Agile transformations and Organizational Performance: the impact of maturity, employee satisfaction and transformation approach

Thesis

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Abstract

Over the last decade, more and more companies have changed their way of working, towards a more agile way of working. The amount of companies working the agile way of working have increased drastically. This phenomenon started in the software development departments within companies. Now, years later and a lot of developments further, companies want to implement this new way of working throughout the entire company. This means implement the agile way of working on large scale. The question remains, what are the benefits of implementing this new way of working and do the different large-scale agile frameworks differ from each other in results?

Companies should, in order to obtain the best results from such a large-scale agile transformation, be well informed with the expectations of a large-scale agile transformation. This takes away wrong expectations and makes the transformation easier to implement. Therefore, this study focusses on the results of large-scale agile transformations done in the past in order to create reliable forecast opportunities for upcoming large-scale agile transformations.

Before this study could start, a clear understanding of the concept of large scale agile was necessary. The first focus was on the agile way of working, where throughout the research, the focus shifted more and more on the large-scale implementation of this way of working. After the implementation, metrics had to be determined to be able to measure the impact of such a large-scale agile transformation. After this literature section, a survey has been designed and conducted to find out what the results of earlier done large scale agile transformation were.

The survey was created partly with input for earlier done research. Combined with expert knowledge from experts in the field of large-scale agile transformations, a first draft could be created. This first version has been tested with employees within Accenture the Netherlands and some external employees from other companies, who have expert knowledge of large-scale agile transformations.

The next step was to improve the survey up to a level where every question had a clear goal and all responses could be well measured. After another round of feedback, the survey has been distributed within Accenture the Netherlands and has been distributed in expert groups with people knowledge of large-scale agile transformations within other companies.

The results of this research, based on 134 responses in the survey, have made a clear distinction between different frameworks which can be used to implement large scale agile. On general, organizational performance improves with 62% after such a large-scale agile transformation. Implementing large-scale agile within a company could best be done with a large-scale agile framework, since the results of this implementation with a framework are 36% better compared to this implementation without a framework.

Furthermore, the results show that there are correlations found between the agile maturity of a company and the results of a large-scale agile transformation. This means that when companies are more mature when entering such a transformation, the organizational performance improvements are higher as well. Another correlation was found between the satisfaction of such a transformation and the organizational performance results. This means, that the more improvement employees see, the more satisfied employees are with the results of such a large-scale agile transformation.

List of figures

Figure 1 - The Agile Scrum Process (Trustman and Davis, 2006)	9
Figure 2 - Scrum of Scrums scaling (Østdahl, 2017)	12
Figure 3 -The feedback loop of Enterprise Scrum (Greening, 2010)	13
Figure 4 - Maturity model (Laanti, 2017)	16
Figure 5 - Business results (Case Studies, 2018)	17
Figure 6 - Metrics from Olszewska et al. (2016)	17
Figure 7 - Conceptual model	20
Figure 8 - Conceptual model extended	21
Figure 9 - Transformation Roles	23
Figure 10 - Roles within transformation	26
Figure 11 - Company size	27
Figure 12 - Agile Maturity Level	27
Figure 13 - Satisfaction level	28
Figure 14 - Investment	28
Figure 15 - Strategy used for transformation	29
Figure 16 - Framework used for transformation	29
Figure 17 - Satisfaction per industry	30
Figure 18 - Investment per industry	31
Figure 19 - Satisfaction per framework	31
Figure 20 - Satisfaction compared to company size	32
Figure 21 - Final study model	42

List of tables

Table 1 - Improvement of organizational performance	32
Table 2 - Organizational performance improvements per framework	34
Table 3 – Correlation between improvement and maturity	35
Table 4 - Correlation between improvement and satisfaction	36
Table 5 - Correlation between agile maturity - satisfaction	37
Table 6 - Correlation between agile maturity - company size	37
Table 7 - Correlation model	38
Table 8 - Improvement in organizational performance	38
Table 10 - Organizational performance improvement compared to satisfaction	39
Table 11 - Survey model	41

Table of contents

1	Intro	duction	7
	1.1	Research objective	7
2	Litera	iture Review	8
	2.1	Agile project and portfolio management	8
	2.1.1	Agile Methods	8
	2.1.2	Large Scale Agile	10
	2.1.3	Large Scale Agile Enterprise Frameworks	10
	2.1.4	Agile Maturity	14
	2.2	Impact of large-scale agile methods on organizational performance	16
	2.2.1	Professional literature	16
	2.2.2	Metrics	17
	2.3	Research gap	19
3	Resea	arch Model	20
	3.1	Conceptual model	20
4	Resea	arch Methodology	22
	4.1	Research Method	22
	4.2	Survey	22
	4.2.1	Unit of Analysis	22
	4.2.2	Population	22
	4.2.3	Distributing	23
	4.2.4	Survey design	23
	4.2.5	Expert input & quality assurance	24
	4.2.6	Categorization questions	24
5	Surve	ey data and descriptive analysis	25
	5.1	Data and Sample size	25
	5.2	General Characteristics	25
	5.2.1	Industry	25
	5.2.2	Roles within transformation	26
	5.2.3	Size of company	26
	5.2.4	Maturity	27
	5.2.5	Satisfaction	28
	5.2.6	Investment	28
	5.2.7	Transformation Strategy	29
	5.2.8	Framework	29

	5.3	Descriptive analysis
6	Нуро	theses and correlation testing
	6.1	Correlation testing
	6.1.1	Agile maturity - organizational performance
	6.1.2	Employee satisfaction - organizational performance
	6.1.3	Other findings
	6.2	Hypotheses testing
7	Discu	ssion 40
	7.1	Impact of large-scale agile frameworks on perceived organizational performance 40
	7.2 Organiz	Model for the relationship between Agile transformation strategy, Agile Maturity, ational Performance and satisfaction
	7.3	Model for the relationship between satisfaction, company size and agile maturity
	7.4	Limitations
	7.4.1	Threats on validity
8	Conc	lusion
	8.1	Theoretical contribution
	8.2	Practical contribution
	8.3	Further research
9	Biblic	graphy
A	opendix	I: Survey

1 Introduction

As Macfarlane (2016) put it, the only constant is change. This is especially true in the constantly developing field of technology. Changes in society and rapidly emerging technologies force companies to rethink the way they deliver their product and services. New technologies create opportunities to create better results. One of these emerging trends in organizations is the Agile way of working. To keep up with competitors, companies feel the urge to adapt to a new way of working. But how can they decide how much to invest in this change? Which amount of change will justify the investment?

The reason why many organizations start their agile transformation is the pursuit of business success (Laanti, 2017). Companies need guidelines to decide whether they should change to an Agile way of working. Transformational costs and benefits are currently not calculated at all. Companies are unable to predict or calculate (non-)financial benefits due to insufficient frameworks and lack of relevant historical data. This forces companies to base their transition on a 'gut feeling' or on pressure they feel to keep up with the current trends.

In practice, uncertainties arise due to the missing results and comparisons between companies implementing the large-scale agile transformation and companies not implementing this transformation. Companies need guidelines to decide whether they should change towards an organization working with large scale agile. Although results from the future do not guaranty anything, these numbers can give a very good indication of investment needed and possible improvements.

This research will include a literature study on different frameworks for agile transformations in practice. This will include different scale frameworks and strategies for implementing scaled Agile. In order to generate useful insights, the quantitative metric framework will be complemented by comparing it with already done research, in order to generate trustworthy results.

The metric framework is based on a study conducted by Laanti (2011), this research will be used to create a large number of scalers to measure the success of a transformation. More detailed information about this procedure will be described in the theoretical background.

The practical contribution this research will provide is an overview on how much to invest in Agile changes and how they would describe the benefits of the transformation. This is a complicated process, as metrics in transformation can be dependent on the process and company they are reviewed in. The further research will be done in the form of a survey. This survey is based on earlier done research and on judgement from experts in the field.

1.1 Research objective

The main research question discussed in this research will be: What is the difference in effect on organizational performance while using a certain type of large-scale agile framework? This means researching the effects within companies after a transformation and comparing different results depending on the framework used in the transformation. This is very interesting for companies thinking about such a transformation, since it will help them generate better results.

2 Literature Review

This chapter is written in order to conduct research on the different topics that will be discussed in this study. This literature review will be used to investigate the research already done on these topics. At the end a research gap will be described which this study aims to fill.

2.1 Agile project and portfolio management

This section focusses on the different topics around agile project and portfolio mangement, first the focus will be on agile methods, which will be discussed and explained. Afterwards, the focus will be on large-scale agile and on the possible large-scale agile frameworks. These frameworks will be discussed with a theoretical focus.

2.1.1 Agile Methods

Literally translated, agile means possessing a quick resourceful and adaptable character (Webster, 2018). It is not by chance that this new way of working, originally founded for IT related purpose, is indicated by this name. Agile describes the way project planning is handled and is the opposite of the traditional waterfall way of working. In this chapter, Agile working will be explained and the differences between Agile and traditional working will be described shortly. In the past, several iterative and incremental development methods have been used. Larman and Basili (2003) summarize the past of these methods, where they state that the first agile orientated method was the Dynamic Systems Development Method. After this method the Extreme Programming (XP) method arrived (Beck, 2000). At a later stage, the more commonly used Lean Development and Scrum were introduced (Larman and Basili, 2003).

When working Agile, one person is the project owner. S/he collects all the input from the customer. This could be a team of executives, stakeholders, users etc. All of the requirements for the product are listed in order of importance, which will determine what the project team will start to develop. The project team, led by the project owner, will start a two-week sprint, at which they will attempt to finish as much as possible from the list, starting with the most important task.

During this two-week sprint, the teams meet every day for a scrum meeting. The scrum master leads the sprint period and daily meetings. After the two-weeks, the project owner gets back to the customer, and informs them about the finished work. The team evaluates two elements of the sprint: they review the delivered work and look at the way they've performed.

Usually, to finish an entire project, it can take up to 50 sprints before completion.



A visualization of this process is shown below (Trustman & Davis, 2006).

