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Analysis of Large-Scale agile Transformation

Gap-Analysis of Volvo Car's outlook concerning Large-Scale Agile

Master's Thesis in International Project Management
2019

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Abstract

The master thesis was conducted at Volvo Cars to evaluate their transformation process towards large scaled agile and to perform a gap analysis on what has worked and what needs further attention. The framework used in Volvo Cars is based upon Scaled Agile Framework (SAFe). The thesis can be viewed as a continuation of a previous thesis, 'Large-scale agile transformation. A case study of Volvo Cars' transformation process' which identified several success factors for the transformation process. The research questions in this thesis are designed to evaluate those success factors, to ascertain their viability during the change. Furthermore, a gap analysis was conducted between the desired effects and suppositions and the current state during the change. Literature study was done to obtain the success factors for large scaled agile. The desired effects and suppositions were obtained from the mixture of interviews and literature and were presented as benefits and challenges of the change and then categorized into congruence or fits in an organization. The congruence includes fits of work & culture, work & structure, work & people, people & structure, people & culture and culture & structure. All of them and the success factors were gauged using the anonymous survey and the results were presented for overall organization as well as four focused departments.

The results had varying results for success factors but most of the responds were neutral towards them. The best applied success factors were 'Transparency' and 'Communication' during the change and the worst applied were 'Customization' and 'Vision and Roadmap'. In the gap analysis the work & culture fit seemed effective up to good extent, the people & culture and structure & culture fit were average. The other three fits received poor results and need far more attention.

In addition, future strategies of involving large scaled agile was also sought out from the interviews and the surveys, however, due to lack of literature and studies on the topic, the data was used at face value and presented in the thesis. Finally, recommendations were made based on the analysis of the result. The three main recommendations include more Employee Involvement (EI), appropriate Leadership style and improvements in Training and Coaching. Appropriate methods of involving hardware development into agile were also suggested.

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1.0 Introduction perspective of agile scaling

In the current highly competitive and turbulent market conditions, organizations require not only more efficient products but also high flexibility in their processing and work-methodology. Large organizations have implemented different Agile Frameworks in their work environment to improve their product efficiency, increase innovation and to better tackle their global competitors. The Master thesis consist of the analysis of the perceived and the current implications of Large Scaled Agile frameworks, during and after the transformation process.

1.1 Background

The automotive industry has been in the forefront of innovation and industrial change as well as a facilitator of new work methodologies, since its introduction in the 19th century. Henry Ford with his famous model T, introduced assembly lines to the wider industrial world. The use of Lean production and the adoption of balanced and low wastage principles (Hampson, 1999) were developed by Toyota. These methodologies migrated to other industries as well in due time. The demand and popularity of private vehicles had sky-rocketed by the end of the last century creating huge market and competition for vehicles. It was pertinent for the industries to cater to changing demand trends effectively while maintaining operation profitability.

Agile Methodologies and manufacturing systems allow the companies to continuously launch new products, prioritize the production line capacity on different products based on demands while responding effectively with the changing market while maintaining the capability of producing low demand products (A. Elkins et al., 2004). In addition to the varying customer demands, another demanding aspect concerning automotive industries are the raising awareness of environmental protection and sustainability and the new rules and regulations that comes with it (Miller et al., 2000). With this plethora of contingencies facing the automotive industry, the agile methodologies can provide enough flexibility to continue its operations effectively.

The Agile Methodologies have been popular since its inception in 2001 as a software development tool, and now within many other industries, while future research on more robust scaled agile frameworks for innovations and intra-organizational applicability are being conducted (Dingsøyr et al., 2010). Originally, the first Agile principles were designed for software development in small inter-connected teams (Boehm and Turner, 2005). To realize the potential benefits of Agile in larger enterprises, efforts have been made to scale it up. Large-scale Agile transformations in organizations, with additional importance to non-developmental units such as Human resource management and finance are gaining popularity (Dikert et al., 2016). Many large-scale agile frameworks such as Large-Scale Scrum (LeSS), Disciplined Agile Delivery (DAD) and Scaled Agile Framework (SAFe) have been adopted by many organizations. Among these frameworks, Scaled Agile Framework (SAFe) has dominated both LeSS and DAD as the most popular scaling framework in large enterprises.

Additionally, in any large-scale implementation it is paramount that efforts are made to sustain the benefits, gains and profits of the change and to make sure that the organization does not decay back to old ways of

working (Buchanan, D. et al. 2005). Researchers and scholars have stressed on this sustainability by the end of the change in their theories and models. Lewin (1951) last stage in three steps is 'Refreezing' meaning that the changes should be frozen in place after the change does not decay back. Similarly, Kotter (1995) advised to 'anchor' the change in the end of his eight-step model.

1.2 Purpose

The purpose of this master's thesis is to focus on the implications of Large-Scale Agile implementation and to perform gap analysis on what is the preferred or desired state against what is the actual performance in an automobile industry regarding the use of Scaled Agile Framework (SAFe). The future improvements in the way of working using Large Scale Agile, will also be determined.

1.3 Problem analysis

Numerous studies have been conducted on the transformation process to Scaled Agile Framework (SAFe) (Turetken et al., 2017, Paasivaara, 2017), some specifically focused on automobile industries (Bergqvist and Gordani Shahri, 2018). However, there exist far less research on the implications, benefits and challenges of adopting the new framework in those organizations (Putta et al., 2018) including the efforts of sustaining the change that has been made. For successful integration of Scaled Agile Framework (SAFe), it is more than necessary to accumulate knowledge on the actual usage of these framework through case studies and experience reports after it has been implemented to a certain degree. In addition, determining future strategies and improvements on SAFe based upon 'on the ground experience' in an organization is also imperative. For this master's thesis the gap and implementation analysis of Scaled Agile Framework (SAFe) will be conducted upon various departments of Volvo Cars practicing the framework. Moreover, future improvements will be suggested on the use of Large-Scale Agile. The following research questions are selected for our analysis.

RQ 1: How successful is the implementation and the change process of Scaled Agile Framework (SAFe)?

The purpose of this research question is to study the change process and gauge the success of Scaled Agile Framework (SAFe) during and after its implementation at Volvo Cars. The survey and the interview below will use several success factors to ascertain the nature of the change and to find what have worked well for the organization during implementation and adoption and which factors could use further attention to make the implementation more successful. The gauging success factors of Large Scaled Agile frameworks are taken from SAFe literature and other academic articles.

RQ 2: What were the desired effects of SAFe transformation and what is the current state post-adoption?

The second research question will be tackled using the gap analysis using the Nadler and Tushman (1980) model. The model dissects the change into categories of work, structure, people and culture. It will be these

aspects where the gap analysis of the Scaled Agile Framework will be sought out at Volvo Cars. The first step is to find initial expectations, possibilities and strategies. This will be done mainly through interviews of managers and key personnel who drove the change as well as from academic literatures. The current state of SAFe will be judged mainly using the survey questions where the employees and development team members will be given precedence.

RQ 3: What are the future strategies or improvements in the way of working using Large Scaled Agile?

The third research question is to find the future strategies of Scaled Agile Framework at Volvo Cars. Unfortunately, no academic literature was found which could be used to gauge this. Therefore, some direct queries will be asked in both interview and survey to analyze the research question.

1.4 Delimitation

The case study is performed at Volvo Cars, thus the information and data obtained is based solely from the perspective of one single organization. So, there is the lack of diversity in the data as it is based on the change process of a single organization. Moreover, the study was mainly focused after the change was initiated, therefore, the research does little to cover the pre-change conditions of the organization.

2.0 Theory

The following chapter contains the theoretical data regarding Agile, Large Scale Agile, change management theories and gap analysis tools taken from popular and well cited academic literature. They will form the theoretical foundation of empirical data, analysis and recommendations to come later.

2.1 Lewin's Change model

Lewin (1951) introduced a model of change in the organization which went forward to be, arguably, the most cited organizational change model. He proposed three phases of transition when change is introduced into the organization which are Unfreeze, Change and Refreeze. The three phases are depicted in the Figure 4 (MindTools, 2014) below. The first step is initiated when a change is first implemented into an organization. During this stage the old methods or structures which are a norm needs to unfreeze. Practically, everyone involved should accept that a change is necessary and to do that a compelling argument needs to be made why the existing method is discontinued and a new one is necessary (Maccoby et al, 1958) One of the key ways of doing it is to ensure that the vision and roadmap of the change is clear and refined and is communicated effectively to all stakeholders and in parallel the change leaders need to be aware and open to any employee concerns and misgivings and to make appropriate plan to address them (Maccoby et al, 1958) It is usually expected from the employees to alter their behaviors in any event of a change. Kurt Lewin (1951) views the behavior of employees as dynamic balance of forces in accordance to change; one magnitude of force drives the change forward while the other resists any sort of change in the organization. In changing the status quo, the very foundations of the organization could be questioned which largely affects the attitudes and norms and could create a large resistive force against the change, this makes this stage particularly challenging (Maccoby et al, 1958).

The second stage is where the actual change process takes place, where employees or people change their old way of working, adopt new methods and ways to support the transformation process (Maccoby et al, 1958). The process vastly varies for different departments, people and organizations and it is advised not to set up a definite timeline for the change (Maccoby et al, 1958). Hussain et al. (2018) have suggested that in this step it is impertinent to have effective Knowledge sharing, Leadership and Employee Involvement (EI) throughout the organization. The type of leadership is vital during the 'change process', Bass (1997) presented two types of leadership, transactional leaders and transformational leaders. Transactional leaders encourage the employees by giving out rewards or punishments while transformational leaders adopt inspirational, charismatic and individualized considerations to motivate the change in employees. Moreover, Employee Involvement (EI) strategy will bring more advantages of commitment and more effectiveness (Higgins et al., 2003). Cummings and Worley (2014) have argued that knowledge sharing regarding working methods, new technological equipment's, ideas for organizational improvements, development programs need to be made common in the change process. The organizational benefits and the expected challenges that comes out of the change should also be communicated (Maccoby et al, 1958).

The third and the final stage is to refreeze the new attitudes, behaviors and norms are standardized and made common and are embedded into the organization (Maccoby et al, 1958). Managers and leaders need to be supportive to the people and be there for them when doubts and questions appears about the change

(Maccoby et al, 1958). An important part at this stage is sustaining the change process, which is to make sure that the gains and benefits achieved in the change process are maintained for an appropriate contextual period (Buchanan, D. et al. 2005) and to make sure that the employees, stakeholder and the organization do not decay or slide back to the old working methods (Burnes, 2004). Kotter (1995) argued there is a need for 'institutionalizing' the new approaches in order to anchor the changes in the organization and warned that without institutionalizing, the new behaviors and norms are suspected to degrade back to old behaviors and norms when the pressure of the change is removed. The two factors that support institutionalizing process according to Jacobs (2002) are intervention and characteristics of the organization. Intervention is the effort put in for the change like goal specificity, support for the change, change targets and control mechanism which are the success factors in the change process. Good leadership and processual awareness can influence the process positively. The characteristics of the organization include the 'congruence' or 'fits' in the organization in terms of behaviors, structure, culture etc. which should appear after the change.

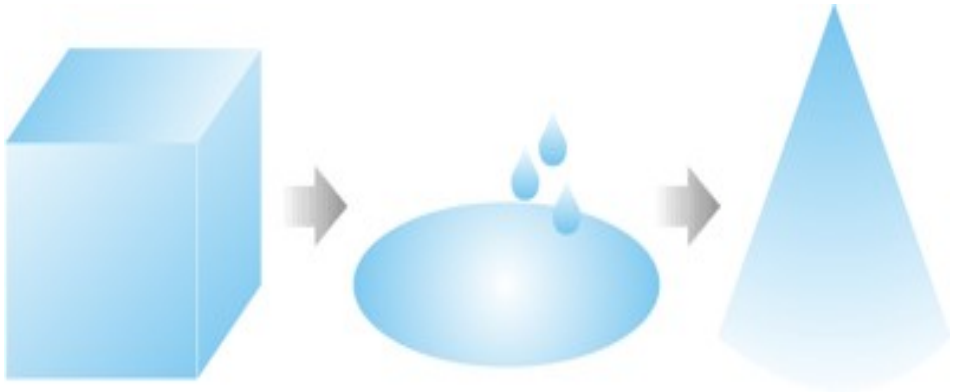


Figure 1 : An adaption of Lewin (1951) 3- Step change model 'Unfreezing-Change-Refreezing' (MindTools, 2014)

2.2 Nadler & Tushman transformation model

To analyze of the 'congruence' for institutionalizing the change in the organization the following model is used. Nadler and Tushman (1980) prepared a model that can be used as an analytical tool to analyze transformation process and observe different interdependencies in an organization. Organization can be seen a mix of components or parts which interact with each other in this model. These different parts need to 'fit' with one another to function properly and effectively. A poor fit can cause problems or performance below potential in the organization. This model also known as 'congruence model of organizational behavior' can be used to measure the quality of these 'fits'. In a transformation or change process, behaviors, traditions and norms are directly challenged. Any input and initiation towards a rapid change can affect the behaviors of the employees and can disrupt these fits. In order to get appropriate and desired outputs it is impertinent that these fits are gelled effectively with each other.

