective about success of a transition from waterfall to agile model project are work experience of employee, training on agile methodologies, adaptation to new agile tools, and the results which should show reduction in error in the output when compared to their previous working methods.

2. The null hypothesis is rejected and thus we accept the alternate hypothesis that work Experience duration of employees impact transitioning to agile. People with more work experience, are not much comfortable in this transition done by the management as they are already accustomed to their view of working. And so this might affect their efficiency.

3. The null hypothesis is rejected and thus we accept the alternate hypothesis that agile training and use of new tools impact transition to agile. Just by establishing the rules for agile framework, benefits of agile can not be enjoyed. Employees have to be given proper training before they are transitioned.

In relation to the second objective, to determine what are the factors according to employees that they consider for success of agile projects they work on. Below is the finding-1. In case of success factors for agile projects by employees perspective, as per our model, work experience, certified scrum master, Agile floor, Ability to predict the efforts, Customer satisfaction, Reduction in error and Increased productivity are the major factors that affect success of agile projects.

### Conclusion

Agile is a method of doing work which results in incremental and continuous delivery of product and services with communication as the major key. It has grown up as a famous way of in software development companies. And not only in software but the agile methodology is being used in different fields. But agile methodologies to be followed diligently requires more time and commitment. And in favouring working software over documentation, sometimes it lacks documenting the necessary information. People know when to use agile but do not know when to avoid working in agile. When a company transition from traditional methods to agile, it has to change its organizational strategy too. Employees should be comfortable working in the new environment, and should be ready to adapt and learn. Three questions which must be clear in their mind before they transition is- what they are doing, how are they doing, and why are they transitioning. So that they have interest in the whole process and they know what are the benefits that they are going to get from the transition. In proposed model it is seen that work experience, adapting to new agile tools, training and reduction in errors are the main factors which affect the mind and willingness of an employee when he/she transition from traditional to waterfall. Larger Work experience people generally find it difficult in transitioning, because they are already adapted to their way of working and suddenly changing it will require a lot of efforts from the management. So that they can utilize their experience and increase the efficiency of the whole team. Training is very important, as it's a new method to work. So, people should be well trained about it in order to get the maximum productivity from them. And if they are not trained, then this can lead to confusion and loss of interest in employees.

Coming to the factors affecting agile projects success, from employees' perspective, as per our model are Work experience, certified scrum master, Agile floor, Ability to predict the efforts, Customer satisfaction, Reduction in error and Increased productivity. Work experience people who have worked with this methodology might find it difficult in transitioning, but once they are set, they understand the advantages it brings to the team. A certified scrum master knows the nuances of the method and thus instead of ordering, he becomes the guide to the team. Making the floor agile holds another importance, because agile floors are set up in such a way that team members do not have any problem communicating with each other. There is separate space on floors for discussions and stand ups. All this lead to better interpersonal communication and learning from the peers. If one is able to predict efforts that is going to be spent on a project, then this saves time and money both.

Thus, adding to the advantage of this methodology. Customers are kept in loop at all stages in agile thus increasing trust in the team and creating transparency. Agile measures risk and leads to reduction in error in your work. Companies should keep in mind these factors while planning their strategies for agile methodology.

### Limitations

- The reach of this questionnaire was not enough to cover all variation in beliefs about agile.
- Due to the limited reach of the questionnaire, more data regarding the cost saving aspect which is a very important one, could not be collected and thus be covered in this research paper.
- Agile methodologies can be moulded and changed when required by the team using it. And thus, does not have a fix rule book. So, views of people vary from company to company according to practices followed in their respective companies and cannot be generalised.
- Software development and agile is a vast area, but here in this paper the focus is mainly on some factors related to management strategies, people, time and process.

### Future Scope

- In future, instead of focussing just on software industry, research can be conducted in other areas such as Agile Supply Chain Management or Ecommerce agile chains.
- Focus can be more on organizational strategies as a separate block, determining the success rate of agile projects. Some specific framework and tool can be selected which is widely used, and the reasons for their success can be researched upon so that this could be used in other industries too.

### References

- [1] Kumar, Gaurav & Bhatia, Pradeep. (2012). Impact of Agile Methodology on Software Development Process. International Journal of Computer Technology and Electronics Engineering (IJCTEE). 2. 2249-6343.
- [2] Taghi Javdani Gandomani, Hazura Zulzalil, Abdul Azim Abdul Ghani, Abu Bakar Md. Sultan, and Khaironi Yatim Sharif (2014) Exploring Facilitators of Transition and Adoption to Agile Methods: A Grounded Theory Study. Journal Of Software Vol 9, No 7.
- [3] Tsun Chow, Dac-Buu Cao (2008)A survey study of critical success factors in agile software projects. Journals of system and software Vol81 issue 6.
- [4] Abrar, M.F, Khan, M.S, Ali,S. (2019) Motivators for Large scale Agile Adoption from Management Perspective. IEEE Access Volume 7. Electronic ISSN: 2169-3536
- [5] Muhammad Asaad Subih , Babur Hayat Malik, Imran Mazhar, Izaz-ul-Hassan, Usman Sabir Tamoor Wakeel, Wajid Ali, Amina Yousaf, Bilal-bin-Ijaz (2019). Comparison of Agile Method and Scrum Method with Software Quality Affecting Factors. (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 10, No. 5
- [6] Jimmy Molina Ríos, Nieves Pedreira-Souto (2019)Approach of agile methodologies in the development of web-based software. Multidisciplinary Digital Publishing Institute (MDPI) ISSN:2078-2489 Volume 10, Issue 10
- [7] Carlos Tam, Eduardo Jóia da Costa Moura, Tiago Oliveira, João Varajão (2020) The factors influencing the success of on-going agile software development projects. nternational Journal of Project Management. Volume 38, Issue 3