Figure 1 - The Agile Scrum Process (Trustman and Davis, 2006)

A big part of the difference Agile makes is the way of planning. With Agile, it is common not to plan far into the future, instead, the project is evaluated step by step, thus determining what the next few steps should be. One of the advantages of this approach, is the ability to learn while executing the project, instead of getting feedback after full completion. Instead of fixing the design and project scope beforehand, the customer can ask for changes along the way. This also improves collaboration with the customer and ensures more attention to individuals and interaction (Serrador & Pinto, 2015).

The difference between traditional development and Agile development is not only the way of planning. In fact, it could be divided into roughly seven categories, as described by Dyba & Dingsoyr (2008). According to them, the relevant categories are: management style, knowledge management, communication, development model, desired organizational structure, quality control and the fundamental assumption of development.

In the traditional way of development, 'systems are fully specifiable, predictable, and are built through meticulous and extensive planning', whereas Agile assumes 'high-quality adaptive software, developed by small teams using the principles of continuous design improvement and testing based on rapid feedback and change' (Dyba & Dingsoyr, 2008, 835-836). The traditional way implies more command and control and formal communication, the testing of the product takes place after completion and is very thorough, and the development model can be seen as 'life-cycle', for example waterfall. When working Agile, there is more focus on collaboration and leadership, and the testing is executed continuously during development. When considering the development model, it is more evolutionary-delivery.

So, the traditional way of project development started off with the outline of a project, the fixing of steps to be taken and the following of this plan. Unfortunately, it occurred more than every once in a while, that the entire project had to be redeveloped after completion. A significant issue with this, is the rapid improvement in technology. As described by Serrador & Pinto (2015), a clear example of this, is the case of Motorola's Iridium project (Collyer et al., 2010, 358). It was a success from several points of view, it was delivered on time and the budget was not exceeded. Unfortunately, from a commercial point of view, it was a disaster as the business environment had changed while the project was developed. The technology changes in such a rapid way, that some new technologies can make the whole project redundant.

From that point of view, it seems like every business should adopt the Agile way of working and all will be good. Many businesses have done so, causing some critics to wonder if there is actual proof that Agile is a solid replacement for life-cycle working. The number of authors writing positively about Agile is significant, but there are not many large-scale empirical studies about the improvement of project success with Agile methods (Serrador & Pinto, 2015). To fill this gap, Serrador & Pinto have done a study about projects using Agile methods. They used a sample consisting more than a thousand projects across multiple countries and industries. Improvement of project success was measured by two main points: efficiency and overall stakeholder satisfaction against organizational goals.

All analyses of their data suggest an improved success when working Agile. Interestingly enough, the improvements are not limited to the field of IT. For example, health care and professional services report a higher success rate when working Agile. This trend is not visible for all industries, as for example construction and retail 'do not show a statistically significant relationship' (Serrador & Pinto, 2015, 1048). When investigating possible moderators for the effects, it was stated that neither the complexity of the project nor the experience of the team was of significant impact on the success of Agile.

2.1.2 Large Scale Agile

Agile working, as described above, is relevant when speaking about one team. However, when multiple teams throughout the company, or even the entire company, work this way, it is valid to speak of large scale Agile. To give a clear explanation about the difference between Agile and Large Scale Agile, it is important to identify what situation qualifies as large scale. As described by Dikert, Paasivaare and Lassenius (2016), there have been several different interpretations of 'large scale'.

An example consisting of 40 people, divided over seven teams, was described as large scale (Paasivaara et al, 2008), team sizes over 50 people with a multi-million budget matched this description (Berger and Beynon-Davies, 2009) and Bjarnason et al. (2011) spoke of a project with a two-year long timeline and 60-80 features. Other articles (Fowler, 2000; Williams and Coackburn, 2003; Koehneman and Coats, 2009; Moore and Spens, 2008) also defined the size of the scale by the amount of people involved. However, it is still a label that depends on varying situations and whoever is defining it.

Eventually, Dingsoyr et al. (2014) analyzed all these projects and defined criteria for Large Scale Agile. When using 2-9 collaborating teams, it counts as Large Scale Agile. When using more than ten collaborating teams, it is very large-scale. A more recent interpretation of the term describes it as an organization with at least fifty employees or with at least six teams. Employees can be counted when they are working together at a common product or project (Dikert, Paasivaara, Lassenius, 2016, 88).

A significant difference between small and large-scale Agile adopting is the way of working within a bigger organization. Larger organizations have more projects and teams and require those teams to document progress and relevant developments. This reduces the agility of the process, thus making it easier for smaller companies to adopt Agile as a way of working (Lindvall et al., 2004).

2.1.3 Large Scale Agile Enterprise Frameworks

This chapter focusses on the different large-scale agile enterprise frameworks.

2.1.3.1 Scaled Agile Framework

The Scaled Agile Framework (SAFe)(SAFe[®] 4.0 Introduction, 2016) improves business agility by creating a new way of working in which productivity, time-to-market, quality and employee engagement are improved. This means that employees feel more attached to the product, so they want to improve quality as well as productivity to create a better product, due to improved processes it is possible to deliver a product quicker to the market. All this is done by combining the power of Agile with Lean product development and systems thinking. This means improved alignment, collaboration and delivery for multiple Agile teams.

SAFe is based on 4 values, these values are essential when applying this Framework (SAFe[®] 4.0 Introduction, 2016).

- Alignment

The only way to focus purely on the product, is when management and developers are aligned towards a common mission. This means the same goals must be set for both teams, which will push them in working together and improving the quality of the product.

- Built-in quality

Quick solutions created to fix at smaller scale, have higher economic consequences at larger scale. This forces developers to create built-in quality standards to make sure every element in every increment has a minimal quality assurance. This also gives developers the space to innovate and take risks, since they are always aware of the quality standards throughout the process.

- Transparency

Transparency is key to success. Without employees being able to tell where they came across errors and failures you won't be able to implement a large-scale solution. Create an environment in which employees are willing to share and be honest with each other. When you give trust and transparency towards your employees, they will be able to make decisions by themselves, which increases the flexibility and speed of your company.

- Program execution

To reach the ultimate goal, faster delivery, more innovation and more agility, the whole process has to change. This means adapting the whole process from a traditional way of working, where structures are built to create stability and have control, towards new, more open structures, that facilitate faster delivery, more innovation and are more agile.

2.1.3.2 Scrum of scrums

As mentioned by Paasivaara, Lassenius and Heikkilä (2012) Scrum of scrums is a large-scale version of the original Scrum method. This means this large-scale version is usable not just within teams, but mainly between teams. It has been researched that these meetings between teams are most effective when they occur at a minimum of 2-3 times a week (Cohn, 2007).

It is set up in such a way that all separate teams designate one ambassador from every team who will be included in the larger scrum meeting, which is the Scrum of Scrums. The Scrum of Scrums meeting will be held in a way employees are already familiar with, the biggest difference is that it is on behalf of the teams they represent (Agile Alliance, 2018).

Initially Scrum was best used in teams smaller than 10 members. Due to the trend to Large scale Agile this method has been upgraded towards a method that can be used in this large scale (Østdahl, 2017).

Scrum-of-Scrum-of-Scrums



Figure 2 - Scrum of Scrums scaling (Østdahl, 2017)

2.1.3.3 Disciplined agile delivery

This is a framework that helps organizations to streamline their processes with a context-sensitive view. This will help create business agility by creating a solid foundation (The Disciplined Agile DA Framework). This method combines several well-known technologies as Extreme Programming, Unified Process and others. Disciplined agile delivery also focuses on the complete end-to-end delivery within a project (Ambler, Lines (2012).

Disciplined Agile delivery has four main pillars (The Disciplined Agile DA Framework):

- Enable Agile delivery teams to succeed

The Scrum of Scrums method focusses on more than just the development team. In order to create successful delivery, it is necessary to work with employees outside of their teams. To create a productive working environment, these external employees, for example data management employees or enterprise architects, have to work in an agile way.

- Provide a coherent strategy for agile IT

When using the Disciplined Agile delivery framework support will be given on how to run an IT department, since they are even harder to manage than just software development. This framework provides the support needed in complex systems.

- Support the Disciplined Agile Enterprise

Disciplined agile delivery framework has the capability to adapt quickly to changes in the market. This makes it possible for companies to adapt to new upcoming technologies and changing environments.

- Context counts

This framework focusses on basis for project that you can later adjust, mature for each project that will be done. It reads the context and can adjust towards this context.

2.1.3.4 Large scale scrum

Large scale scrum is another framework that can be used to achieve large scale agile. Large scale scrum tries to create more structure to the already existing scrum basis. Large scale scrum leaves space for individual twist and makes it suitable for every project (Larman and Vodde, 2017).

Large scale scrum has two more roles compared with non-large-scale solutions. These two roles are Area Product Owner and Product Owner Team and one more artifact, the Area Backlog. These extra roles are included to create a better view on the Product backlog for the different teams (Larman and Vodde, 2009).

2.1.3.5 Enterprise scrum

Enterprise Scrum excels in keeping the transformation simple. This framework believes that keeping a scaled agile approach simple within a multi-product enterprise gives the best results. It focusses on creating clearness within the culture of the companies and gives everyone clear roles within this large scale agile framework (Greening, 2010).



Figure 3 -The feedback loop of Enterprise Scrum (Greening, 2010).

2.1.3.6 Lean management

Lean management is one of the 'older' frameworks. It can be traced back to the Toyota way of manufacturing which has been first implemented by two Japanese engineers. This way of working has been implemented at first in the manufacturing industry but has later been adapted to all different departments within organizations (Arnheiter and Maleyeff, 2005).

Lean management focusses on the elimination of non-primary processes in order to optimize the process and remove all waste that is not necessary for reaching the goal of a process or project. By implementing this way of working, it is possible to work with the just-in-time method, where product will be delivered exactly at the moment they are needed by other colleagues (Arnheiter and Maleyeff, 2005).

2.1.3.7 Nexus

Nexus is one of the newer frameworks for large scale agile. This means that it is less used than for example Large Scale Scrum (Less) or Scaled Agile Framework (SAFe). It can be used in departments or organizations with more than two teams but less than nine teams. The Nexus framework is especially strong within larger project with a scope that can overlap between different teams. Due to the intermediate level of this framework some knowledge is necessary to have before this framework can be used (Alqudah and Razali, 2016).