Nadler and Tushman (1980) identified four components of the organization that greatly affect the behaviors in the organization. These are (1) tasks, (2) the individuals (3) formal organization and (4) informal

organization. The tasks are the basic everyday works that needs to be done in the organization. This also includes the basic characteristics of the work done like the skills and knowledge required for the work or the environment where the work is done. The individuals are the people who perform these tasks and include both what the people can provide the organization with their skills and activities as well as the expectations they have from the organization. Thirdly, the formal organization includes the structure, methods and procedures that govern the activities of the organization for example the team structures, marketing procedures, client handling etc. The final component is the informal organization which are the unspoken rules and attitudes which could affect the behaviors in the organization. It both affects and can be affected by any transformation process in an organization. The Figure 4 (Athuraliya, 2019) below depicts a modified version of Nadler and Tushman (1980) model, where task, individuals, formal organization and informal organization is replaced by work, people, structure and culture respectively. The Figure 4 also presents the congruence of these four components explained below.

i. Work – People
   This congruence is used to find if enough knowledge and skills are present in the people involved in an organization to effectively perform the new work done. Also, if the expectations and needs of the people are met by the newly performed tasks.

ii. Work – Culture
   This congruence quantifies whether the culture of an organization facilitates or hinders the daily tasks and opposingly, whether the demands of the new work are in line of the existing culture.

iii. Work – Structure
   The congruence deal with the arrangements of the structure to find if they are adequate to meet the demands of the daily tasks. Similarly, if the work activities are in line with the new structure that is put in place.

iv. People – Structure
   To find the perceptions of individuals on the new structure introduced and whether that structure helps fulfil the needs of the people of the organization.

v. People – Culture
   To ascertain if the people in the organization benefit from the culture, especially the one which a change introduces and whether the new culture is benefiting the people.

vi. Structure – Culture
   If the new structure is in line with the culture of the organization and whether the new culture facilitates the structure in place.

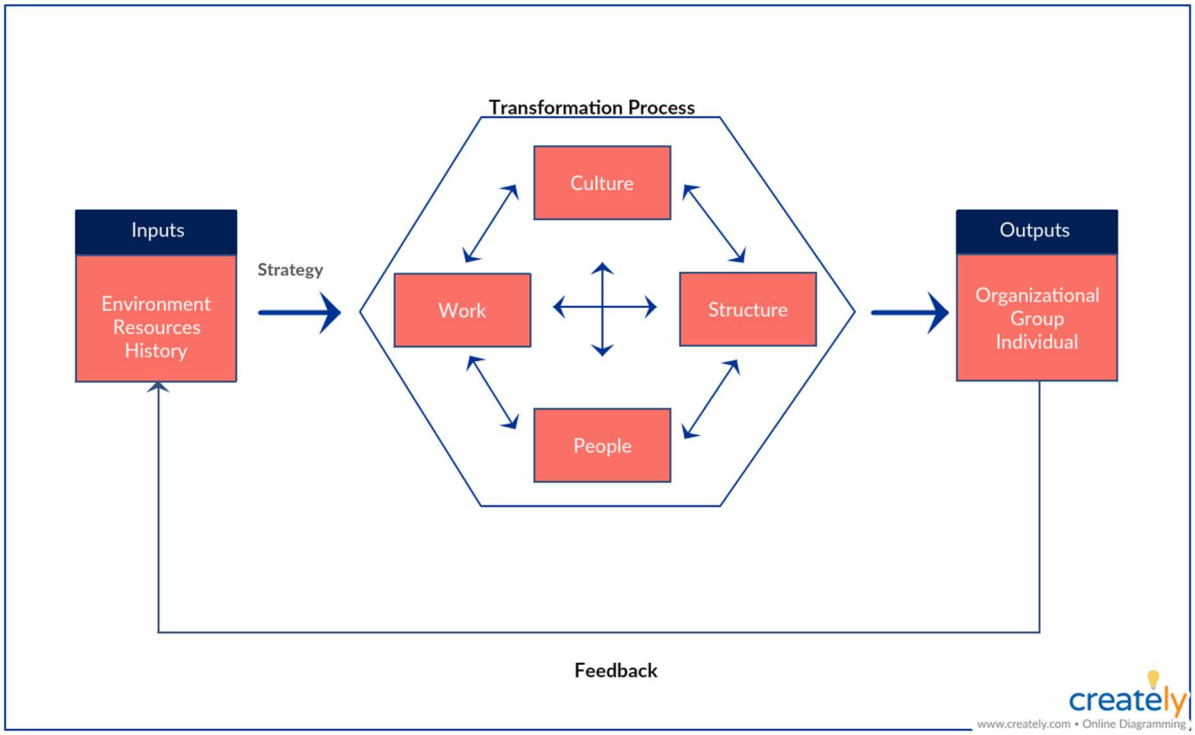


Figure 2 : A modified version of Nadler & Tushman (1980) congruence model (Athuraliya, 2019)

2.3 Agile Methodology

The Agile methodology can be viewed as a reaction to traditional plan-based methods which focus more on extensive planning, unchanging structure and codified process in development. The dynamic markets and switching customer needs raised the demand of rapid response and flexibility. The agile methodology begun in 2001 in USA, when seventeen software engineers came together to create a framework, following the failures of traditional methodologies in software development. This meeting resulted in what is called the Agile Manifesto (Beck et al., 2001) defining the following twelve principles of Agile software development:

- Customer satisfaction through quick and continuous delivery of software is the main priority.
- Changing requirements by the customer should be welcomed irrespective of its timing.
- Frequently deliver working software to the customers within weeks or months, preferably in a shorter time scale.
- Both software developers and businesspeople need to collaborate throughout the project.
- Individuals should be supported by providing them with environment they need to get the job done.
- Physical face-to-face conversation is the most efficient method of conveying information
- Primary measure of progress is a working software
- A constant pace of development should be maintained by developers, sponsors and users to promote sustainable development.
- Stronger aesthetics and technical brilliance empower agility in software development.

- Reducing the amount of work done to achieve best results is essential.
- Spontaneous teams bring out the best results and designs in the software
- Continuous self-reflection to be more effective should be done by the whole team and later applying the new ideas and behaviors upon itself.

The Agile methodologies are known for their iterative qualities where the continuous cycles will result in selection or retention of required scope and high productivity processes, with the omission of redundant or unnecessary requirements. With every cycle or iteration, feedback from clients is encouraged. The approach is used in projects where both requirements and how to manage the project is not clear (Wysocki, 2012). The Agile Project Management approach as proposed by Wysocki (2012, p. 51) can be seen in the Figure 1 below.

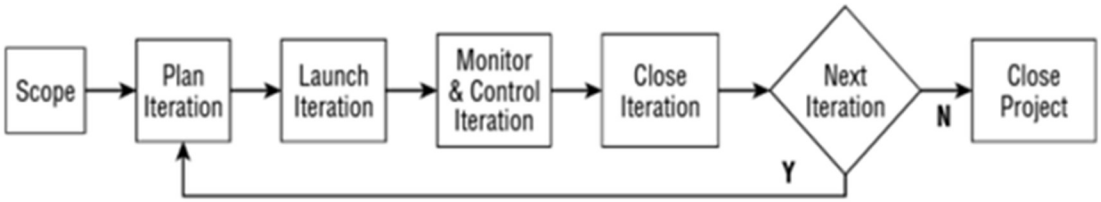


Figure 2-4: Iterative PMLC model

Figure 3 : A typical agile iteration (Wysocki 2012, p. 51)

Rapid communication process is one of the key characteristics of the Agile Methodology. Berczuk (2007) states that communication, which is frequent, of good quality and encourages feedback to facilitate the iteration process based on the internal or external business needs is the main purpose of numerous iterations. For this to work, different people should perform together as well as closer to the market in cross-functional teams while making room for communication and feedback.

Rapid response and flexibility minimize the number of artefacts in the development process (Berczuk, 2007). The collaboration and iteration which would take place in order to be flexible and responsive, reduces the amount of documentation. As a result, the team can devote plenty of time and resources on the implementation of the project than in pre-deployment. It is also important to not have to rely on single individuals, with respect to knowledge, and instead have team-based competence, where the team possesses the knowledge (Berczuk, 2007). The communication process should also include sharing knowledge within the teams and have social development activities.

Software development markets were the focal point of Agile methodologies in its initial stages but have later expanded into physical products, due to increase in digitization and since software and hardware are often connected (Karlström and Runeson, 2006). New frameworks with their own unique characteristics, while maintaining the core principles of Agile have emerged and are practiced in various industries e.g. Scrum, Kanban and Scaled Agile Framework.

2.4 Scaled Agile Framework

The Scaled Agile Framework, abbreviated as SAFe consists of the salient features of Agile and Lean principles, and incorporates many frameworks in it such as Scrum, Lean and Kanban. It was created for large organizations to implement Agile holistically in them. Leffingwell (2007) first mentioned SAFe in his book 'Scaling Software Agility', to be applied in large project settings, mainly for software development but also including non-developmental units of the organizations in it. The Scaled Agile Framework itself is categorized in four different models namely Essential SAFe, Large Solution SAFe, Portfolio SAFe and Full SAFe in the increasing order of complexity with every more complex model incorporating all the constituents of the former models. The SAFe also includes four levels namely Team level, Program level, Large Solution Level and Portfolio level. The hierarchy of the above categories are determined by the number of levels it contains as depicted in the Figure 2 (SAFe, n.d) below. It should also be noted the SAFe only provides the initial agility into an organization and it is up to the organization to customize and frame it based on its own needs.

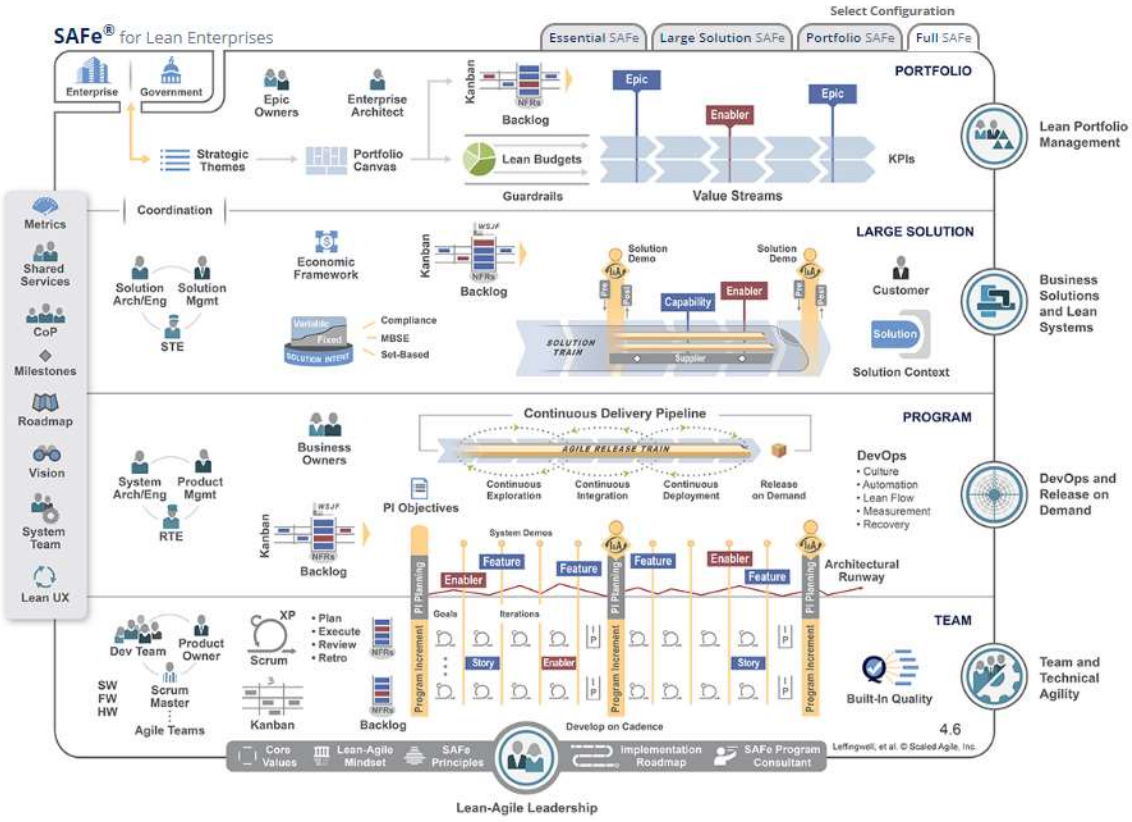


Figure 4 : SAFe framework at Full SAFe (SAFe, n.d)

2.4.1 Core values of SAFe

SAFe has four fundamental core values which describe its essential beliefs and should be in the fore front in every decision made (SAFe, n.d). It can also be used to gauge the success of SAFe applicability in an organization. The values are as follows and can be seen in the Figure 3 (SAFe, n.d) below:

- Alignment - This includes aligning the portfolio strategy upon the daily tasks and programs that are executed by teams in the organizations so that they would build up to reach the desired values and business objectives. This is achieved by effective communications and relevant briefings of those strategies. Synchronization and cadence between teams are applied to ensure alignment within the organization.
- Built-in quality – The planning and implementation practices should have built-in quality procedures to ensure high quality in the product. The quality of the work, tools, behaviors and operations should also be ensured by the leaders.
- Transparency – Open and responsible behavior must be practiced. Leaders should admit their own mistakes and motivate others who acknowledge theirs. High performance teams and programs are unable to function without trust and reasonable commitments. A transparent environment is promoted within the culture of trust between people.
- Program Execution – The use of Agile Release Train, ART depicts the importance of continuous and adequate delivery to produce solutions and release on demands. The leaders should ensure the execution of the project to establish business value. The work and tasks are adjusted as per the demands made by the consumers.

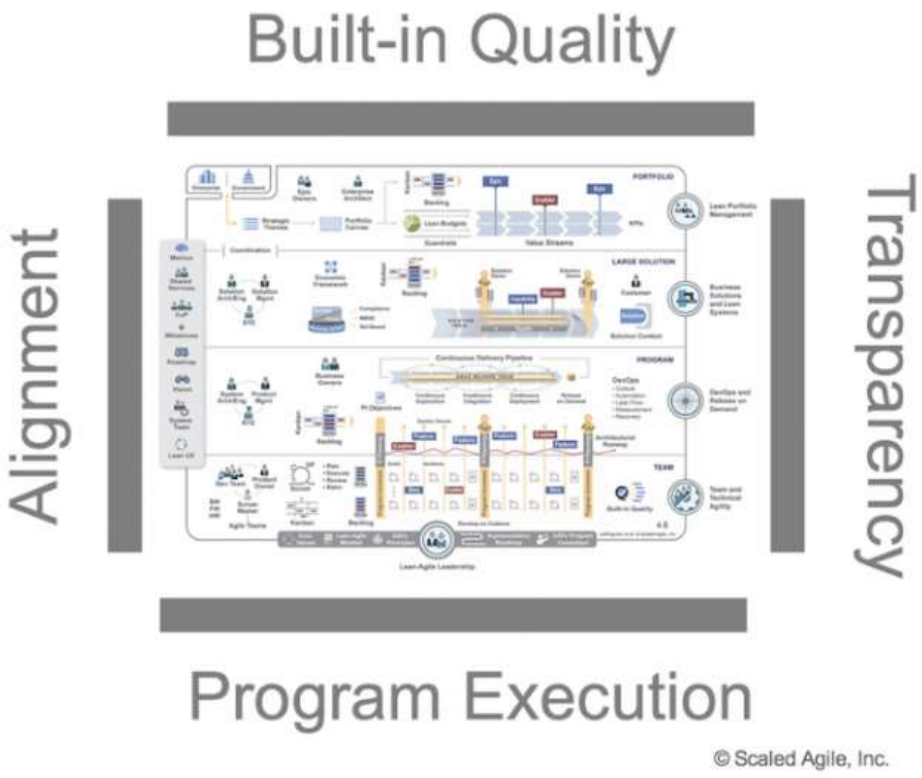


Figure 5 : Four core values of SAFe (SAFe, n.d)

2.5 Large Scale-Agile, Success factors, Benefits & Challenges

The introduction above mentioned quite a few large scaled agile frameworks like SAFe, DAD and LeSS which are increasingly becoming popular. Many scholars have made an attempt to interpret large scale agile. Petersen and Wohlin (2010) argued in terms of code base size, having 5 million lines of codes in an organization will constitute it as practicing large scale agile while Berger and Beynon-Davies (2009) defined large scale with project cost of over 10 million GBP and a team size of over 50 people. Dikert et al. (2016) after reviewing several studies found that the most common term of defining or interpreting it is the number of people involved. They then defined large scale as organizations involved in Software development with 50 or more people with at least six different working teams in their study. Not all people or teams need to be involved with software development but most of them do, thus there is a need to collaborate with each other to make a single product.

Implementing change at a large scale is a challenge in itself and it is required that the barriers and hindrance to the change are discussed and gauged. Adopting Large-scaled Agile frameworks requires transformation on all levels of an organization (Misra et al., 2010). There are more dependencies between teams and projects in large organizations than their smaller counterparts, which raises the issues of more documentation, inter team coordination and interaction with non-developmental units. Consultation and communication between departments can also be tedious and slow. Perhaps the most concerning challenge is the adjustment of management to the iterative and life-cycle models like the developmental teams (Nerur et al., 2005). The difficulties of introducing large scale agile frameworks increases with the organization size, which is partly related to more impedances in large organizations which slows down the change (Livermore, 2008). Organizations cannot just adopt new or additional tools or practices to adopt large scale agile frameworks, a holistic change in thinking and entire organizational culture change is required (Misra et al., 2010).

Dikert et al. (2016) after their research and study of over 50 case studies and researches on multiple industries adopting large scaled agile, identified several challenges and success factors. Around 29 success factors were identified which later were contracted to 11 categories showed below.

- Management support

  Any large scaled transformation process requires ample support from the management at all levels by their authority to influence the change and remove impediments. It is also required to make the management support visible for all to see. (Dikert et al. 2016)
- Commitment to change
  A strong commitment is needed to develop the change and sustain it.
- Leadership
  Leadership style is important for a successful change management, leadership should be both motivational and attempting to transform the behaviors and methodologies and transactional, i.e. incentivizing the people for the change. (Bass 1997)
- Choosing and customizing the agile approach
  Agile in its principle means changing and modifying based on feedbacks and new information. Therefore, it is necessary to mold and customize the new work methodologies in the context of the people, work and organization. (Dikert et al. 2016)

- Piloting
  Research and case studies has shown that focusing on pilots and pilot projects creates confidence for the changes' suitability as well as the general acceptance towards the change is also increased (Dikert et al. 2016)
- Training and coaching
  Training and coaching the employees about the new methodology is an important step in any change process. Training should not only be confined to the beginning of the project but should be continued throughout the change process. (Dikert et al. 2016)
- Engaging people
  A grass root level engagement and empowerment are required throughout. As mentioned above the engagement should begin with the pilots and agile supporters considering their abilities and technicalities as well as personalities. (Dikert et al. 2016)
- Communication and transparency
- Mindset and alignment
  To develop an appropriate mindset the agile values should be emphasized and promoted to align the organization towards the agile change. This could range from arranging training ceremonies and social events. (Dikert et al. 2016)
- Team autonomy
  Teams should be allowed to self-organize which creates more commitment, motivation and ownership within. The acceptance increases when teams have the authority to develop. (Dikert et al. 2016)
- Requirements management
  Since the change is large it is necessary that the requirements are concise and easily understandable. It is also advised that investments are made in teaching the employees to write stories to perform better requirement forecasting.

Organizations with large number of people, teams and functions are sure to face several challenges. The challenges defined by Dikert et al. (2016) in their study are as follows:

Challenges:

- Change Resistance
- Lack of investment
- Agile difficult to implement
- Coordination challenges in multi-team environments
- Different approaches in a multi-team environment
- Hierarchical management and organizational boundaries
- Requirements engineering challenges
- Quality assurance challenges
- Integrating non-development functions in the transformation

Many studies have been conducted on the applicability of large scale agile and its many aspects (Razavi and Ahmad, 2014, Gustavsson, 2017, Khalid et al., 2015). However, not a lot of research is done on scaling agile to cover most of the organization or exclusively on SAFe. Putta et al. (2018) conducted research on scaling the agile to find out reported benefits and challenges of SAFe. Their research also included several practitioners of SAFe to further study the related problems of SAFe. They identified 23 benefits of applying SAFe in different industries and organizations. Some of the major benefits include visibility (66% of the

cases), Productivity (61%), Alignment (65%), Predictability (49%), Quality (47%) and time to market (62%) (Putta et al., 2018). Similarly, the reported challenges ascertained by them include Resistance to change (10 cases), Unfamiliarity with the framework (6 cases), Agile Release Train challenges (6 cases), and staffing roles (5 cases) among others.

3.0 Methodology

3.1 Research strategy

The research framework in this study was both qualitative and quantitative. The qualitative method uses models and frameworks from the literature and academics to form the analysis. Quantitative method is where raw data is analyzed using statistical tools and numeric categories. Overall in this report, the quantitative analysis is used to form qualitative analysis. Bell et al. (2018) asserted two types of research methods, deductive and inductive. A deductive method is when theory is identified and empirical data is analyzed against that theory, while the inductive approach uses the empirical data found to build up a theory (Bell et al., 2018). Deductive approach is used in this thesis. Existing academic theories and models are used to analyze the empirical data and analysis is done based on the same theories.

3.2 Research Design

The type of framework or methodology used to collect data and analyzing it is called research design in the research process (Bell et al., 2018). The research design used in this thesis was case study design, which involves collection and analysis of the data from a single organization and obtaining all data exclusively from it (Bell et al., 2018). Therefore, the problem statement and the research questions were answered at the organizational level and not focused on certain individuals and groups. Using a case study approach confine the research to a single organization, hence the lack of diversity in data collection. On the other hand, a heavy focus on a single organization would enable us to deliver more nuanced research on that organization's industry. Finally, as a third party at Volvo Cars, which has its own advantages, like conducting an unbiased study away from inherent leanings, giving an out of the box perception of things etc., there is always a chance that the study might not be taken as seriously and less could be done to motivate the employees to participate in it.

3.3 Research Method/Data collection methods

The empirical data was collected in line with the studies and model in the theoretical chapter. Two methods were used to collect most of the data, semi-structured interview and the anonymous survey. Both these methods are discussed in detail below.

3.3.1 Semi-Structured Interview

The interviews were mainly conducted on managers, coaches and transformation leaders who were involved in the SAFe implementation process. This was done to ascertain the initial supposition and desires of the implementation for the gap analysis. Most of the questions in the interview were designed to ascertain the benefits and challenges which ought to be tackled when the new way of working sets in. The interviews were structured initially but many improvisations were made during, based on the answers given. The interviews were both taped and transcribed to reflect back on, after permission given by the interviewees to do so. There were also some limitations on what could be divulged by the Volvo Cars' employees under

the standard rules as well as the employees' own perception of confidentiality. The time of the interviews were not ideal for a lot of employees since it was few weeks before the summer vacation, when most of the workforce goes on leave. So, many managers and leaders were busy in wrapping things up before going on vacation. For this reason, a few sought out interviews could not be conducted.

Seven people were interviewed internally at Volvo Cars for this study. Out of these people, six were present in the company when the SAFe transformation took place in their respective departments. Five of them had managerial positions and were actively involved in the transformation process. However, only four of the interviewees had previous experience with agile principals and way of working before implementation begun at Volvo Cars. The majority of the interviewees, five people, were from Vehicle Software & Electronics (94000) department. While one each from Vehicle Hardware (93000) and Quality & Operations (58000). Their work experience at Volvo Cars ranged from less than a year to 25 years. The entire interview can be seen at Appendices I:*I: Interview* Questions below.

3.3.2 Survey

The survey was sent out mostly to the employees in Product & Quality, also known as 90000 departments. It was also sent to a few people in other departments of Volvo Cars as well, but could only garner 3% of the responds, since SAFe had not been implemented there. Product and Quality formed 97% of the responses. The total no. of responses was 992. The survey was open for responses for a month and a half. Around 14% of the survey requests were answered. Almost half of the employees had experience of working at Volvo Cars for 0-5 years, while the average work experience of the respondents was 12 years. The figure 7 below, the distribution of the respondents as per their departments can be seen.

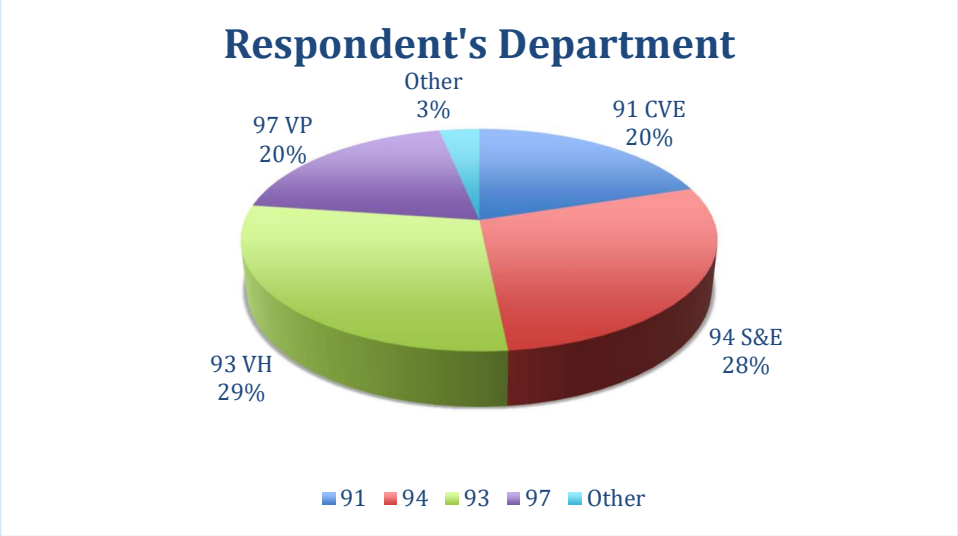


Figure 6 : Total Respondents of Survey based on departments

As per the figure above, the most respondents were from 93000 Vehicle Hardware (VH) department followed closely by 94000 Software & Electronics (S&E) department. 91000 Complete Vehicle

Engineering (CVE) and 97000 Vehicle Propulsion (VP) had almost the same number of respondents. The survey had 19 questions, the question 1 – 6 had miscellaneous questions about the roles, years of experience and experience with agile at Volvo Cars. The questions 7 – 14 dealt with gauging the success factors of transformation as per the Research Question 1, while questions 15 & 17 were gauging the benefits and challenges parameters respectively for the gap analysis for Research Question 2. Question 19 was set as an obligatory to determine the opinions of the respondents regarding future plans and strategies to improve SAFe at Volvo Cars in line with the Research Question 3. The complete survey questionnaire can be seen in the *II: Survey questions* section.

The success factors of the survey questions 7 – 14 were taken from Dikert et al. (2016) study. He pointed out 11 success factors as presented in the Theory Chapter above. Six of them 'Management Support', 'Commitment to change', 'Leadership', 'Customization', 'Training & Coaching'. 'Communication', 'Transparency' was used as it is in the survey. 'Vision and Roadmap' was added from implementation process of SAFe as provided by the creator (SAFe, n.d). 'Mindset & alignment' and 'Requirement management' were left out because of their similarities and parallels with benefits and challenges parameters. 'Piloting', 'Engaging people' and 'Team Autonomy' were termed as redundant due to their relevance to 'Training & Coaching', 'Management support' and 'Customization'. In the end the eleven factors were brought down to eight.

The benefits and challenges parameters from the question 15 and 17 of the survey were taken from four sources, the interviews, the study conducted by Dikert et al. (2016), the study conducted by Putta et al. (2018) and some aspects of SAFe provided by the creator Leffingwell (2007). Several commonalities were present in all the studies. The interviews suggested 'Alignment', 'Collaboration', 'Visibility', 'Transparency', and 'Productivity' for the benefits and mainly 'Mindset issues', 'staffing roles' and 'resistance to change' for the challenges. Dikert et al. (2016) had several challenges in the study and several of both benefits and challenges were present in Putta et al. (2018) study, all of those introduced in the Theory Chapter above. Leffingwell (2007) has four benefits 'Program execution', 'Alignment', 'Transparency' and 'Program Execution'. So, for selecting the benefits all of the interview benefits and four by Leffingwell (2007) were used the rest were taken from Putta et al. (2018) study based on number of hits in their studies. All the challenges parameters were also taken from the interviews and then the ones most occurring in the Putta et al. (2018) study to balance the scope, three were taken from Dikert et al. (2016) study. Table 1 below depicts both the benefits and the challenges used in the survey.