Nexus is based on Scrum, therefore it has partially the same roles and structures as large-scale Scrum. Nexus can cope well in projects where the focus is on (Schwaber, 2018):

- Requirements: The Nexus frameworks copes very well with overlapping scopes, where different development teams have different scopes, where requirements overlap.

- Domain knowledge: This framework is a tool to distribute knowledge inside the whole organization. This means that the knowledge within each small team can be used across the large-scale project.
- Software and test artifacts: This is a focus on adding all the demands and requirements of all stakeholders into the software. By combining the requirements and the knowledge in the right way with combined with a framework, the best results will be achieved.

2.1.4 Agile Maturity

Since the introduction of Agile working, researchers and companies have sought ways to describe the level of proficiency in agile working. One of the first significant calls for more research on this topic can be identified in the paper from Laanti (2011), concluding that the body of knowledge lacked quantitative studies on agile methods (Gren et al., 2015). Gren, Torkar and Feldt (2015) responded to this by analyzing Sidky's agile adoption framework (Sidky, 2007). This approach is more specifically focused on the agile potential of an organization and helps companies to structure agile practices (Gren et al., 2015).

In this model, five levels are distinguished, describing the maturity in five agile principles: embrace change to deliver customer value, plan and deliver software frequently, human-centric, technical excellence and lastly customer collaboration. An example of this is the scale of planning and delivering software. The lowest level consists of 'regular' collaborative planning, whereas a company on level 4 presents smaller and more frequent releases with an adaptive planning. Sidky's definition of 'how agile' a company is, is based on the amount on practices from the table that the company uses (Gren et al., 2015).

A different approach for the defining of agile maturity, is the model identified by Patel and Ramachandran (2009), the Agile Maturity Model. In this model, there are also five levels identified, to be known: Initial, Explored, Defined, Improved, Sustained. Is this first level, there are no process improvement goals defined, whereas the fifth level uses project performance management. This model is used to scale agile maturity, but is, as mentioned by the authors, 'not an exhaustive representation of agile software development' (Patel and Ramachandran, 2009, p5).

The model is based on goals that companies should strive to achieve and helps orienting towards the right steps. Whenever the goal is met, a certain agile maturity is reached. It can be useful to help organizations switch to agile working as it gives a visual outline of the steps in becoming more agile (Patel and Ramachandran).

Although these models have made great attempts at visualizing and describing agile maturity and the steps to achieve this, both models are not suitable for large-scale agile frameworks. Both models have been tested in smaller organizations with smaller projects than is used in this research. A second important factor when determining the use of agile maturity models, is the development in the field. As the research on agile has grown, the practices have has improved over time and more knowlegfe about the development of an organization into an agile organization has become available. The research from Gren et al. (2015) and Patel et al. (2009) are both less recent than the agile maturity model as described by Laanti et al. (2017), which is a disadvantage when applying these models.

Therefore, the model used for this thesis is the model from Laanti (2017), which will be described in more detail below. This model is suitable for large scale agile and is the most recent model suitable for this research.

'The reason why many organizations start their agile transformation is the pursuit of business success' (Laanti, 2017). This paper describes the evaluation of a transformation, for the three common agile levels; portfolio, program and team. These three levels are all evolving from beginner, novice, fluent, advanced to eventually world-class. Almost all organizations strive to be at the top of their class, meaning, to reach the highest level possible. This way, they can compete on a global level.

Sometimes business goals will not be achieved due to misalignment between business and IT. Usually when in lower maturity levels, it is hard to know why and where the organization is failing (Laanti, 2017). The maturity level has a big influence on the results emerging from a transformation. As described by Laanti 'then these questions try to measure the capability of the organization, i.e. how good a cake can be baked?'. In other words, how can you evolve to a higher level when the company is not organized in a way they can handle this new level.

2.1.4.1 Beginner

This is the first level of maturity, meaning that traditional project will be transformed into projects based on the agile way of working, including new tools and new roles that come along with this change. All decisions within this phase are based on a certain framework, but the mindset is slowly changing towards a more agile based mindset. This means that people understand that in order to compete with competitors you have to restructure towards a project method including smaller iterations (Laanti, 2017).

2.1.4.2 Novice

In the novice phase, organizations have created a value stream. This phase also requires organizations to realize that all project have to be done in this new way of working and remove all previous traditional project methods. Management should be working on making sure that all employees work fluently with this new way of working, know how to measure the outcomes of projects and know how employees with technical backgrounds can improve the whole process (Laanti, 2017).

2.1.4.3 Fluent

On this level the whole organization understands the benefits that the new way of working will provide and almost all decisions within the organization are based on the agile way of working, meaning it is based on collected data from quick experiments. It is important this data will be saved for further decisions (Laanti, 2017).

2.1.4.4 Advanced

This level means that the organization is pushing its goals to the limits by making better use of the agile way of working. It is using all data gathered in the past and has compared all data to create methods that work perfectly within the organization. The mindset has completely changed, and this has happened by all employees, including management and development. New projects are set up with an agile mindset instead of being transformed towards an agile way of working project (Laanti, 2017).

2.1.4.5 World-class

When this level is reached, the organization has reached the highest level of maturity, meaning they found the perfect way to adapt agility within their organization. In general, companies now start helping other companies to improve their agility or buy companies to improve their project management (Laanti, 2017).

	Basics exist	Large scale agile in use	Large scale agile internalized	Agile first thought	Best in class
	Beginner	Novice	Fluent	Advanced	World-class
Portfolio	Prioritized portfolio Work identified as Epics, owner nominated Backlog tool support	Portfolio work is continuous Systematic and fast rolling decision- making Agile metrics	Options thinking In portfolio decision- making Measuring feedback, guidance based on data collected and trends	Detecting and utilizing fast business opportunities Agility part of values and company strategy	Ability to innovate new businesses that increase client competitiveness
Program	Agile projects / programs Incremental planning and execution Agility to embrace change	Agile release trains in use Agile roles in use and defined and carry responsibility Increment demos guide future development Organized for lean- agile way-of-working	Agile budgeting and cost follow-up Networked leadership Systematically speeding up production releases Agile metrics Acceptance test planned first before	Continuous positive feedback from customers from fast deliveries Ability to create systems and services previously impossible	Ability to respond rapidly to challenging customer needs Networked, empowered, self- controlled, adaptive organization
Team	Fast fixes as needed Scrum in use Dedicated build environment Version control	Automatic testing, integration and deployment efforts	Test-first approach Systematically removing impediments	production code practically error -free	Production releases multiple times per day

Figure 4 - Maturity model (Laanti, 2017)

2.2 Impact of large-scale agile methods on organizational performance

In this part the impact of large-scale methods on organizational performance will be described. First some professional literature will be described and afterwards the focus will be on theoretical literature to show the metrics that can be used in order to measure the impact of a large-scale agile transformation.

2.2.1 Professional literature

Calculations on the effect of large-scale agile transformations have been done by organizations who deliver these transformations. These professional organizations deliver a lot of case-studies in which the results of their work is described.

An overall improvement has been described by Scaled Agile Framework (Case Studies, 2018) based on several case studies. These case studies are results from several companies who have completed a large-scale agile transformation.

Professional companies see an increase in organizations all over the world. It improves on several levels, where the most common are: time-to-market, employee satisfaction, quality improvement, customer engagement (Case Studies, 2018). These improvements have been summarized in the following figure:



Figure 5 - Business results (Case Studies, 2018)

This figure shows the improvement seen by users based on their experience after a large-scale transformation. An improvement between ten and fifty percent can be seen when looking at the motivation and happiness of employees. With this improvement employees show more engagement towards their organization. Organizations are able to deliver value 30 to 75 percent quicker to the market than they were before the transformation. They are also able to improve the quality of their products by reducing the number of defects with 25 to 75 percent. Last, the organizations see an improvement of 20 to 50 percent in productivity of their teams (Case Studies, 2018).

Different companies have shared their more in-depth results of the transformations. These results show that a lot of the companies see these improvements.

2.2.2 Metrics

In this case study, eight metrics were used to answer four different questions about the effects of Agile working. In this study, the wording of the questions was altered to remove any positive biases that might occur when only researching improvements of the transition. Therefore, the final questions were formulated as 'How did X change?'. The overview of the questions and the metrics that were used are displayed in Figure 5 and will be described below.



Figure 6 - Metrics from Olszewska et al. (2016)

One of the goals of Olszewska's research, was to maximize the use of existing data that was accessible for them. They based this objective on the define-your-own-model guidelines described by Basisi et al. (1994). Since the data was gathered before, during and after the transition to the Agile way of working (WoW), it was also important that the data from projects in the old WoW and data from the new WoW

could be compared. Therefore, some metrics were changed before finalizing the metric model. In order to answer the first question - *How did the responsiveness change?* - they used the

Request Journey Interval and the Processing Interval. The main focus of the question is about time.

Metric 1. Request Journey Interval (Customer Service Request (CSR) turnaround time)

The first is based on the customer service request (CSR) turnaround time. This included all service requests, need for new features and problem solving. It was measured $CSR_{rerod} = CSR_{solv} - CSR_{cre}$, subtracting the CSR Creation time from the CSR Solving time.

Metric 2. Processing Interval: Lead-time per feature (end-to-end)

The Processing Interval was measured with the Lead-time per feature. This implies the time between a product being ready for implementation and the moment it is ready to be shipped. The shorter time in between those moments, the better for the company and the customer. It was measured LdTime = $T_{ship} - T_{impl}$.

In order to answer the second question – *How did the throughput change?* – they used the Hustle Metric and the BV Metric. The main focus of the question is about the total amount of value.

Metric 3. Hustle Metric: Functionality/ Money spent

The essence of this metric is the ratio of functionality to the money and/or effort that was spent on the product. The measuring instrument: features divided by money spent, in which both features and money spent are natural numbers that have to be greater than zero.