3.4 Data analysis

To analyze the empirical data collected change management theories, models and statistical tools are used. For research question 1, only the theories are utilized to make analysis and discussions. For Research Question 2, however, the Nadler & Tushman (1980) model as depicted in Figure 2 above and Pearson-Fischer Coefficient is used in addition to the theories. These two are described below.

3.4.1 Nadler & Tushman (1980) model

The Table 1 below shows the division of the benefits and challenges parameters based on the model's different congruence. The sections below describe the justification of the division done.

i. Work – Culture

Transparency and predictability are two benefits parameters we believe best fit in work-culture congruence. Leffingwell (2007) asserts that to achieve transparency, both vertical and horizontal, a sense of trust needs to be built amongst the employees of all levels. This 'culture' of trust then creates a transparent work environment in the organization. Similarly, for the work to be predictable, a synergy and familiarity between various units and departments are needed to streamline the overall progress of the organization. A best fit is achieved when the culture of trust and familiarity facilitates transparency and predictability. The challenges parameter 'Agile Release Train Challenges', we believe also falls in this congruence. Agile Release Trains are a necessary part of the SAFe framework and the work culture of many departments may not be fully aligned with this practice. Hence, a cultural challenge goes hand in hand in a work setting.

ii. Work - Structure

The parameters of work-structure include 'Alignment', 'Built-in Quality' and 'Program Execution'. These parameters were proposed by the founders of SAFe framework as the result of its application. We believe that these three are a fit for Nadler & Tushman (1980) Work-Structure congruence. The structure arrangements need to be set in such a way to promote the demands of the task for the organization. The new framework of SAFe is poised to help achieve alignment between different departments, establish quality within the software during its development rather than later and finally the structure needs to be in tune with the execution of the tasks. The challenge parameter 'Requirement Management' also falls in this congruence. The challenges in managing the requirements; short term and long term, elaboration of the requirements, adhering to organizational level requirements etc. (Dikert et al., 2016) are created when the there is a miss-match between the work and structure.

iii. Work – People

The benefits parameters for this congruence are 'Faster & Frequent deliveries' and 'Customer satisfaction'. The founders of Agile Methodology Beck et al. (2001), posited customer satisfaction and the frequent delivery as the top key principals of the methodology, which everyone adopting agile should follow through. Policies and frameworks of agile are built upon by continuously adopting customer feedback and delivering a working software frequently thus keeping the customers in the loop and satisfied. Any scaling of Agile should also incorporate these principals and their benefits need to be realized in the organization. The authors believe that since, for continuous delivery to keep the customer satisfied, an extensive people to people interaction is needed so the tasks should be designed to promote such interactions. Therefore, a unique mindset of people is required to perform the appropriate tasks. The challenge parameter 'Moving Away from Agile' also relates to the mindset of the employees or people not following agile principals due to adherence towards existing work systems or other reasons.

Therefore, a synchronization between the people of the organization and the adopted tasks related to agile is needed to appropriately apply agile principles.

iv. People-Structure

'Defect Reduction' and 'Productivity' are benefit parameters we have assigned to people-structure congruence because we believe for the people to be productive a structure is needed in place to ease them in. Similarly, a framework or structure which has theoretically, a built-in process for defect reduction in the software and other products, the employees would try to strive for it. Therefore, the structure and framework of SAFe, which according to several literature (Dikert et al., 2016, Putta et al., 2018), has established ability to improve productivity and help reduce defects in the products should be gauged with these parameters in the company. The challenge parameter 'Unfamiliarity with SAFe' and 'Difficulty in Implementation' are also related to people-structure dynamics, as the challenges of little knowledge and implementation of a structure inevitably affect the people's attitude towards that structure.

v. People – Culture

The benefit parameter of this congruence are 'Collaboration' and the challenge parameters are 'Resistance to Change' and 'Coordination Challenges in multi-team environment'. The sense of collaboration with different teams and departments which the new SAFe framework promotes, should be incorporated within the cultural setting in the organization. The framework would theoretically, lead the people or the employees to collaborate more with each other. Similarly, the resistance an organization face when overlapping a new system upon the old also needs a cultural change among the employees for them to adopt the new structure completely. With new cross-functional teams and several new ceremonies and events, employees need to be involved with several different people with differing functions, expertise and opinions. Hence, after the implementation of SAFe, coordination challenges are sure to rise and should be gauged.

vi. Structure – Culture

The new structure demands a culture change in the organization in order to be feasible. Similarly, the new structure should also be molded and customized to some extent to align itself with the existing informal setting of the organization. The parameters of this congruence are needed to ascertain the benefits of this fit as well as the challenges facing the company. 'Visibility' is a parameter brought up by the SAFe framework in the organization which could mold the culture of Volvo Cars to be more open and informal in sharing data and backlogs. 'Cost Benefits' are the benefits, rewards and incentives existing in the informal settings which the new structure needs to adopt. In the same manner, the challenge parameter 'Staffing role' and 'hierarchical management' deals with the challenges of changing the existing culture when implementing a new structure.

	Work-Culture	Work-People	Work-Structure	People-Structure	People-Culture	Structure-Culture
Benefits	Transparency	Faster & Frequent deliveries	Alignment	Productivity	Collaboration	Visibility
	Predictability	Customer Satisfaction	Built-in Quality	Defects Reduction		Cost Benefits
			Program Execution			
Challenges	Agile Release Train Challenges	Moving Away from Agile	Requirement Management	Unfamiliarity with SAFe framework	Resistance to Change	Staffing roles
				Difficulty in implementation	Coordination Challenges	Hierarchical Management

Table 1: Division of benefits and challenges parameters as per the Nadler & Tushman (1980) congruence

3.4.2 Pearson-Fischer Skewness Coefficient

Each of the parameters are then gauged using skew analysis of the distribution. Skewness is the measure of symmetry or rather asymmetry in a sample (Stephanie, 2013). When a distribution is symmetrical it means that one half of the distribution is a mirror half of the other half. Skewness is zero when a sample is symmetrical. In case of asymmetry the distribution can be right skewed or left skewed. Right skewed, also called positive-skew distribution has a long tail or less data in the positive direction of the number line and the mean is at the right of the peak. In contrast, left skewed, also called negative-skew has a long tail in the negative direction of the number line and the mean is on the left side of the peak (Stephanie, 2013). Both the distribution can be seen in the Figure (Stephanie, 2013) below.

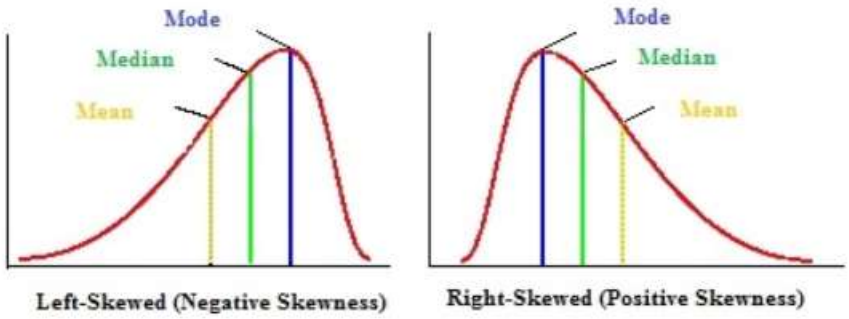


Figure 7 : Right-Skewed and Left-Skewed distribution (Stephanie, 2013)

Fisher-Pearson standardized moment coefficient is used with the current distribution of the samples which is given by the formula below.

$$\frac{n}{(n-1)(n-2)}\sum\left(\frac{x_i - \bar{x}}{s}\right)^3$$

Where n = sample size
S = standard deviation of the sample
X_i = i^{th} value in the sample from 1 to n
$\bar{x}$ = standard mean of the sample

This formula is widely used in many statistic software packages including Excel, Minitab and Data Plot (Stephanie, 2013). The output can have a positive or a negative sign which indicates it being either right or left skewed and a magnitude indicating the strength of the skewness. There are no definite criteria of interpreting the magnitude of the skew analysis. Statisticians have used arbitrary ranges to interpret the results (Bulmer, 1979). Therefore, for the purpose of classifying and gauging each parameter in relation to each other, we have created classes considering the highest and the lowest magnitude of the overall organization sample and color coded them as per their magnitudes for both positive and negative.

For the benefits:

0 – 0.1	Low effect
0.1 – 0.2	Very low effect
0.2 – 0.3	Barely an effect
0.3 And above	No effect

0 - -0.1	Some effects
-0.1 - -0.2	Satisfactory effect
-0.2 - -0.3	Highly effective
-0.3 and below	Excelling the estimates

For Challenges:

0 – -0.1	Some concern
-0.1 – -0.2	Mildly Concerning
-0.2 – -0.3	Highly Concerning
-0.3 And above	Extremely troubling

0 – 0.1	Low Concern
0.1 – 0.2	Very Low Concern
0.2 – 0.3	Barely a Concern
0.3 and above	Least Concerning

It could be noted above that classes are inverted against each other for benefits and challenges, the positive magnitude for the benefits relate to the lack of effects while negative magnitude relates to a better satisfactory situation. In contrast the challenges have the opposing classification. This is due to the way the survey was designed for both the benefits and the challenges parameters and the output from the skew analysis. The results of the benefits parameters goes from least beneficial to more beneficial from left to right (see results from
Figure 16 to *Figure 27*), so the negative magnitude or left-skewed is a favorable result and a positive magnitude or right-skewed is unfavorable. In the case of challenges the results go from least challenging to more challenging from left to right (see results from the *Figure 28* to *Figure 36*), so the negative magnitude or left-skewed is unfavorable result and positive magnitude or right-skewed is the favorable result. Therefore, there was a need to depict a contrasting classification for the benefits and challenges.

3.5 Ethics

The ethical and legal considerations which influenced the thesis are mentioned below.

3.5.1 Ethical principles

Bell et al., (2018), in their business research methods identifies four ethical impediments, which are: harm to participant, lack of informed consent, invasion of privacy and deception, these are drived from common human values and revolves around how people should be treated in general. Harm to participant can be both physical or mental including any harm to the career and future employment (Bell et al., 2018). Keeping this in mind the employees' concerns and principles were catered to the maximum extent. The interview questions were sent to the interviewees prior to the interviews and they were given all the freedom to choose questions to reject or not answer. No information of the interviewees were divulged to anyone. Recording was taken only for our own self reflection only after the permision from the interviewee. Similarly, the surveys were designed to ensure privacy as much as possible impeding any chances of figuring out who the participant is. Lack of informed consent entails that the participants of the research are kept in the dark of any essential information regarding methodology or the study. Therfore, the participants were appropriately informed that this research is for academic purpose only and the results will be reviewed by a case study representatives before being published. Overall the participants were free to choose whether to involve or not in both interviews and survey.

Invasion of privacy is diving into the private and sensitive matters of the participants. In our research methods this might include asking personal or private questions. This could vary for different cultures, ages and backgrounds and even from person to person. During the interviews, the interviewees could simply skip questions which they did not choose to answer. Almost all questions of the survey were mandatory but any employee could choose to not participate and there was no way of knowing who rejected to participate. The final impediment is deception, meaning presenting the results different to the actual or with biasness. The results were presented as objectively as possible, and special care was taken not to steer the results to certain directions. The raw data was also shared with the Chalmers supervisor to cross-examine the results. Moreover, the automated results of the survey form was also given to the company case study representative as an Excel file.

3.5.2 Legal Consideration

The legal considerations one needs to consider in any formal studies include data management, copyright, reciprocity and trust and affiliations and conflicts of interest (Bell et al., 2018). The data management concerns with the ownership of the data, the legal rights of the data subject, responsibility of its use and if the research is even allowed from a legal standpoint. The research was green lighted by the company after signing of an agreement. As far as ownership goes Volvo Cars owns the data and is also responsible of the usage and availability of the data. The data subjects are also all Volvo Cars employees and consultants and like many organizations' Volvo Cars have also employed GDPR law, which essentially does not allow storage of any personal data. Therefore, the interviews and questionnaire were designed in such a way that no personal data is collected. Since the thesis is also be published in Chalmers University of Technology database, prior approval is taken from Volvo Cars before sending out for publishing.

Bell et al., (2018) have stated that copyright consideration would mean that the interviewee owns the spoken words and the transcriber is the owner of the interview transcript. Pasting any picture should join with getting an approval from the photographer and the subjects of the photograph (Bell et al., 2018). The cover picture of the report on the first page was used after receiving permission from Volvo Cars.

To have mutual benefits for everyone involved in regards to research study, data and analysis is termed as reciprocity and trust (Bell et al., 2018). This is done by generating useful and benificial results from the research done. In this study, it was extensivey explored what worked for Volvo Cars during the change process and what did not. In addition recommendations and future strategies were also suggested. It is hoped that research can also iniate further research on the subject in the same settings and could also benefit others when published. Lastly, affiliation and conflicts of interest are issues related to having results influenced by the founders (Bell et al., 2018). The founders were Volvo Cars in this instance, and they had minimal influence in slecting the methodologies of the survey and interview questions also having regular meetings with Chalmers supervisor kept influence at the minimum.

3.6 Quality of Research

The thesis used both qualitative and quantitative data analysis in the study using both numbers and theoretical understanding form analysis and discussions. The ideal practices of both would be discussed here. Bell et al. (2018) identified four quality criteria of qualitative research to ensure the trustworthiness and dependability of research strategy and design. They are credibility, transferability, dependability and confirmability. The credibility was maintained by using thoroughly referenced academic literature. Notes and recordings, with the permission of the interviewee, were taken during the interviews. All the interviewees were actively involved in one way or the other in the SAFe transformation. Most of the interviews were of managers, coaches and leaders, however, two out of seven interviews were conducted with people in non-managerial positions to maintain a balance and to get a holistic view. Since the study was carried out in a closed organization it is difficult to ensure transferability and dependability. However, the foundation of research parameters was taken from well-known and academic literature which had sorted out numerous case studies on the matter and much of the findings aligned with them. Conformability was ensured by having meetings with the supervisor at Chalmers University of Technology as well as managers, leaders and coaches at Volvo Cars. In an instance the focus of the thesis was also changed when more data

and room for research became available and more information became clear on the actual realities of the situation at Volvo Cars.