Metric 4. BV Metric: Nr. of releases/ Time period

The business value that is being measured here, is based on the frequency of major releases in a certain time period. This will not only provide more profit but will also improve customer satisfaction. Metric nr. 3 supports this metric, as a higher efficiency ratio (often) also means a higher amount of releases possible. BV is measured as the number of releases within a certain time period, with this time period being a natural number. An outcome of zero implies no releases have been done.

To answer the third question – *How did the workflow distribution change?* – the Pacemaker Metric and the Bottleneck Gauge were being measured. The main focus is workflow, as this indicates whether a company is able to discover issues and resolve them in time.

Metric 5. Pacemaker Metric: Commit pulse

This metric is measured by the frequency of the number of days between commits, at which a lower amount of days is better, if the commits are continuously spread. The measurement is the number of days between commits.

Metric 6. Bottleneck Gauge: Flow Metric

Measures the difference between the timestamps of each handover for features or service requests selected for development. Can be counted phase-wise or feature-decision wise. HandoverTime = TF_{t-} TF_{t-} timestamps denoting certain phase of processed feature and the proceeding phase of processed feature.

To answer the fourth question – *How did the quality change?* – the quality of the product is the aspect that is central to the question. The Snag Metric and the Typical Snag Metric are being used for this.

Metric 7. Snag Metric: Number of External Trouble Reports (TR)

Defect reports from external users. Whenever a product fails and a complaint or request for service is being made. Comparison between a certain time period with the old WoW and a certain time period with the new WoW. It is used to answer the question 'are we going in the right direction?'. Measured by the amount of TR's.

Metric 8. Typical Snag Metric: Average Number of Days Open External Trouble Reports The average number of days that external trouble reports had the status of unresolved. From start of trouble report to the date it was fixed. Implicitly also measured the quality of the product, as a good product will not have many error reports as an inferior version.

Another study describing metrics to measure organizational success and performance has been written by Laanti (2017), where a research at the Nokia company has been done. In this paper

she describes the need of companies to adapt to a different way of working. This Laanti (2017) research has been based on a survey done among employees within the Nokia company in order to test several metrics. These metrics were the following:

- Agile development increases the effectiveness of development
- Agile development increases the quality of the product
- Agile development increases the transparency of development
- Agile development increases collaboration
- Agile development makes work more fun
- Agile development makes work more organized/planned
- Agile development increases the autonomy of development teams
- Agile development enables the earlier detection of bugs/errors/defects
- Agile development makes work less hectic

Besides these metrics, the survey was designed in a way that the satisfaction of employees could be measured. On top of that, this research studied if employees are more satisfied with the new way of working, compared to their old way of working.

2.3 Research gap

After reviewing the available professional and theoretical literature about Large Scale Agile benefits and improvements, a research gap has been identified. Within theoretical literature there's not much knowledge about large scale agile transformations frameworks and the effect these transformations have on organizational performance. The link between case studies and theoretical literature is missing. There has been some research that implicates positive links between Large Scale Agile and organizational performance. Previous research that has been done within the field of organizational performance versus large scale agile has had very limited scoping due to the setup of this research (Laanti, 2011).

3 Research Model

After reviewing the available literature about Large Scale Agile benefits and improvements, a research gap has been identified. This research gap, where there is no clear comparison between the different large-scale agile frameworks and organizational performance leads to the following main question for this study:

What is the impact of large-scale agile transformation frameworks on organizational performance?

Based on the found literature and found relations in practice, hypotheses can be drawn about the link between Large Scale Agile usage, organizational performance and satisfaction about the results of a transformation.

Hypothesis 1: Large Scale Agile implementation has a positive effect on organizational performance

This hypothesis is based on research earlier done by Laanti (2017), where the outcomes of agile were positive. With the current research the effects of large scale agile could be measured. Due to the measurement options, the usage of large scale agile will be divided into different maturity levels, more detailed information about this can be found in the next chapter.

Hypothesis 2: Higher employee satisfaction about the transformation has a positive effect on organizational performance.

With this hypothesis, the effect of employee satisfaction on organizational performance will be researched. Based on research from Harter, Schmidt & Killham (2003), the expectation can be drawn that employee satisfaction correlates positively with organizational performance. This expectation is also based on results from practice, since higher satisfaction in general will lead to higher organizational performance, since satisfied employees, in general, perform better (Schneider, Schmitt (1986)).

3.1 Conceptual model

The two hypotheses mentioned above give the following conceptual model:



Figure 7 - Conceptual model

After creating the survey, a second, more in dept conceptual model has been created, with the questions implemented and expected relations included.



Figure 8 - Conceptual model extended

4 Research Methodology

This chapter will focus on what research methodology will be used to research the earlier mentioned hypotheses. First, the research method will be described.

4.1 Research Method

Choosing the right research method is highly important for conducting a useful and valuable study. The method should be based on the conceptual framework and the propositions in it (Hak, 2011). The question that will be answered in this thesis is: What is the difference in effect on organizational performance while using a certain type of large-scale agile framework?

To gather the relevant data, a survey will be used to collect information about the propositions mentioned in the framework above. The basis of this study is quantitative, which allows for a generalization of the results for the population. It is not uncommon to use surveys for this category of research, as seen by Chow & Cao (2008), Cockburn & Highsmith (2001), Laanti, Salo & Abrahamsson (2011).

4.2 Survey

In order to come to a survey as the right way of executing this study, Saunders Onion has been used (Saunders, Lewis, Thornhill (2006)). This research has been done with the philosophy of interpretivism, this is done to not lose any data by reducing the complexity of the transformation and its results. This research approach will be a deductive way, were a main question and hypotheses are created in order to test the truth. The used strategy is a survey, in order to generate as much comparable data as possible. The study will be longitudinal since this research will investigate the change over time.

First, a population and a unit of analysis have been determined.

4.2.1 Unit of Analysis

It is necessary to determine the unit of analysis before a study can start. The unit of analysis is the group of people/organizations that are being analyzed in the study (Cohen, Manion and Morrison, 2000). Before a consistent measuring tool can be created, it is important that the study has determined limits and a unit of analysis.

Since this research is about the effects an agile transformation has on the organizational performance of companies, the unit of analysis will be organizations. Of course, it is necessary that these companies are currently undergoing or just finished a transformation.

4.2.2 Population

After the unit of analysis has been defined, the population needs to be well defined as well. This is an important phase during the survey due to the importance of expert level of participants. In case of this research, multiple characteristics are important for participants. That means that all companies that have implemented large scale Agile are suitable to take part in this research. As not all employees are really involved in the transformation itself, the population should be more precise and should be narrowed down to a more specific number of people.

This implies that the population for this study will be narrowed down to employees directly involved in the transformation, since they have a more precise look on the transformation. These employees should be able to answer all the questions from their personal experience without having to consult other employees for input.

The population of this study is therefore described as: employees within companies which have been in a transformation or are currently undergoing one, where the employee has been involved in the transformation.

4.2.3 Distributing

This survey will be held in co-operation with Accenture The Netherlands. This means that a large network of companies and managers will be available to cooperate with and contact people. Besides that, several online groups of people with a lot of agile experience could be reached out to. The aim is to at least get 100 responses from participants who complete the survey. This means distributing the survey within companies' higher management, who is generally responsible for the transformations.

In order to collect all the different data, several employees within the same company will be contacted. In order to gather financial data as well, higher management has to be contacted as well. On the other hand, in order to gather satisfaction data, employees from all different levels have to participate.

Distributing will take place internally within Accenture The Netherlands, towards consultants who are working at external companies and who have the right knowledge to participate in the survey. Simultaneously, distributing will take place at external companies. To do this, companies who are known to just have completed a transformation will be contacted. Due to the 'hype' around large scale agile, those companies are open and honest about just completing the transformation. When looking at the different roles within the transformation suitable, the following table describes the deviation of participants needed:





4.2.4 Survey design

To be able to answer the two hypotheses created, questions should be created. In order to measure the level of maturity within companies earlier done research will be used. As described in the literature section, this research divides three different levels within large scale agile; portfolio, program and team level. For each of these levels a scale from beginner towards world-class is created. This way, employees can indicate their level of maturity with using Agile within their companies.

This creates the following question: 'Q16 - Where in the Agile Transformation Model (Table 1) do you consider your organization currently?'. The answering scale is based on research done by Laanti (2017), meaning the scaling will be 'Beginner' - 'Novice' - 'Fluent' - 'Advanced' - 'World-Class'. These different levels are explained in the survey, in order to make sure that participants can compare their

situation with this maturity model (See Appendix 1 for the table).

Other questions were created to answer the hypotheses was about satisfaction. This question has been based on the Likert Scale (Likert, 1932). Hereby, a 7-point scale has been created in order to get results from the data. The question asked was: 'Q20 - How satisfied are you with the results of the transformation (so far)?'. As mentioned, the answering scale has been based on the Likert Scale, so the answering options were: 'Extremely satisfied' - 'Moderately satisfied' - 'Slightly satisfied' - 'Neither satisfied nor dissatisfied' - 'Slightly dissatisfied' - 'Moderately dissatisfied' - 'Extremely dissatisfied'.

In order to measure organizational performance improvement several metrics have to be measured. As described in the literature section, these metrics have been based on earlier done research. Combing these created a sufficient set of measurement metrics to measure organizational performance. These different metrics have been described in the literature review. The scale for these questions has been set from an improvement of zero percent towards an improvement of one hundred percent.

4.2.5 Expert input & quality assurance

Next to the theoretical literature input for this survey a lot of input from experts in the field is used. This knowledge has been gathered from employees within Accenture the Netherlands and from employees outside of Accenture the Netherlands. With this input multiple versions of the survey have been tested. Upfront, questions that were related to problems that employees run into in practice were given, in order to improve the survey.

Later on in the process, the experts were willing to give input and feedback on the survey, this made it possible to do several test runs of the survey and get additional feedback. This way, several questions have been slightly adapted or answers have been modified before spreading the final survey in order to make better measurement possible with the survey results.

With this survey a number of metrices will be calculated, as described above, these metrices have come out of related studies in the field. These earlier done research papers give results on smaller scale but can be used to compare results in order to validate these results.