The quality criteria of quantitative research as put forward by (Bell et al., 2018) are reliability, replication and validity. Reliability is when the results are repeatable and does not contain large variances. To counter it is important to have a large sample size, where the same results are obtained if the method is used again. The population size was 8000 and the response size was 992, which makes approx. 12% of the population. The population and the response size can be considered reliable for this research. Replicability of the research method means that the same research process can be repeated by some other researcher. The interview questions and the survey used in this research are both available in *I:* Interview Questionsand *II:* Survey questionsrespectively and could act as a foundation of future research. Lastly, the validity of the research concerns with how well the different steps performed. The quantitative research was done under the guidance of our Chalmers supervisor. The study and methods were approved by both the academic and company supervisor as well as our colleagues at Chalmers before being published. Several changes were also made to make sure the correct nomenclature and terms were used during the interviews and when sending out the surveys. Both the interview guidelines and the survey were pre-approved by the company supervisor so that all the respondents could be on the same page when giving the interview or filling out the survey.

4.0 Empirical Data

To evaluate the problem statement, interviews were conducted, and a survey was sent out to the employees. The description and the results of the empirical study done are presented below.

4.1 Interviews

Since the interviews were conducted to ascertain the initial realities, conditions and expectations of the managers and the employees, most of the questions were asked around those topics. When asked about the driving factors towards SAFe implementations by Volvo Cars, the respondents, answers were mostly similar. The vehicles of today are becoming increasingly dependent on software development with many of its functions now automated. This has made Volvo Cars changed from a purely mechanical company to be more software oriented. In-house software development for different vehicle functions are now a part of Volvo Cars. Therefore, to bring the various software related dependencies under one system to promote proper collaboration and visibility between them, together with fast loops and quick feedbacks, it became eminent in the top managements' mind to adopt SAFe. However, the idea of the implementation was both through grass root movement of the company and some of the top management support to change. Agile was already practiced in parts of the organization simultaneously with the old waterfall methods. Some of the software-oriented units had scrum masters and agile practitioners before the large-scale implementation. As the in-house software development grew, at a certain point it was decided to scale agile process to the organizational level in early 2018. A couple of top managers who had experience with working and implementing SAFe were the key proponents of this decision. As a Change Manager had said in the interview:

"The idea of introducing SAFe was both a grass root moment in Volvo Car Group, as the company was becoming software-oriented more and more. In-house development of software had started here. Further helped by persuasion from top management who had experienced Agile and SAFe in other places."

The first unit to adopt SAFe was Software and Electronics (94000) in early 2018. The Agile way of working has become a trend and a standard in in-house software development industries and the 'need for speed', rapid changes and automated regression tests in software has made agile a necessity. This developed into software units in Volvo Cars to first adopt large scaled agile ways of working. The new way of working is now subsequently expanded into other non-developmental units too. As the line between software and hardware is thinning, it also became paramount to introduce SAFe to hardware units. Some interviewees have also said that the structural setup of SAFe with varying hierarchies makes it more feasible in large organizations.

When asked about key benefits and challenges of SAFe envisioned before it was implemented, the interviewees again responded with many similar points. The more structured work planning was anticipated to reduce time and resources in tasks and creating less ad-hoc work. Holistic views of the tasks were also envisioned with greater *visibility* and *transparency* between different units. Empowerment of the team including decision making power was also established beforehand. Greater *alignment* both horizontally and vertically across the organization where both software and hardware units are brought together to a single table. Better efficiency and ease in program execution were also envisioned before the implementation.

Some of the anticipated challenges include the *resistance towards the change* mainly from the hardware units of the company. As a hardware change leader said:

"People's resistance especially in hardware is concerning with a general perception that agile will not work for hardware. [we] Spent a lot of workshop trying to figure out how it should be implemented"

The problems with restructuring the organization were anticipated including job titles changes, change in power and responsibilities and new *staffing roles*. Confusion regarding the new way of working especially among the old employees were foreseen. In addition, the general perception of the people that agile is solely for software development and may not accommodate hardware development appropriately, hence people might not be keen in participating in the change, was also considered.

To tackle these and other challenges extensive coaching and planning meetings were organized to create an understanding of agile and SAFe principals. Special consideration was given to change the mindset of the people towards agile way of working, especially its general perception towards hardware units. Managers had their own discussions within the teams they were leading on what aspects work best for them within the larger SAFe background. Customization of SAFe was done in the context of automobile industries and Volvo Cars' own work culture, by creating their own framework called Volvo Cars Agile Framework (VCAF). VCAF is work in progress and is regularly updated with additional information of roles and responsibilities of staff as said by a manager:

"Changes are made and shared with everyone in VCAF, the localized SAFe for Volvo. New version is available every alternative week. Communication and deployment of new practices are done, with deployment meeting."

New roles are also added in it based on feedbacks and introspection. In addition, the use of VIRA, an issue handling system based on the popular management tool JIRA, is deployed within the organization. More power is now given to the product-based teams to make important decisions, which are now preplanned collectively in initial planning sessions and stored in backlogs to be executed later. This has synchronized many multifunctional units together.

SAFe was introduced into different units of Volvo Cars making the use of few change agents or pilots in each unit. These individuals used the SAFe framework in their daily tasks and were set as an example for the rest of the unit to follow. Besides education and coaching, these individuals were used to motivate their units to adopt SAFe. They were called early innovators or pilots of SAFe. The pilots were then trusted to inspire early adaptors of the unit. This group of people were those who were most likely to accept the new way of working in their tasks. They displayed positive response to the change and were motivated to apply it in the organizational level. Employees hired in units post implementation or hired specifically for a role in SAFe were usually found in this group. The third group were called 'Late adaptors' and included those who had second thoughts on the application of SAFe. This group consists of people who were reluctant in adapting the new way of working or were having second thoughts of its feasibility in the organization and their respective units. As one of the developers stated that the current SAFe practice in his unit was the third attempt of the application of the framework. The employees in his units did not respond well in the first two attempts. As per the change leaders these employees needed an extra bit of motivation and concrete

results out of SAFe in order to consider it. The last group of employees were called ‘laggards’, who according to change leaders, were extremely defiant on adopting the change in their tasks and units. They proved extremely difficult when approached with the new SAFe framework and settings.

When asked about the future of SAFe in the organization, the interviewees believed like every change, this implementation to the new way of working also needs time to settle in. A change in mind-set is required from the employees, especially those who have been working with waterfall way of working for a long while. This also includes the hardware units to realize the potential and benefits of working with SAFe. The distance between hardware and software should be bridged since their dependencies with each other have increased. Some also believed it is high time that the hardware units apply agile principals completely since it would be for the best in the long run. The interviewees also stated the SAFe should be scaled up even further to accommodate more of the organization. The more different units will be synched together, the better planning can be done, and dependencies can be addressed further.

4.2 Survey Responses

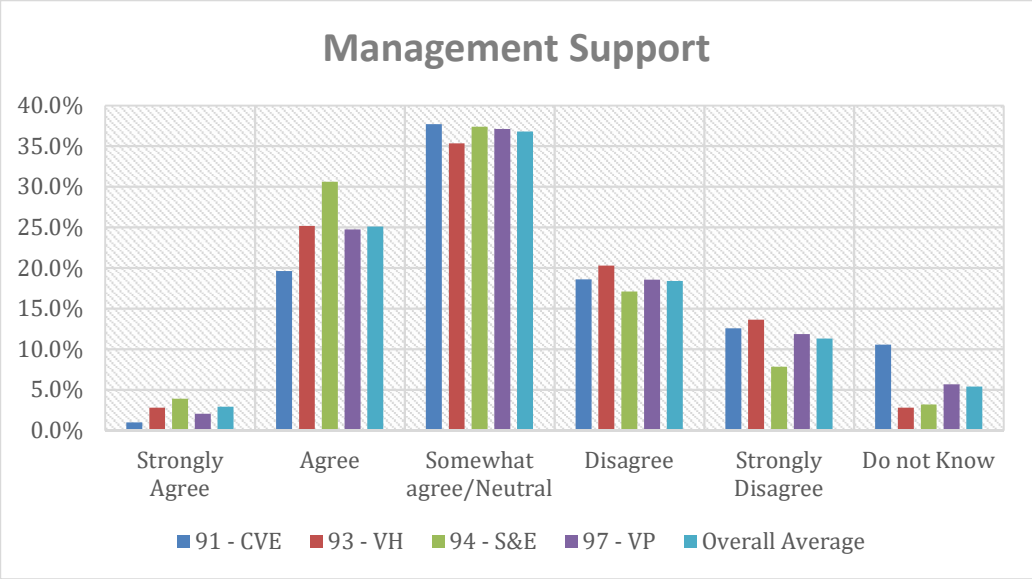
Around 30% of the respondents had a managerial or leadership positions, which means a good amount of team managers, leaders and coaches responded to the survey. 523 respondents had worked in the same department of Volvo Cars since the transformation started which makes 53% of all respondents. Only 22% of the respondents had experience with agile prior to its implementation at Volvo Cars. 72% of the employees responded that they had attended and taken active part in the SAFe transformation in their departments or units. The figures below highlight the responds of the survey questions by the participants. The results are focused around the overall organization and the four focused departments, 91 - Complete Vehicle Engineering (CVE), 93 - Vehicle Hardware (VH), 94 - Software & Electronics (S&E) and 97 - Vehicle Propulsion (VP). The department numbers and the acronyms are used in the survey results below.

4.2.1 Success Factors

The success factors are gauged in the survey and the results are displayed from the Figure 8 to Figure 15 below, the responds of question 7 to question 14 from the survey can be seen. The responds are depicted for the entire organization as well as the four focus departments.

4.2.1.1 Management Support

Survey Question: The change leaders have given support needed during the SAFe transformation process at all levels of the organization.



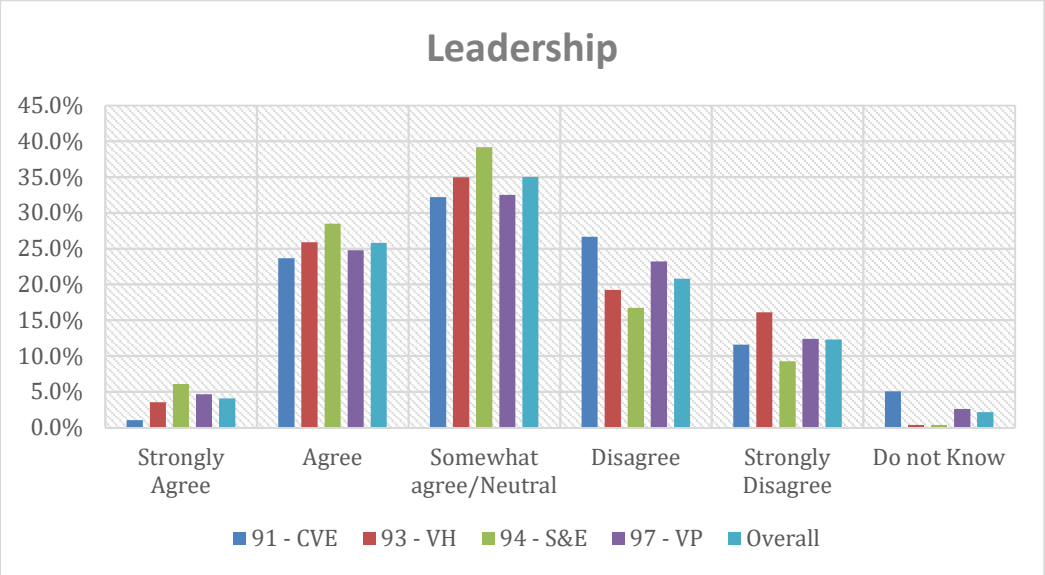
	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall Average
Strongly Agree	1,01 %	2,80 %	3,91 %	2,06 %	2,9 %
Agree	19,60 %	25,17 %	30,60 %	24,74 %	25.1 %
Somewhat agree/Neutral	37,69 %	35,31 %	37,37 %	37,11 %	36,8 %
Disagree	18,59 %	20,28 %	17,08 %	18,56 %	18.4 %
Strongly Disagree	12,56 %	13,64 %	7,83 %	11,86 %	11.3 %
Do not Know	10,55 %	2,80 %	3,20 %	5,67 %	5,4 %

Figure 8 : Results of Success factor 'Management Support'

As depicted in Figure 8 above most of the employees had 'Neutral' response (36.8 %) when asked about the support of change leaders and managers during the SAFe transformation in their respective units. More than one-fourth 'Agree' or 'Strongly Agree'. However, about 18% poised to 'Disagree' with the sentiment while about one-tenth 'Strongly disagree'. Meanwhile, about 5% of employees were unable answer the question and opted to select 'Do not Know' in the survey. Observing the departments individually, 94 - (Software & Electronics) seems to fare better than rest of the departments with 4% of its employees opting to 'Strongly Agree' and over 30% to 'Agree' that good support was provided or is being provided. Followed by 97 - (Vehicle Propulsion Engineering) and then 91 - (Complete Vehicle Engineering). 93 - (Vehicle Hardware) fared the worst amongst all. Important to note is the 10.55% of 91- CVE claim that they 'Do Not Know'.

4.2.1.2 Leadership

Survey Question: The line-management has displayed leadership qualities (e.g. teach, empower, engage) during the transformation.



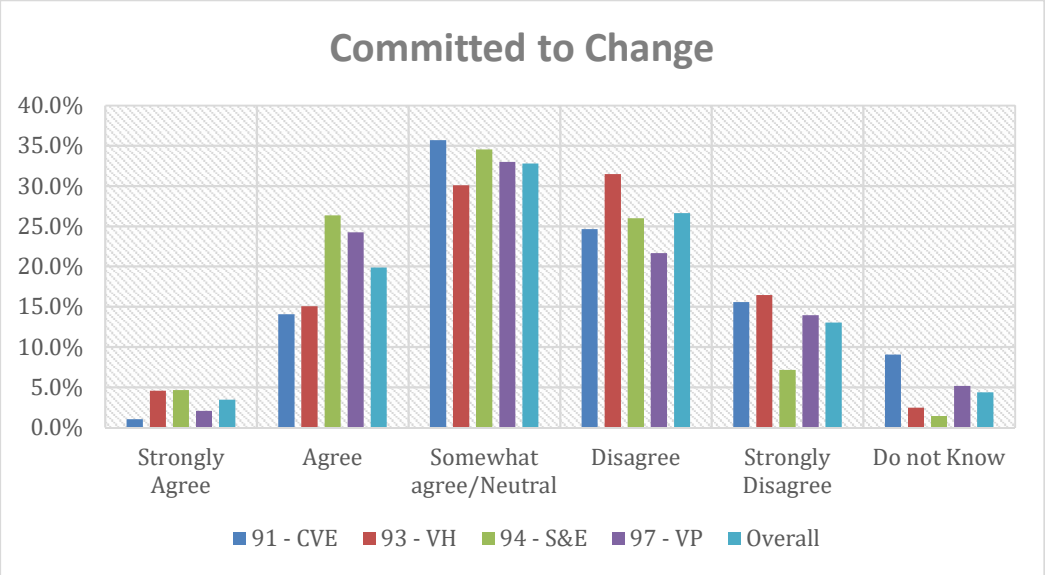
	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
Strongly Agree	1,0%	3,5%	6,0%	4,6%	4,0%
Agree	23,6%	25,9%	28,5%	24,7%	25,8%
Somewhat agree/Neutral	32,2%	35,0%	39,1%	32,5%	35,0%
Disagree	26,6%	19,2%	16,7%	23,2%	20,8%
Strongly Disagree	11,6%	16,1%	9,3%	12,4%	12,3%
Do not Know	5,0%	0,3%	0,4%	2,6%	2,1%

Figure 9 : Results of Success factor 'Leadership'

When asked about the leadership qualities in the line-management and the change leaders in leading the SAFe transformation, the following response was given by the employees of Volvo Cars as depicted in the Figure 9. Like in the previous factor most of the employees, 35%, chose to be 'Neutral' on the issue. More than one-fourth i.e. 25.8% 'Agreed' with the statement while 4% 'Strongly Agreed'. On the other side, slightly more than one-fourth, 20.8%, of the employees 'Disagreed' with the statement and 12.3% expressed strong disagreement. 2.1% claimed to not know the answer to the question. Individual analysis on the department also shows 94 – S&E to be at the top as in Management Support. 6% of the employees in this department 'Strongly Agree', while 28.5% chose to 'Agree' with the statement. About 39% chose to stay 'Neutral' and around one-fourth chose to 'Disagree' and 'Strongly Disagree'. The rest of the departments, 91 - CVE, 93 - VH and 97 - VP, all had more than one-third of the employees either disagreeing or strongly disagreeing with the statement and about the same amount stayed 'Neutral'. Both 97 - CVE and 93 - VH had 29% of the employees 'Agree' and 'Strongly Agree' with the statement while less than 25% of 91 - CVE employees did the same. Meanwhile 5% of 91 - CVE employees and 2.6% of 97 - VP employees claim that they 'Do not know' or cannot judge the statement.

4.2.1.3 Committed to Change

Survey Question: The line-management and the employees of all departments were committed to the change to SAFe which was brought forward.



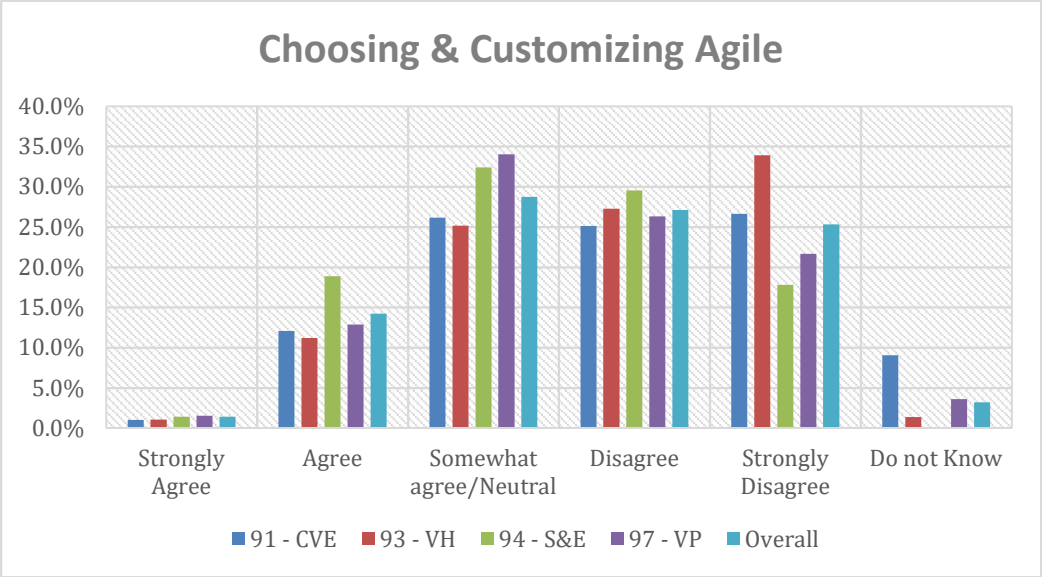
	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
Strongly Agree	1,0%	4,5%	4,6%	2,1%	3,4%
Agree	14,1%	15,0%	26,3%	24,2%	19,9%
Somewhat agree/Neutral	35,7%	30,1%	34,5%	33,0%	32,8%
Disagree	24,6%	31,5%	26,0%	21,6%	26,6%
Strongly Disagree	15,6%	16,4%	7,1%	13,9%	13,0%
Do not Know	9,0%	2,4%	1,4%	5,2%	4,3%

Figure 10 : Results of Success factor 'Committed to Change'

The results of the management's and employees' commitment to change is depicted in the Figure 10 above. Compared with the previous parameters, the results in this one shows a higher number of employees disagreeing with the statement given. 94 – S&E fared worse than the previous two parameters yet remained the best among other departments. With around one-third of its employees 'Disagree' and 'Strongly Disagree' with the statement. More than one-third remained 'Neutral' and less than one-third 'Agreed' and 'Strongly Agreed'. 93 - VH had more employees 'Disagree' at 31.5% than being 'Neutral' at 30.1%, and about 16.4% 'Strongly Disagreed' as well while even less than one-fifth chose to 'Agree' and 'Strongly Agree'. 97 - VP had one-third of the employees react to the statement as neutral and negatively each and only slightly more than one-fourth remained positive. 5.2 % however, claimed to not know the answer. Most of the employees in 91 - CVE, more than 40%, reacted negatively to the statement followed by being 'Neutral' at 35.7%. Only about 15% reacted positively however, a high of 9% claimed to not know the answer.

4.2.1.4 Choosing & Customizing Agile approach

Survey Question: The agile and SAFe frameworks have been molded and customized within the context of the organization to achieve best efficiency optimization in time and resources used.



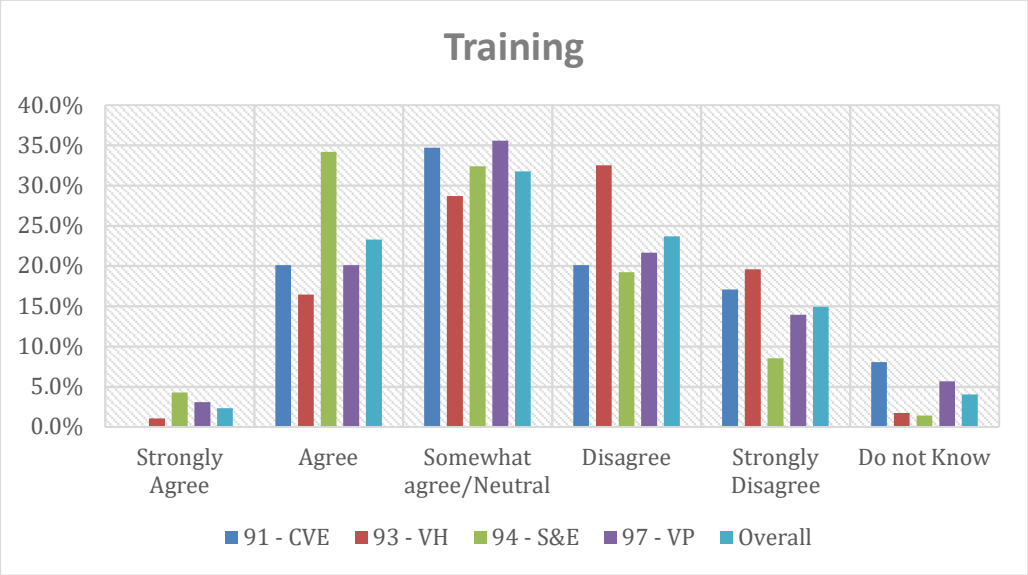
	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
Strongly Agree	1,0%	1,0%	1,4%	1,5%	1,4%
Agree	12,1%	11,2%	18,9%	12,9%	14,2%
Somewhat agree/Neutral	26,1%	25,2%	32,4%	34,0%	28,7%
Disagree	25,1%	27,3%	29,5%	26,3%	27,1%
Strongly Disagree	26,6%	33,9%	17,8%	21,6%	25,3%
Do not Know	9,0%	1,4%	0,0%	3,6%	3,2%

Figure 11 : Results of Success factor 'Choosing & Customizing Agile approach'

The employees of Volvo Cars were inquired about customization during the change process and the Figure 11 above depicts the results. Although, like the previous factors the number of 'Neutral' employees were the highest, though the amount was less than the latter at 28.7%. More than half of the employees answered in negative, with 27.1% 'Disagree' and 25.3% 'Strongly Disagree'. Only about 15% chose to 'Agree' and 'Strongly Agree' with the statement. Meanwhile, 3.2% of the employees claimed that they are unable to judge the situation. The skewness towards the negative for all the employees was also depicted in the individual department analysis. 94 – S&E had the most employees with a 'Neutral' reaction to the statement as with the previous factors at 34.5% but almost half of the employees reacted negatively. Just over one-fifth reacted positively towards the statement. 97 - VP had somewhat similar results except for less than 15% reacting positively and 3.6% unable to answer. Both 93 - VH and 91 - CVE had more than 60% of employees reacting negatively to the statement and more than one-third of the employees of 93 - VH 'Strongly Disagreed' with the statement. 9% of the employees of 91 - CVE claimed that they were unable to judge the statement on customization.

4.2.1.5 Training

Survey Question: The training for SAFe provided helped employees work with SAFe and appropriately conveyed the reasons and benefits of the new way of working before the transformation.



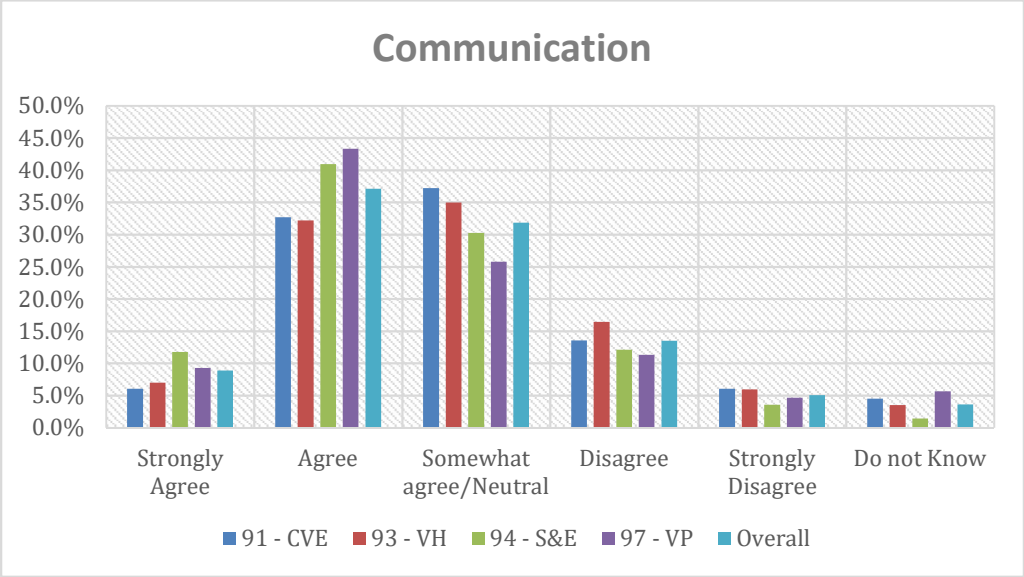
	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
Strongly Agree	0,0%	1,0%	4,3%	3,1%	2,3%
Agree	20,1%	16,4%	34,2%	20,1%	23,3%
Somewhat agree/Neutral	34,7%	28,7%	32,4%	35,6%	31,8%
Disagree	20,1%	32,5%	19,2%	21,6%	23,7%
Strongly Disagree	17,1%	19,6%	8,5%	13,9%	14,9%
Do not Know	8,0%	1,7%	1,4%	5,7%	4,0%

Figure 12 : Results of Success factor 'Training'

The employees were asked to rate the effectiveness of the training they had received for the transformation to SAFe in the organization. The results are depicted in the Figure 12 above. The trend of most employees choosing to be 'Neutral' continues for this factor too. 94 - S & E again fared the best for this with one-third of its employees choosing to 'Agree'. Another one-third remain 'Neutral'. However, a little more than one-fourth gave a negative reaction and chose to 'Disagree' and 'Strongly Disagree'. 93 - VH had more than half of the respondents give a negative response to the statement and only 16% 'Agreed' with the statement. 91 - CVE and 97 - VP fared slightly little better with one-fourth of the respondents agreeing with the statement. 17.1% of 91 - CVE and 14% of 97 - VP chose to 'Strongly disagree' with the statement. Meanwhile 8% and 5.7% of 91 - CVE and 97 - VP respectively claimed not to know enough about the training.

4.2.1.6 Communication

Survey Question: Intensive communication was employed to reach as many people in the organization for the new way of working.