The survey will be created in several iterations. This means that with every version feedback will be received from experts from Accenture The Netherlands and external experts. Both of these groups of people will give feedback on the survey by looking at the content but will also look at the way the survey is set up. Are the questions right for the audience? Will they be able to answer all questions? Is the tone of the survey correct? Does the survey take too much time to complete?

4.2.6 Categorization questions

The survey will be set up is such a way that there will be background questions about the employees and their companies. In this survey that control variables are on personal level:

- Role in organization: Are there any differences in results between different levels of employees?
- Role in transformation: Do the results differ depending on the role within a transformation?

And on organization level:

- Company size: Do the results differ depending on company size?
- Company industry: Are there any differences in results between different industries where the companies operate in?

5 Survey data and descriptive analysis

In this chapter, the gathered data will be analyzed and will be discussed. The data that was collected with the survey has been analyzed using different statistical analysis. The first analysis has been looking into all the different characteristics. These different characteristics are shown in different diagrams using descriptive analysis.

5.1 Data and Sample size

This survey had a difficult audience. Due to the selective amount of companies already willing to share their information about these transformations. During the three-week data collection period the survey reached a large audience. This audience has been reached by using different distribution channels. The survey was posted on internal channels from Accenture, due to an internship, these are large groups of Agile (Transformation) experts. These experts also forwarded the survey to external experts and Transformation sponsors at external companies to gather a as complete as possible audience.

Next to these internal channels, external channels have been used. The survey has been posted within several communities (within for example LinkedIn) with thousands of experts in those groups. The final size of the sample used for the analysis consist of 134 responses. These responses came out of 264 people starting the survey, which gives a completion rate of 51%. Previous research (Dalen, 2008) showed that a minimum of 20 percent is a preferable response rate, this rate has been reached with this survey. Due to the nature of this survey, there is no information about the non-respondents, therefore there is no input for the non-response bias, so this could not be determined.

5.2 General Characteristics

After importing the data into SPSS various information was generated. In the next paragraph information will be given about the data.

5.2.1 Industry

A large part of the participants come from three different industries. These industries are the software industry (21,64%), financial services (17,91%) and professional services (15,67%). The expected reason for higher percentages of these industries is that the agile way of working has been more adapted within these industries. Next the three biggest industries this sample has participants from different industries. The responding participants were working in the following industries: Telecom (6,72%), Utilities (5,97%), Healthcare (4,48%), Retail (4,48%), Government (3,73%), Manufacturing (3,73%), Consumer Products (2,99%), Public Services (2,24%), Transportation (2,24%), Insurance (0,75%), Media & Entertainment (0,75%), Internet Services (0,75%), Education (0,75%).

Industry	Respondents	Percentage
Software	29	21,64%
Financial Services	24	17,91%
Professional Services	21	15,67%
Telecom	9	6,72%
Utilities	8	5,97%

Tabel 1 - Responses per industry

Other*	7	5,22%
Retail	6	4,48%
Healthcare	6	4,48%
Manufacturing	5	3,73%
Government	5	3,73%
Consumer Products	4	2,99%
Transportation	3	2,24%
Public Services	3	2,24%
Education	1	0,75%
Internet Services	1	0,75%
Media & Entertainment	1	0,75%
Insurance	1	0,75%

5.2.2 Roles within transformation

The main roles participants had within the different transformations were Agile Program Coach (26,12%) and Transformation Manager / Lead (21,64%). Other roles participants had within transformations were Team Coach (21,64%), Transformation sponsor (8,21%) and Devops coach (5,22%).





5.2.3 Size of company

Most of the companies' participants are employed in large organizations. This means that most companies in this sample have more than 50.000 employees (38,06%). Next to these larger organizations, employees work at companies with an employee number between 1.001 and 5.000 employees (23,88%), less than 1.000 employees (19,40%), between 20.001 and 50.000 employees (9,70%) and between 5.001 and 20.000 employees (8,96%).





5.2.4 Maturity

The survey tested the maturity level of the current state of the Agile Transformation. This has been tested based on research done by Laanti (2017). This research divides three different levels; portfolio, program and team level. From the sample taken with the survey we can see that these levels are not aligned.

On team level the biggest group of participants estimated their company at advanced level (29%). The other participants estimated that their organization was fluent on team level (23%), novice on team level (20%), beginner on team level (19%) and a smaller group estimated world-class level (8%).

On program level the biggest group of participants estimated their company at novice level (32%). The other participants estimated that their organization was beginner on program level (26%), fluent on program level (18%), advanced on program level (18%) and world-class on program level (7%).

On portfolio level the biggest group of participants estimated their company at beginner level (38%). The other participants estimated that their organization was on novice level (25%), fluent on portfolio level (17%), advanced on portfolio level (14%) and world-class on portfolio level (7%).



Figure 12 - Agile Maturity Level

5.2.5 Satisfaction

During the survey, satisfaction has been tested, the question was asked whether employees were satisfied with the results of the transformation. The biggest group of participants was moderately satisfied with the results of the transformation (38,06%). Other groups of participants were slightly satisfied (20,90%), extremely satisfied (18,66%), slightly dissatisfied (8,21%), neither satisfied nor dissatisfied (7,46%), moderately dissatisfied (3,73%) and extremely dissatisfied (2,99%).



Figure 13 - Satisfaction level

5.2.6 Investment

The survey has investigated the average investment done to support the transformation. The outcome of this research is that the biggest group of participants tell that the transformation needed an investment between ξ 500 thousand and ξ 2 million (26,72%). The other participants said that the investment needed was between ξ 2 and ξ 10 million (25,19%), between ξ 100 and ξ 500 thousand (16,03%), less than ξ 100 thousand (14,50%), more than ξ 50 million (9,16%) and between ξ 10 and ξ 50 million (8,40%).



Figure 14 – Investment

5.2.7 Transformation Strategy

During the research participants were asked about the strategy used to implement large scale agile within their company. Most companies used the bottom up strategy (42,54%). Other companies used the department by department strategy (29,10%), the big bang strategy (11,94), the new department strategy (7,46%) and the new company strategy (0,75%). Eight percent of the participant said they used another strategy or no strategy at all.



Figure 15 - Strategy used for transformation

5.2.8 Framework

Next to the strategy used for the agile transformation, the survey investigated the framework that companies use for their transformation. From the sample taken during the survey the biggest group of participants used the Scaled Agile Framework[®](SAFe[®]) (42,11%). Other participants said they used Scrum of Scrums (19,55%), Internally created methods (14,29%), Enterprise Scrum (3,01%), Large scale scrum (2,26%), Lean management (2,26%), Nexus (0,75). Other participants said they used other or no framework for the transformation (15,79%). No respondents from this survey said they used the Disciplined agile delivery or agile portfolio management frameworks for their transformation.



Figure 16 - Framework used for transformation

5.3 Descriptive analysis

After the general characteristics of the data the logical next step is to further analyse the data by forming descriptive tables. These tables will give a better understanding of the survey data. This analysis is mainly focused on the differences in responses based on industry, framework used during the transformation and strategy used during the transformation.

The results give a clear view of the distribution of the answers given by the participants. The results show that satisfaction of the agile transformation give an average of 5,3. This is based on a 7-point Likert scale. This number indicates that on average respondents were more than moderately satisfied with the transformation. Satisfaction is highest within consumer products and education. Lower satisfaction is measured at financial services and manufacturing. Media & Entertainment and Internet Services are kept out of scope, since limited participants worked in those industries.



Satisfaction per Industry

The next variable analyzed is investment per industry. Investment is, in this survey, a combination of different topics, all added together: training, coaching, organizational consulting, technological consulting and software development. This diagram shows that on average companies invested 10 million Euro in the transformation. The Public Services and Utilities industries had on average the highest investments, where Consumer Products and Telecom have on average lower investments.

Figure 17 - Satisfaction per industry



Figure 18 - Investment per industry

The next statistic is about the satisfaction per framework. Different frameworks have been used within transformation in this sample taken with the survey. The data shows that Enterprise scrum, Scrum of scrums and Scaled Agile Framework give higher satisfaction. No framework or other frameworks give lower satisfaction.



Satisfaction per framework

Figure 19 - Satisfaction per framework

Satisfaction has also been measured compared to company size. This will give an indication whether bigger companies have more trouble satisfying their employees during and after a transformation. This has been measured on a 1 to 7 Likert scale. The results are that the highest satisfaction is for companies between 5.000 and 20.000 (5,77) employees. Next are companies with more than 50.000 employees (5,47), followed by companies between 20.000 and 50.000 employees (5,25), companies with less than 1.000 employees (5,15) and companies with an employee number between 1.000 and 5.000 (4,91).



Figure 20 - Satisfaction compared to company size

The next questions in the survey investigated the impact of an agile transformation on organizational performance. Organizational performance has been divided into different topics for this survey. All these results are a percentage improvement of organizational performance.

• All metrics combined:

Framework	Improvement of organizational performance:
Enterprise scrum	71,5
Scrum of scrums	71,4
Lean management	67,6
Nexus	64,9
Total:	62,5
Scaled Agile Framework	62,5
Internally created methods	59,1
Large scale scrum (LESS)	55,7
Other:	55,1

None	47,6

As seen in table 2 the use of large scale agile has a positive effect on organizational performance. This has been measured in the survey by dividing organizational performance into separate metrics, who could all be measured during the survey. These factors were:

• Large Scale agile increases the effectiveness of development

During this study an improvement of 60% was found in the survey. Employees using the enterprise scrum framework and the scrum of scrums framework even found an improvement of more than 70%, were other participants, using the Nexus framework only found an improvement of 45%.

• Large Scale agile increases the quality of the product

Results show that participants see an improvement of 61% in the quality of the product after implementing large scale agile. Participants using the enterprise scrum framework see an increase of almost 75%. In this metrics, participants not using an framework to implement large scale agile only see an improvement of 37%. This shows the value of using a framework when implementing large scale agile.

• Large Scale agile increases the transparency of development

The survey shows that there is an increase of 70% in the transparency of development. The range of this increase is between 46% (when no framework is used) and 80% (when the Scrum of scrum framework is used). Meaning the participants saw a very significant improvement of their transparency of development.