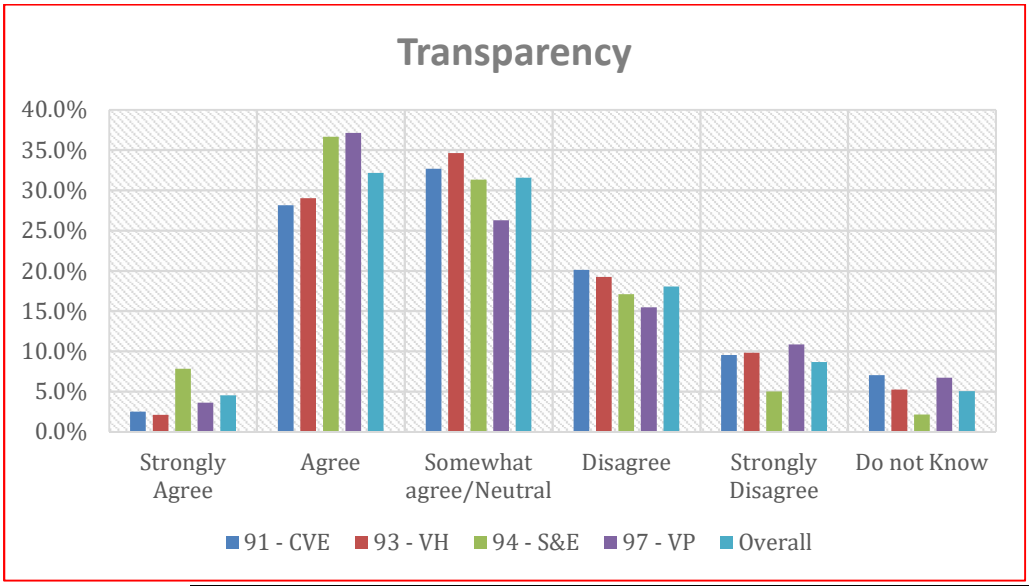
	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
Strongly Agree	6,0%	7,0%	11,7%	9,3%	8,9%
Agree	32,7%	32,2%	40,9%	43,3%	37,1%
Somewhat agree/Neutral	37,2%	35,0%	30,2%	25,8%	31,9%
Disagree	13,6%	16,4%	12,1%	11,3%	13,5%
Strongly Disagree	6,0%	5,9%	3,6%	4,6%	5,0%
Do not Know	4,5%	3,5%	1,4%	5,7%	3,6%

Figure 13 : Results of Success factor 'Communication'

The employees were asked to provide their opinion on the overall communication done both horizontally and vertically to convey the message of the transformation as depicted in the Figure 13. In a rare instance, most of the respondents, about 37%, chose to 'Agree' that effective communication was done while around 9% 'Strongly Agreed' with the statement. Less than one-third remained 'Neutral' and less than one-fourth gave a negative response. 4% of the respondents however, claimed to not know about it. Individual departments too had high opinion on the effectiveness of the communication in the organization. Both 94 – S&E and 97 - VP had more than half of the respondents give a positive response with even around one-tenth of them 'Strongly Agreeing' with the statement and only around 15% had a negative response. However, around 6% of 97 - VP respondents claimed that they 'Do not know' enough about the statement. 91 - CVE and 93 - VH also had around 40% positive response. However, 4.5% of 91 - CVE respondents and 3.5% of 93 - VH respondents claimed unable to judge the statement.

4.2.1.7 Transparency

Survey Question: The information and guidelines of the transformation process were shared transparently without bias with everyone.



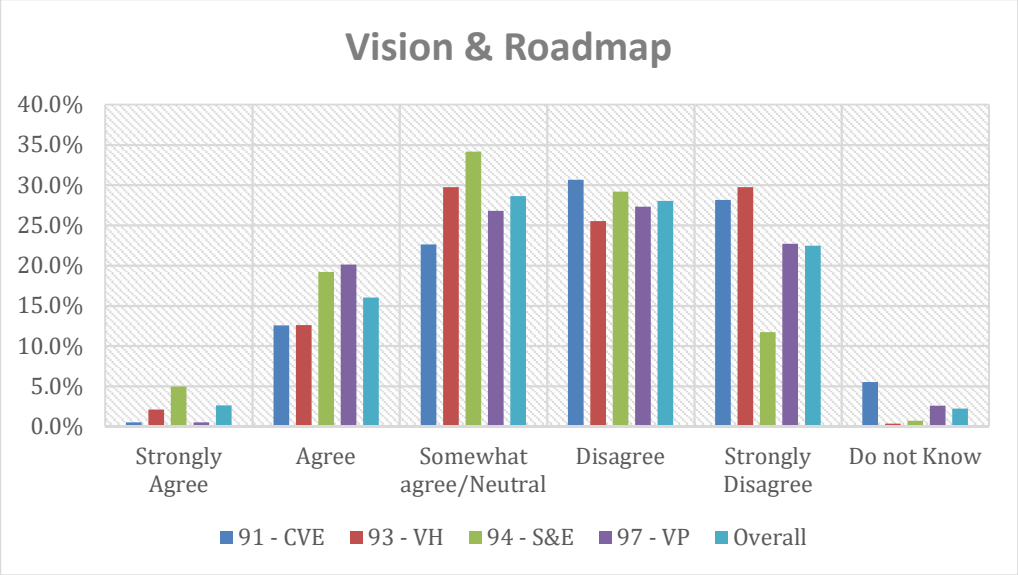
	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
Strongly Agree	2,5%	2,1%	7,8%	3,6%	4,5%
Agree	28,1%	29,0%	36,7%	37,1%	32,2%
Somewhat agree/Neutral	32,7%	34,6%	31,3%	26,3%	31,6%
Disagree	20,1%	19,2%	17,1%	15,5%	18,0%
Strongly Disagree	9,5%	9,8%	5,0%	10,8%	8,7%
Do not Know	7,0%	5,2%	2,1%	6,7%	5,0%

Figure 14 : Results of Success factor 'Transparency'

Being transparent with the information flow is necessary to have during a large-scale transformation in an organization. The employees were asked to rate the transparency during the change and the results are shown in the Figure 14. Around one-third of the respondents were neutral, and the same amount 'Agreed' with the statement. More than one-fourth however, gave a negative response and chose to 'Disagree' or 'Strongly Disagree' with the statement. Meanwhile 5% of the respondents claimed to not know of the situation. 94 – S&E was the best performing department again with as much as 43% of the respondents giving a positive answer followed by 97 - VP with around 41% with a positive response. 7% of 97 - VP, however, were unable to answer the question. Both 91 - CVE and 93 - VH had one-third of the respondents stay 'Neutral' while around 30% of the both responded with a positive. Another 30% chose 'Disagree' and 'Strongly Disagree' for both and 7% of 91 - CVE and 5.2% of the 93 - VH claimed to not know the answer of the question.

4.2.1.8 Vision & Roadmap

Survey Question: The vision and roadmap of the transformation to the new way of working was clear and apparent during the change.



	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
Strongly Agree	0,5%	2,1%	5,0%	0,5%	2,6%
Agree	12,6%	12,6%	19,2%	20,1%	16,0%
Somewhat agree/Neutral	22,6%	29,7%	34,2%	26,8%	28,6%
Disagree	30,7%	25,5%	29,2%	27,3%	28,0%
Strongly Disagree	28,1%	29,7%	11,7%	22,7%	22,5%
Do not Know	5,5%	0,3%	0,7%	2,6%	2,2%

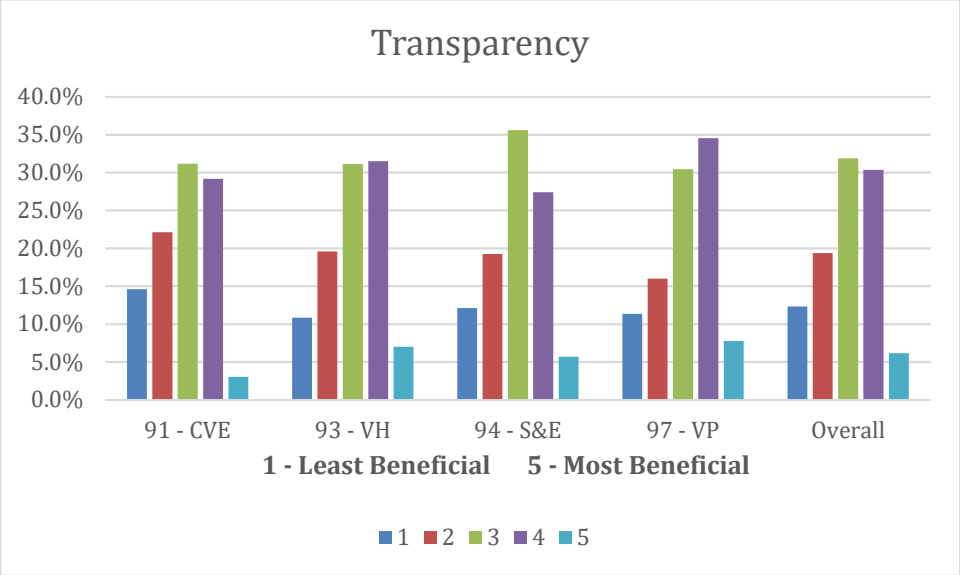
Figure 15 ; Results of Success factor 'Vision & Roadmap'

Employees of Volvo Cars were asked how the roadmap was laid out for them for the transformation to scale agile and how much did the top management conveyed their vision to them. The employees' responses were collected in the Figure 15 above. The responses were largely negative with over half of the respondents reacting negatively choosing to 'Disagree' and 'Strongly Disagree'. Only 18.6% of the respondents reacted positively with 'Agree' or 'Strongly Agree'. Meanwhile, 2.2% decline to answer. 94 – S&E was again the best performer albeit not as good as in other factors. Around one-third of the respondents in the department claimed to be 'Neutral' and a little less than one-fourth of the respondents had a positive response. However, around 40% had a negative reaction to the statement. The negative responses of 91 - CVE, 93 - VH and 97 - VP were more than 50%.

4.2.2 Benefits of SAFe

The following figures from Figure 16 to Figure 27 shows the results of the benefits parameter for the whole organization as well as the four focused departments. The survey participants were asked to rate them from 1 to 5. Where 1 being Least Beneficial and 5 being Most Beneficial. The specific parameter is depicted with each figure below.

4.2.2.1 Transparency

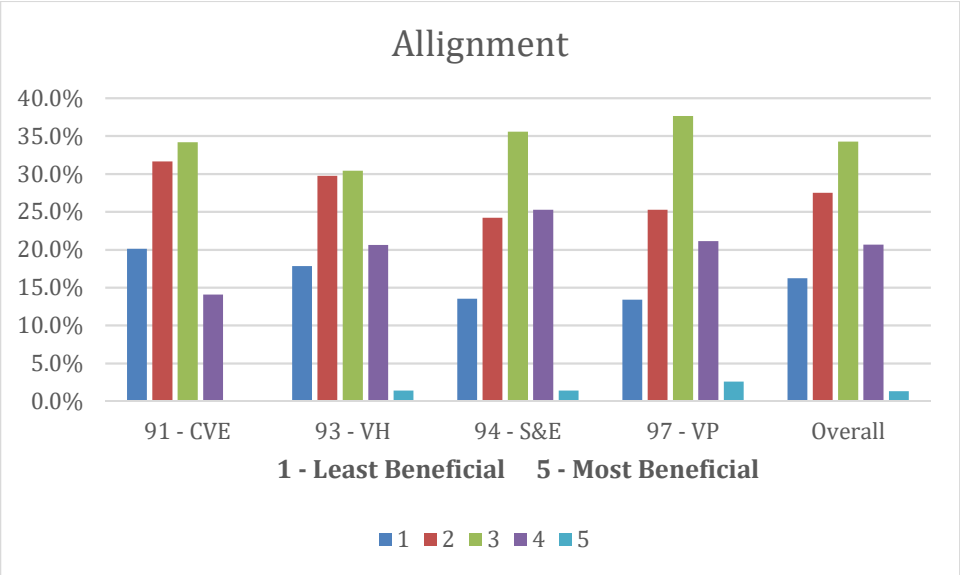


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	14.6%	10.8%	12.1%	11.3%	12.3%
2	22.1%	19.6%	19.2%	16.0%	19.4%
3	31.2%	31.1%	35.6%	30.4%	31.9%
4	29.1%	31.5%	27.4%	34.5%	30.3%
5	3.0%	7.0%	5.7%	7.7%	6.1%
Average	2.83	3.0	2.95	3.11	3.0

Figure 16 : Results of the benefit parameter 'Transparency'

According to the respondents of the survey, the benefits of Transparency are being realized to a good extent in their respective units and departments. Majority of them rated it at '3' followed very closely by those who rated at 4. 97 - VP and 93 - VH had more employees rate the parameter at 4 than 3. The overall average of all departments was 3.0. Individually 97 -VP had the best average followed closely by 93 - VH then 94 – S&E, with 91 - CVE being the rear at 2.83.