• Large Scale agile improves the time-to-market

The improvement of the time-to-market has been, on average, 67%. When using no framework to implement large scale agile the improvement was 53% while the improvement was 82% when using the lean management framework.

• Large Scale agile increases collaboration

Collaboration has increased with a very high percentage, on average with 75%. The lowest improvement has again been at the companies were no framework has been used (65%), where companies using Enterprise scrum have seen an increase of 86%, so almost double of what they were used to.

• Large Scale agile makes work more fun

The survey shows that employees have more fun during their work when working with large scale agile. On average the improvement seen in the survey has been 63%. Again, the lowest improvement is seen when no framework is used (40%), where the improvement is a lot higher when the Nexus framework is used (88%).

• Large Scale agile makes work more organized

Participants see, on average, an increase of 57% in this metric. This is a relative low increase when looking at different metrics. The lowest increase is seen when the Nexus framework is used (32%), where a larger increase is seen when using the scrum of scrums framework (67%).

• Large Scale agile makes work more planned

The survey shows that using large scale agile increases this metric with 55%. The results of this metric vary between an increase of 40% when no framework is used and 67%, when the scrum of scrums framework is used.

• Large Scale agile increases the autonomy of development teams

The autonomy of development teams shows an average increase of 64% after a large-scale agile transformation. The biggest difference between different frameworks used is almost 44%, where the lowest improvement is 42%, where the highest improvement is 86%, when the Nexus framework is used.

• Large Scale agile enables the earlier detection of bugs, errors and defects

On overage, an improvement of 67% is seen in the earlier detection of bugs, errors and defects. The lowest improvement has been with the Nexus framework, were only an improvement of 49% has been seen. When using the Enterprise scrum framework, the participants saw an improvement of 78% in the earlier detection of bugs, errors and defects.

• Large Scale agile makes work less hectic

The implementation of large scale agile decreases the hectic at work with 49%, When using internally created methods, the hectic at work will be decreased with only 43% while using the Nexus framework will decrease the hectic at work with 78%.

An overall table has been created, in order to give a clear overview of the results of this study. It is important to keep in mind that later on in the study, only the framework with enough respondents will be used in order to create more validity.

Framework	Respondents	Effectiveness	Quality of product	Time-to-market	Collaboration	Fun	Planned	Organized	Less hectic	Earlier detection of defects	Transparency of development	Autonomy of development teams	Average
Scaled Agile													
Framework	56	60,5	61,5	64,2	76,1	65,8	53,7	56,5	44,2	68,0	72,2	64,6	61,9
Scrum of scrums	26	72,5	72,7	75,1	78,7	66,8	66,7	67,3	59,3	74,3	80,3	71,8	67,6
Internally created													
methods	19	54,6	56,9	62,8	75,4	60,8	54,5	54,8	42,8	62,4	63,5	61,7	55,8
Other:	13	46,5	52,6	65,5	71,6	60,0	47,7	45,8	40,5	57,5	61,8	56,2	51,6
None	8	48,5	37,1	53,4	64,5	40,0	39,8	42,4	56,1	53,3	46,4	42,3	44,3
Enterprise scrum	4	74,8	74,3	69,5	85,8	63,3	61,0	67,0	64,8	78,0	70,0	78,3	65,9
Large scale scrum													
(LESS)	3	53,3	53,3	75,0	60,3	72,3	50,0	38,7	46,3	56,7	56,0	50,3	51,3
Lean management	3	64,0	70,7	82,0	63,3	58,0	54,7	69,7	67,0	74,3	71,7	68,3	62,2
Nexus	1	45,0	53,0	70,0	84,0	88,0	52,0	32,0	78,0	49,0	77,0	86,0	59,6
Total:	133	57,7	59,1	68,6	73,3	63,9	53,3	52,7	55,4	63,7	66,5	64,4	67,6

Table 2 - Organizational performance improvements per framework

6 Hypotheses and correlation testing

In this chapter the two hypothesis will be tested with a correlation test. Furthermore, the survey data has been studied in order to find other correlations that could be interesting to describe and add to the research model.

6.1 Correlation testing

In this chapter, the correlations between the topics of the hypotheses will be investigated. Hereby the correlation between agile maturity and the impact on organizational performance has been analyzed. For the second hypothesis, the correlation between satisfaction and the impact on organizational performance has been analyzed. Furthermore, the complete dataset has been analyzed to see if there were any other interesting correlations which were not in the conceptual model.

6.1.1 Agile maturity - organizational performance

This first correlation comes from the first hypothesis and is based on the different organizational improvements compared with the agile maturity of a company. It has been split up into the three different levels of company maturity, to make sure that the correlations can be seen for each of the different levels. The correlations are, excluding one (Makes work more fun compared to agile maturity level on portfolio level) significant.

	A			A silita a Deserve			A		
	Agility -			Agility - Program	1		Agility -		
	Portfolio						Team		
	Pearson	Sig. (2-	Ν	Pearson	Sig. (2-	Ν	Pearson	Sig. (2-	Ν
	Correlation	tailed)		Correlation	tailed)		Correlation	tailed)	
Increases the effectiveness of development:	.450	0,000	129	.511	0,000	129	.487	0,000	130
Increases the quality of the product:	.322	0,000	128	.450	0,000	128	.392	0,000	129
Improves time-to-market:	.373	0,000	126	.381	0,000	126	.382	0,000	127
Increases collaboration:	.279	0,001	129	.297	0,001	129	.244	0,005	130
Makes work more fun:	0,121	0,174	128	.212	0,016	128	.225	0,010	129
Makes work more planned:	.263	0,003	127	.356	0,000	127	.263	0,003	128
Makes work more organized:	.303	0,001	126	.379	0,000	126	.305	0,000	127
Makes work less hectic:	.426	0,000	125	.363	0,000	125	.359	0,000	126
Enables the earlier detection of defects:	.357	0,000	127	.439	0,000	127	.413	0,000	128
Increases the transparency of development:	.237	0,007	130	.319	0,000	130	.332	0,000	131
	.298	0,001	129	.350	0,000	129	.372	0,000	130
Increases the autonomy of development teams:									

Table 3 – Correlation between improvement and maturity

6.1.2 Employee satisfaction - organizational performance

The second correlation is the correlation between employee satisfaction and the improvement of organizational performance. This correlation has a minus because of the setup of the question. All correlations, excluding one (time-to-market improvement) are significant. The significance is lower than the 0.05 limit.

	How satisfied of the trans Satisfaction:	are you with soften are you with soften are s	the results to far)? -
	Pearson Correlation	Sig. (2- tailed)	N
Increases the effectiveness of development:	385**	0,000	130
Increases the quality of the product:	309**	0,000	129
Improves time-to-market:	-0,167	0,061	127
Increases collaboration:	179*	0,041	130
Makes work more fun:	218*	0,013	129
Makes work more planned:	309**	0,000	128
Makes work more organized:	340**	0,000	127
Makes work less hectic:	262**	0,003	126
Enables the earlier detection of defects:	301**	0,001	128
Increases the transparency of development:	250**	0,004	131
Increases the autonomy of development teams:	252**	0,004	130

6.1.3 Other findings

After analyzing the results of the survey, two more interesting results were found:

- Agile maturity - employee satisfaction. The results of this correlation were the following:

This correlation was found after the survey was done. It is a correlation between the level of agile maturity within a company and the satisfaction of results. This correlation has a minus because of the setup of the question. This correlation means that the more agile mature a company is, the more satisfied employees are.

Table 5 - Correlation between agile maturity - satisfaction

		Where in the Agile Transformation	Model (Table 1) do you consider	your organization currently? - Portfolio	Where in the Agile Transformation	Model (Table 1) do you consider	your organization currently? - Program		Where in the Agile Transformation	Model (Table 1) do you consider	your organization currently? - Team	
How satisfied are you with the	Pearso n		-	.384**		-	.387	**		3	387	**
results of the	Correlat											
transformation (so	ion											
far)? -	Sig. (2-			0,000		(0,00	0		0	,000	0
Satisfaction:	tailed)											
	N			133			13	3			134	4

- Agile maturity - company size. The results of this correlation were the following:

Another correlation that was found in the survey data, is the correlation between the size of a company, and the level of agile maturity within that company. This correlation means that when the number of employees within a company increase, the level of agile maturity increases as well.

Table 6 - Correlation between agile maturity - company size

		Where in the Agile	Transformation Model (Table 1)	do you consider your	organization currently? - Portfolio	Where in the Agile	Transformation Model (Table 1)	do you consider your	organization currently? - Program	Where in the Agile	Transformation Model (Table 1)	do you consider your	organization currently? - Team
How many employees are working within your	Pearson Correlation		-	32	2		_	34	4		-	23	6
organization?	Sig. (2- tailed)		0	0,0	00		0),0	00		(),0	06
	Ν			1	33			1	33			1	34

6.2 Hypotheses testing

During this research, hypotheses were formulated, in order to add value to the research, when looking back on these hypotheses, the following conclusions can be drawn.

Hypothesis 1: Large Scale Agile implementation has a positive effect on organizational performance

Hypothesis 1 is accepted.

Looking back at the conceptual model, this can now be drawn as a model with correlations in it. This positive correlation between all the different metrics mean that when agile maturity increases the results of an agile transformation increase as well.

Table 7 - Correlation model



This correlation model shows that the more agile mature a company is, the more impact there is on organizational performance.

When looking at the results of the survey, the following answer for this hypothesis can be drawn. As seen in the results section, the average percentage of improvement of organizational performance when implementing large scale agile is 62,5%. This is the average of all positive metrics measured in the survey.

Table 8 - Improvement in organizational performance

Improvement of organizational performance:

Total: 62,5%

Hypothesis 2: Higher employee satisfaction about the transformation has a positive effect on organizational performance.

Hypothesis 2 is accepted.

When looking at the results of the survey, this hypothesis can be accepted as well. The correlation in this hypothesis is moderate, but strong enough to see a correlation between the different subjects. This correlation is shown in table 8.

The results of the survey confirm the correlation, since the positive impact on organizational performance increases when the level of satisfaction increases. Hereby the numbers show that with the lowest satisfaction the average improvement of organizational performance is 45%, where the highest satisfaction shows an improvement of 77%.

Table 9 - Organizational performance improvement compared to satisfaction

Satisfaction	Organizational performance improvement
Extremely satisfied	77
Moderately satisfied	62
Slightly satisfied	59
Neither satisfied nor dissatisfied	50
Slightly dissatisfied	52
Moderately dissatisfied	58
Extremely dissatisfied	45

Organizations are always looking for ways to improve their business. By implementing large scale agile, several organizational performance indicators have been improved a lot. This means that for further implementations, expectations can be drawn, and more reasonable measurements can be done before a transformation, measuring the fact if a transformation is beneficial or not.

7 Discussion

In this chapter, the focus will be on interpreting the results of the study. This chapter has been divided in several subchapters, so that all different findings will be discussed.

7.1 Impact of large-scale agile frameworks on perceived organizational performance.

With the results of the survey four findings could be described around the impact of large-scale agile frameworks.

(1) As seen in table 2, all frameworks give high improvements, the lowest average improvement after a large-scale agile transformation with a large-scale framework is 51,3%. This means that improvements are seen by all employees, even employees who are less satisfied with the results of a transformation do see a lot of positive results.

(2) What is interesting to see is that when companies try to do large scale agile without a framework, results are a lot less positive compared to the results when using a large-scale agile framework. On average, results are 36% better when using a large-scale agile framework, which is a significant number in a business environment. These numbers were expected, due to the results and improvements seen in practice. On the other hand, the frameworks are criticized a lot, due to the false sense of security these frameworks give. This improves results on the short term, but on the long term, they only transform your way of doing business, without reaching the true advantages of Large-Scale Agile (Vaidya, 2014).

(3) As seen in figure 15, a lot of participants use the same large-scale frameworks, according to these results, more than 60% of the participants use the Scaled Agile Framework or the Scrum of Scrums framework. When looking at other surveys done within the field of large-scale agile transformations and the frameworks used (Version One, 2016), these numbers show very similar results.

(4) Between the tested large-scale frameworks differences have been recognized, see table 2. Due to the limited responses for the separate frameworks, it is difficult to draw conclusions based on this data. One of the better performing large-scale frameworks, based on this study, is the Scrum of Scrums framework. It is important to realize that this is based on the survey conducted in this study, more detailed research on these different large-scale frameworks should be done in the future. Based on the already available literature, these results were somewhat unexpected, since previous studies demonstrate that the Scrum of Scrums Frameworks shows significant downsides on performance (Paasivaara, Lassenius, Heikkilä, 2012). Other research goes deeper into the factors why Scrum of Scrums is less effective, due to the lack of team-spirit and the lack of feeling of responsibility (Paasivaara, Lassenius, 2011).

7.2 Model for the relationship between Agile transformation strategy, Agile Maturity, Organizational Performance and satisfaction.

While doing this study, two hypotheses were based on literature and could be included in the research in order to find interesting insights. With these two hypotheses a conceptual model could be created, which would first be tested in the survey.

(1) The results of this research created a next version of the conceptual model, with correlations included. What is interesting to see, is that different metrics have different correlations with maturity and thereby have different results. For example, when looking at the increase of effectiveness of development, a moderate to high correlation can be found, where other metrics only have moderate correlations. This high metric correlation, between Agile maturity and increase in effectiveness of development is shown in other research as well (Laanti, 2011). This could be explained when looking at the development of employees. When looking at the results of this survey, a growth in team level maturity is seen. This means that teams perform better than before the agile transformation, which will first be visible within teams and their performance. Another factor, for example the improvement of fun at work, will have less correlation with the level of maturity. This was an unexpected outcome, based on what the experts have noticed in their professional work experience they see a lot more fun at work after implementing large-scale agile. Other research indeed confirms this observation that higher maturity gives more fun at work (Gren, Torkar, Feldt, 2017).

When combining all the different metrics and different agile maturity levels, the following model could be created:



Table 10 - Survey model

(2) As seen in table 11, the correlations differ from 0.2 towards 0.5, this means that besides the Agile Maturity factor, other factors influence the impact on organizational performance as well. Hereby, influences such as employee commitment or management focus probably have influence as well. Practice shows that employees will perform better when higher management is involved in the transformation and is willing to focus on the new way of working (Moe, Dingsyr, Kvangardsnes, 2009).

(3) Strangely enough, there was no correlation found between the strategy used and the results of a transformation. Also, no correlation was found between the used strategy and the employee satisfaction. On forehand, these correlations were expected, so these two topics could be interesting for possible further research. Further research should discuss the possibility that other factors have influence on the results of a transformation, such as leadership approach or company culture.

(4) The correlations between agile maturity and organizational performance indicate that it is very important to keep investing in a more agile mature company, since this has effect on organizational performance metrics. This correlation does make sense, since a more agile mature company will be able to make more use of the benefits an agile way of working gives. These benefits are included in the metrics stated in table 11, so these will increase when being more agile mature.

7.3 Model for the relationship between satisfaction, company size and agile maturity

Later on in the study the first conceptual model could be extended with more interesting insights from the survey. The two extra findings were a correlation between company size and the average company level of agile maturity and a correlation between the company level of agile maturity and how satisfied employees were with the results of a large-scale agile transformation.

(1) The first finding, the correlation between company size and the average company level of agile maturity is a difficult to describe finding. In general, smaller companies have more agility and can easier adapt do emerging technologies in their field. However, bigger companies have, in general, more money to invest in agile maturity. Hence, large companies can invest in external expertise and can use this external knowledge to their advantage.

(2) For the second finding, the correlation between employee satisfaction and the company level of agile maturity, numbers can be found in the results section. Here, a negative correlation has been found, which is a direct result of the fact that the satisfaction question has been done with a Likert scale, with the worst option on the right and the best option on the left side. This means, all these results should be turned around, so a positive correlation could be found between employee satisfaction and company level of agile maturity. A possible cause for this correlation can be found in the origin of employees; in general, employees are willing to work harder and improve themselves more when they are satisfied with their work. This strengthens the reasoning that, when employees are more satisfied with their work, they are willing to invest more in themselves and keep on learning, with the result that the company level of agile maturity will increase as well. The second possibility for this correlation can be found in the roles of participants; employees participating in the study are closely involved in the large-scale agile transformation and could have a false feeling of maturity, since they are very mature, but other parts of the company don't reach that level of maturity.

	Po	ortfolio	Program	Team	* = Significance < 0.05		
		0.450*	0.511*	0.487*	Q17 -Increases the effectiveness of development	- <u>0.385</u> *	
		0.322*	0.450*	0.392*	Q18 - Increases the quality of the product	-0.309*	
		0.373*	0.381*	0.382*	Q19 - Improves time-to-market	-0.167	
		0.279*	0.297*	0.244*	Q20 - Increases collaboration	- <u>0.179</u>	How
		0.121	0.212*	0.225	Q21 - Makes work more fun	-0.218*	satisfied are
Where in the Agil	le	0.263*	0.356*	0.263*	Q22 - Makes work more planned	-0.309*	the results
Transformation Mo (Table 1) do you con:	odel sider	0.303*	0.379*	0.305*	Q23 - Makes work more organized	-0.340*	of the transformati
your organization currently? (Q16))	0.426*	0.363*	0.359*	Q24 - Makes work less hectic	-0.262*	on (so far)?
1		0.357*	0.437*	0.413*	Q26 - Enables the earlier detection of defects	-0.301*	
		0.237*	0.319*	0.332*	Q27 - Increases the transparency of development	-0.250*	
		0.298*	0.350*	0.372*	Q28 - Increases the autonomy of development teams	-0.252*	
		0.384*	0.387*	0.387*			
		0.322*	0.344*	0.236*	How many employees are working within your organization?		
					(Q5)		

Both these findings have been included in the final research model, which gives the following model:

Figure 21 - Final study model

7.4 Limitations

The first limitation is the number of participants in this study. Due to the distribution of participants, it is hard to generalize the results of this study (Hak, 2011). Although this is a limitation that occurs in many studies, it's important to mention.

Another limitation of this study has been the lack of prior research done on this topic. Due to the limited input for the research some of the survey questions have not been based on literature but have been based on knowledge from experts in the field. This made the survey a time-consuming part of this study due to the feedback needed.

A large part of the participants came from The Netherlands, so there is a risk of this research being influenced with a cultural bias. Although the results have been compared between The Netherlands compared to the rest of the world, it has been hard to generate results for other countries besides The Netherlands.

When looking at the participants, large group of the respondents have used the same framework. These specific characteristics have made it difficult to compare between the different frameworks but gave the possibility to compare between using and not using any type of large-scale framework.

7.4.1 Threats on validity

Due to the setup of this study, it is important to look at the threats on validity. Several factors could influence the validity:

- Results of the study show that several frameworks are rarely used and have limited respondents using them in the survey. It is difficult to write conclusions about these frameworks.
- Biased results, due to the setup of the survey, were responses from Accenture employees has been gathered. Based on results, about 40% of the results is from Accenture employees, worldwide. This means that Accenture methods and principles will come forward more compared to other methods and principles.
- Based on the number of respondents in the first round, the decision has been made to not do a second round, where numbers could be checked. This could lead to misinterpretations of the numbers, but due to the extensive testing, the possibility of misunderstanding of questions has been reduced to a minimum.

8 Conclusion

This study addressed measurable improvements in organizational performance after Large-Scale Agile Transformations. This has been done by a deductive, quantitative survey study. The main research question for this study was: 'What is the impact of large-scale agile transformation frameworks on organizational performance?'. A survey was used, which gathered information from 134 participants. The participants have been gathered via private channels, for example LinkedIn, and by using the internal network from Accenture The Netherlands.

The gathered data showed that the main group of participants were in The Netherlands, followed by India and the United Kingdom. The main roles employees had within the transformation were Agile Program Coach, Transformation Manager/Lead and Team Coach. The results show that the Agile Maturity within organizations defer a lot between the three different levels. On team level, organizations believe their maturity is on high level, were the results for program level are a bit less mature, and on portfolio level, organizations consider themselves beginners. The companies were participants work differ a lot in size. Most of the companies have more than 50.000 employees, but a lot of the organizations had an employee number between 1.000 and 5.000. The most used framework for Large-Scale Agile is the Scaled Agile Framework, next are the Scrum of Scrums framework and internally created frameworks. On average, the results show high employee satisfaction about the results of a Large-Scale Agile Transformation.

The three main findings in this study relate to the improvement of organizational performance after large scale agile transformations. (1) There's a correlation found that the improvement of Agile maturity has a positive impact on the improvement of organizational performance. This impact differs on the different metrics used to measure organizational performance. On average a moderate correlation has been found. (2) The second finding is that the usage of a large-scale agile framework has a positive effect on the organizational performance compared to large scale agile usage without a large-scale agile framework. Results show that when using a large-scale agile framework results are 36% higher compared to non-usage of large-scale agile frameworks. (3) The third finding is the correlation between satisfaction and Agile maturity. This correlation shows that employees will be more satisfied with the results of a large-scale agile transformation when the Agile Maturity increases as well.

The overall conclusion of this study is the following: By improving the company agile maturity not only will better results be achieved, but it will also create more satisfied employees which eventually will lead to better results.

8.1 Theoretical contribution

This research has contributed to literature by extending and adding new additions to earlier done research. There has not been much research done on the impact of large-scale agile transformations on organizational performance.

By studying literature on the field of large-scale agile transformations, a conceptual framework could be created and some hypothesis could be drawn around the subject of large-scale agile transformations. Metrics within the companies that are affected by the agile transformation have not been highlighted in literature in the past, even though the market for large-scale agile transformations is very big. Eleven organizational performance factors have been researched by using a survey and have given organizational performance improvement numbers based on a sample created by the survey. These factors have not been researched before on a scale this big, with focus on multiple industries and multiple roles within organizations. Experts on the field of agile transformations have given their opinions. This way, a solid research foundation has been created to add extra knowledge around the knowledge base of agile transformations. These factors are correlated with each other, to show how strong they correlate with each other.

Another aim of this research was to investigate the satisfaction after a completed transformation. In previous research, satisfaction has been tested, but not through different industries and different levels. The conclusion of this research can be used in research researching the effects of different styles of agile within organizations.

8.2 Practical contribution

Besides the theoretical contribution there has been focus on adding practical knowledge for upcoming transformations. The next chapter will focus on the practical outcomes of this study. During this practical research the focus has been on outcomes of the transformation and using the expert knowledge for extra input during the survey.

The first interesting outcome is based on the satisfaction of agile transformations. During the research, employees from different levels have participated in the survey, this makes it possible to give an overview of all layers of an organization. On average the satisfaction level was very high after transformations, not dependent on the level or industry of the organization. Therefore, organizations should try to adapt to a new way of working throughout the whole organization. This means, implementing large scale agile within their organization.

There's still a lot to improve within the large scale Agile way of working within organizations, participants responded that their companies are immature when asked about the agile maturity of their companies. Especially when asked about the portfolio part of their Agile organization, the biggest group of participants felt that their company was still in the beginner phase. For the program part of Agile way of working, companies are a bit more matured, but on this topic is still a lot to improve as well. The team level of this maturity measurement was the most mature, but as well as on the other levels, there is still a lot of improvement possible to get more organizations towards the higher maturity levels.

Another finding that can be used in practice is the difference between doing a large-scale agile transformation with or without a large-scale agile framework. This study shows that the impact from a large-scale agile transformation is less when doing the transformation without a framework. When frameworks are used, no matter what framework, the impact is on average 36% higher.

8.3 Further research

The outcomes of this research are relevant within the context of organizations considering an agile transformation and therefore cannot be used in every context. Further research could focus on several points created within this research.

This research has given a multi-industry view of the results of large-scale agile transformations. Due to the size of companies in different industries, it is interesting to see if more detailed research of specific

industries will give different results. For example, investments differ a lot between different industries, it could be interesting to see if there is a logical reason for this difference.

In this study, the strategy used for a large-scale agile transformation has been researched, but no correlations between strategy and organizational improvement or satisfaction have been found. Further research could try to discover why there is no correlation between these topics or that there is a correlation after all.

As mentioned earlier in this paper, the main focus has been on results in The Netherlands. Due to the social and economic environment it is possible a bias has happened in this research. To see if differences in cultural and economic characteristics have influence on the results, it could be useful to do research outside of The Netherlands as well.

The results of this study try to show differences between the frameworks, but due to the deviations of participants over the different frameworks it is difficult to draw conclusions based on these answers. Further research should be focusing on the differences between the results of the different frameworks.

The satisfaction part of this research gave a positive view of the transformations. It could be interesting to see why employees feel this satisfaction, and how it could be improved to make employees even more satisfied with the results of these transformations.

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Appendix I: Survey



Dear participant,

Thank you for taking the time for participating in this anonymous survey. This research investigates the value drivers of an agile transformation. We are specifically interested in benefits of this transformation compared to the financial impact and investment.

This survey is meant for agile transformation leads, agile transformation sponsors and agile coaches. By participating in this survey, you will be given the opportunity to cross-reference your results with those of other organizations when results are shared.

This survey is fully anonymous and all data will be treated fully confidential. There are no right or wrong answers, therefore we would like to encourage you to answer all questions. If there are any questions please contact me at v.h.van.els@umail.leidenuniv.nl .

It is estimated the survey will take around 5 minutes to answer.

Thank you very much for your participation! Best,

Victor van Els Master student ICT in Business at Leiden University

Dr. Christoph Johann Stettina Leiden University



What is your role within your organization?

In which industry does your company operate?

•

Is your company currently undergoing/ has it undergone an agile transformation?

Yes, my company is currently undergoing an agile transformation

Yes, my company completed an agile transformation

No, but my company is about to start with an agile transformation

No, not at all

What was/is your role within the transformation?

Transformation sponsor

Transformation manager / lead

Agile program coach

Team coach

Devops coach

Other:

How many employees are working within your organization?

< 1.000

1.001 - 5.000

5.001 - 20.000

20.001 - 50.000

50.001 +



Which strategy is used during the transformation?

Transform bottom up: Transform team by team

Department by department: Transform department by department

Big bang: approach where the entire organization makes the change at once

New department: Create a new department and implement Agile there

New company: Set up a new company were you build Agile from scratch and let it grow organically within the new company

Other:

What do you consider as the start of an agile transformation?

Training

Setting up the first agile team

Setting up the first agile program / agile release train

Sponsorship act

Transformation launch

Roadmapping and planning

Other

What is the expected duration of the transformation?

6 months or less
Between 6 and 12 months
Between 1 and 2 years
Between 2 and 5 years
More than 5 years

What percentage of employees is within the scope of this transformation?

0% - 25%

26% - 50%

51% - 75%

76% - 100%

Which departments are included in the scope of this transformation?

Production	
Research and Development	
Marketing	
Finance	
IT	
HRM	
Other:	

How many external consultants or external employees supported / are going to support your transformation?

< 5	5 - 20 21 - 50	51 - 100	101 +
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Was/is your agile transformation part of a bigger digital product/transformation?

Yes			
No			

Which large scale framework is used during the transformation?

Scaled Agile Framework ® (SAFe®)

Scrum of scrums

Internally created methods

Disciplined agile delivery (DAD)

Large scale scrum (LESS)

Enterprise scrum

Lean management

Agile portfolio management (APM)

Nexus

None

Other:



Below you find a table, representing an Agile maturity framework. Please use this table to answer the upcoming question.

	Beginner	Novice	Fluent	Advanced	World-Class
Portfolio	 Prioritized portfolio Work identified as epics, owner nominated Backlog tool support 	 Portfolio work is continuous Systematic & fast rolling decision making Agile metrics 	 Options thinking in portfolio decision making Measuring feedback guidance based on data collected and trends 	 Detecting and utilizing fast business opportunities Agility part of values and company strategy 	 Ability to innovate new business that increase client competitiveness
Program	 Agile projects / programs Incremental planning and execution Agility to embrace change 	Agile release trains in use Agile roles in use and defined and carry responsibility Increment demos guide future development Organized for lean- agile way-of-working Value stream thinking	 Agile budgeting and cost follow-up Networked leadership Systematically speeding up production releases Agile metrics Acceptance test planned first before features 	 Continuous positive feedback from customers from last deliveries Ability to create systems and services previously impossible 	 Ability to respond rapidly to changing customer needs Networked, empowered, self- controlled, adaptive organization
Team	 Fast fixes and needed Scrum in use Dedicated build environment Version control 	 Automatic testing, integration and deployment efforts 	 Test first approach Systematically removing impediments 	 No errors released, production code practically error-free 	 Production releases multiple times per day

Where in the Agile Transformation Model (Table 1) do you consider your organization currently?

	Beginner	Novice	Fluent	Advanced	World-Class
Portfolio	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Program	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Team	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc

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Increases the quality of the product:							
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Improved time to market:							
Improves time-to-market.							
Increases collaboration:							
Makes work more fun:							
•							
Makes work more planned:							
•							
Makes work more organized:							
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How satisfied are you with the results of the transformation (so far)?

	Extremely satisfied	Moderately satisfied	Slightly satisfied	Neither satisfied nor dissatisfied	Slightly dissatisfied	Moderately dissatisfied	Extremely dissatisfied
Satisfaction:	0	0	\bigcirc	0	0	0	0

What would you do different next time? (Before, during or after an Agile Transformation)



How much money was / do you foresee to be invested in the agile transformation?

€100.000 or less
€100.001 - €500.000
€500.001 - €2.000.000
€2.000.001 - €10.000.000
€10.000.001 - €50.000.000
€50.000.001+

amount invested?											
0	10	20	30	40	50	60	70	80	90	100	
Training											
•											
Coaching											
•											
Organizational consulting											
•											
Technological consulting											
•											
Software development											
•											
Other:											

How was / is the investment divided? Could you indicate a percentage per topic of the



Would you like to receive an overview of the results of this thesis? Please leave your email:



We thank you for your time spent taking this survey. Your response has been recorded.