4.2.2.2 Alignment

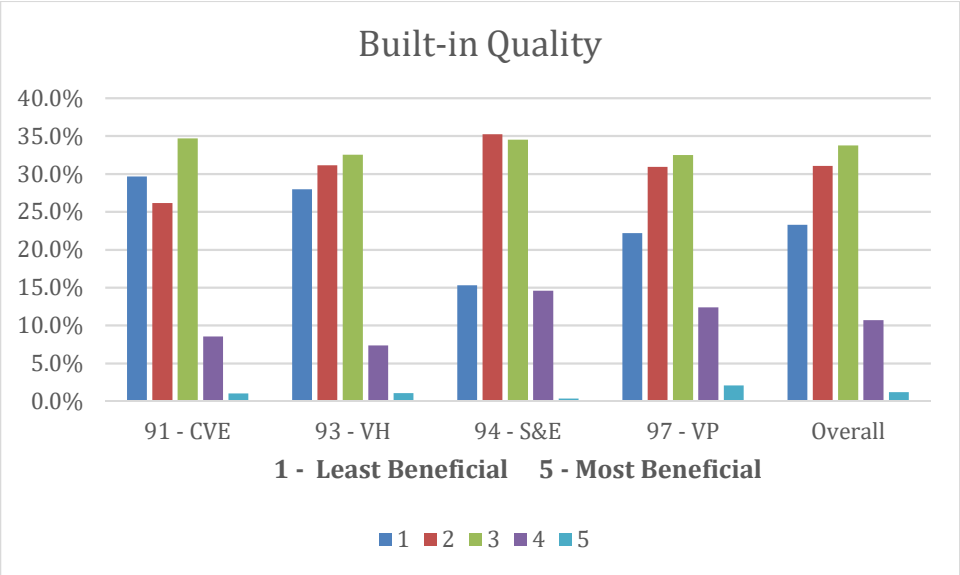


	91 - CVE	93 - VH	94 – S&E	97 - VP	OVERALL
1	20.1%	17.8%	13.5%	13.4%	16.2%
2	31.7%	29.7%	24.2%	25.3%	27.5%
3	34.2%	30.4%	35.6%	37.6%	34.3%
4	14.1%	20.6%	25.3%	21.1%	20.7%
5	0.0%	1.4%	1.4%	2.6%	1.3%
AVERAGE	2.42	2.58	2.76	2.74	2.63

Figure 17 : Results of the benefit parameter 'Alignment'

The 'Alignment' parameter, which deals with aligning the daily tasks with the portfolio strategy of the organization or the department, did not perform as well as the 'Transparency', many participants gauged it lower than the previous one. Majority rated it at 3 followed by 2 and then 4. Many opted it to rate it as 'Least Beneficial' as well. The overall average was 2.63. Individually 94 – S&E had the highest average followed very closely by 97 - VP. 91 - CVE was at the lowest at 2.42.

4.2.2.3 Built-in Quality

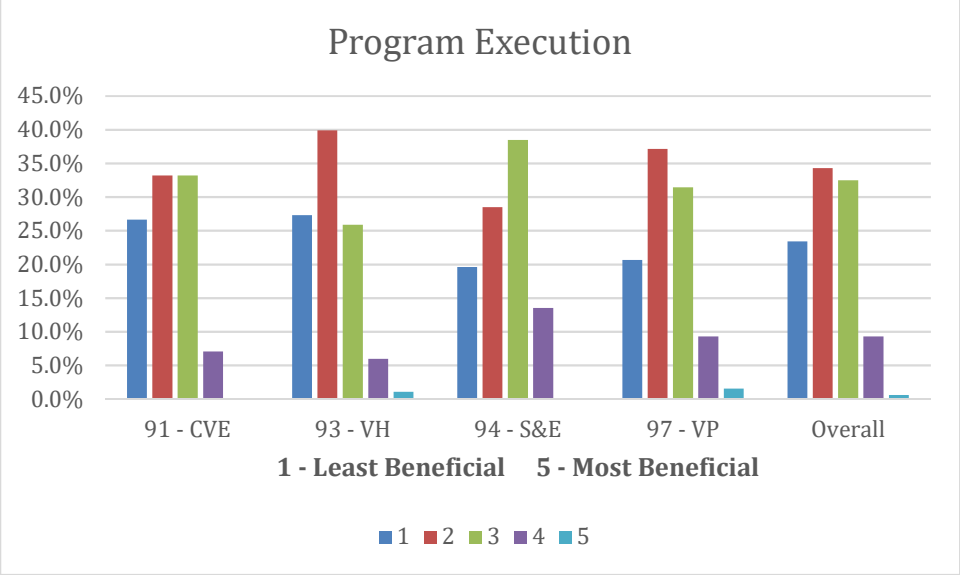


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	29.6%	28.0%	15.3%	22.2%	23.3%
2	26.1%	31.1%	35.2%	30.9%	31.0%
3	34.7%	32.5%	34.5%	32.5%	33.8%
4	8.5%	7.3%	14.6%	12.4%	10.7%
5	1.0%	1.0%	0.4%	2.1%	1.2%
Average	2.25	2.22	2.49	2.41	2.35

Figure 18 : Results of the benefit parameter 'Built in Quality'

It does not seem that the new framework processes have contributed in increasing the quality of the software and product according to the participants. More than one-fourth opined this parameter to be least beneficial. While those who rated it at 2 and 3 are almost the same. Looking at the averages the overall is 2.35, while 94 – S&E had the best at 2.49 and 93 - VH had the worst at 2.22.

4.2.2.4 Program Execution

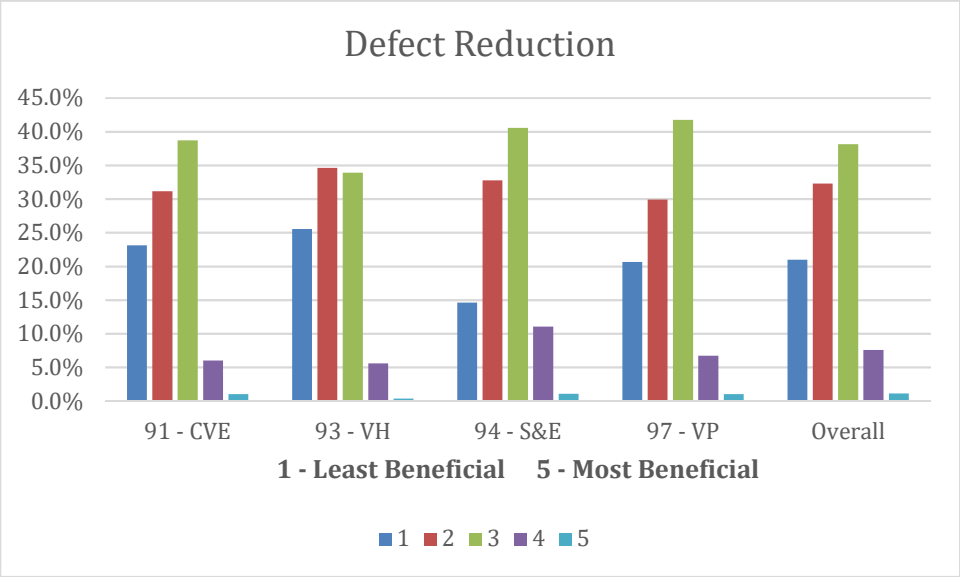


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	26.6%	27.3%	19.6%	20.6%	23.4%
2	33.2%	39.9%	28.5%	37.1%	34.3%
3	33.2%	25.9%	38.4%	31.4%	32.5%
4	7.0%	5.9%	13.5%	9.3%	9.3%
5	0.0%	1.0%	0.0%	1.5%	0.6%
Average	2.2	2.14	2.45	2.34	2.29

Figure 19 : Results of the benefit parameter 'Program Execution'

Continuous and adequate delivery is one of the main principles of agile and SAFe. The opinion on the parameter was mainly negative overall many of the participants chose the lowest and the second lowest rank. The overall average was 2.29. 94 – S&E and 97 - VP were higher than average and 91 - CVE and 93 - VH were lower than average.

4.2.2.5 Defect Reduction

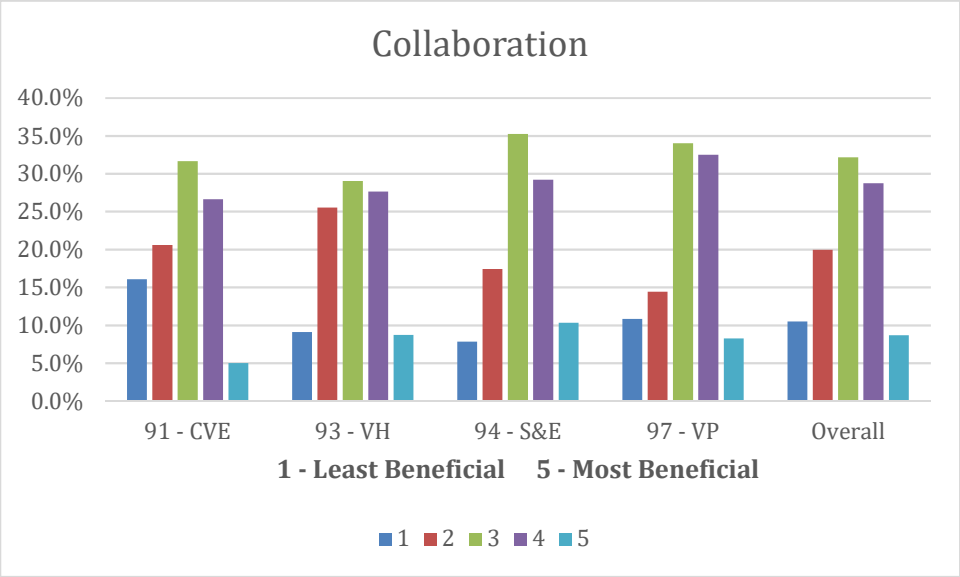


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	23.1%	25.5%	14.6%	20.6%	21.0%
2	31.2%	34.6%	32.7%	29.9%	32.3%
3	38.7%	33.9%	40.6%	41.8%	38.1%
4	6.0%	5.6%	11.0%	6.7%	7.6%
5	1.0%	0.3%	1.1%	1.0%	1.1%
Average	2.31	2.21	2.51	2.38	2.36

Figure 20 : Results of the benefit parameter 'Defect Reduction'

Reducing the defects in the product is one of the key motivations of bringing out a change and is gauged here. The participants once again gave a low opinion on this parameter, most opted to choose 3 and 2 while gauging the parameter with significant amount of them opting for 1 as well. The overall average also remained low at 2.36. Individually, 94 – S&E had the highest average at 2.51 and 93 - VH had the lowest average at 2.21. 91 - CVE and 97 - VP were close to the average.

4.2.2.6 Collaboration

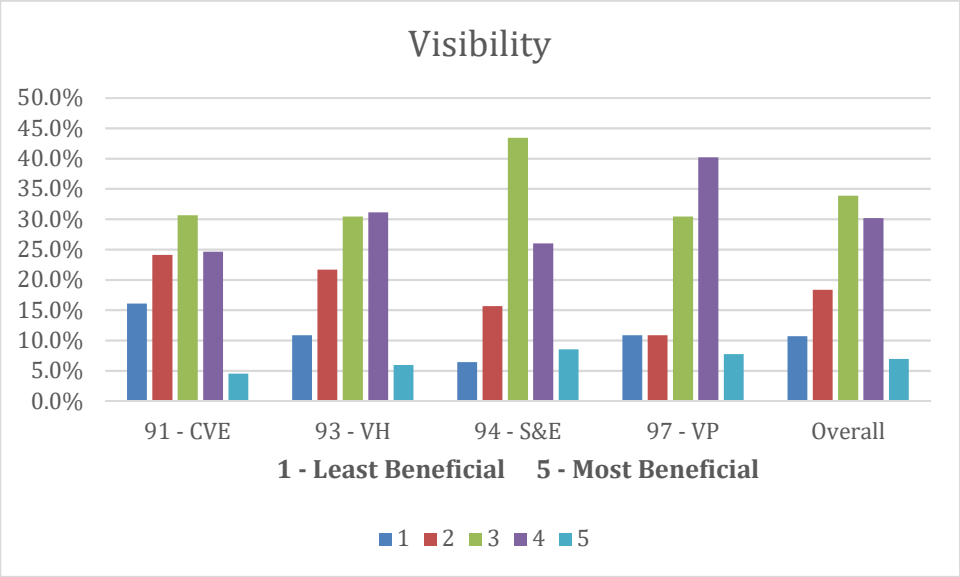


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	16.1%	9.1%	7.8%	10.8%	10.5%
2	20.6%	25.5%	17.4%	14.4%	20.0%
3	31.7%	29.0%	35.2%	34.0%	32.2%
4	26.6%	27.6%	29.2%	32.5%	28.7%
5	5.0%	8.7%	10.3%	8.2%	8.7%
Average	2.84	3.01	3.17	3.13	3.05

Figure 21 : Results of the benefit parameter 'Collaboration

Collaboration within the teams, inter teams, inter departments as well as with the customers is one of the key principles of agile and is gauged here. This parameter performed reasonably better than previous parameter. Most of the participants rated it at either 3 or 4, while 1 and 4 had almost the same number of choosers. The overall average was at 3.05 while 94 – S&E averaged at 3.17, however 91 - CVE only averaged at 2.84.

4.2.2.7 Visibility

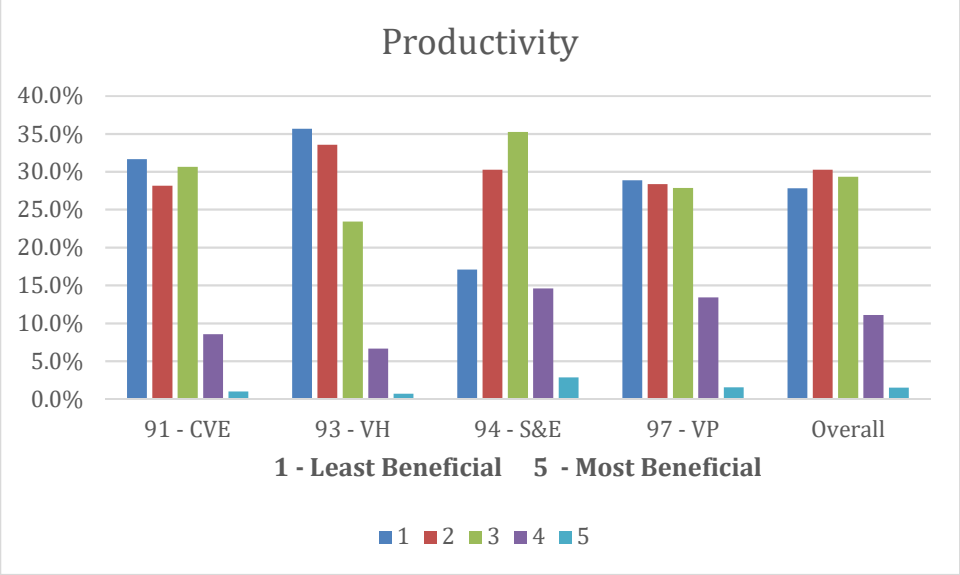


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	16.1%	10.8%	6.4%	10.8%	10.7%
2	24.1%	21.7%	15.7%	10.8%	18.3%
3	30.7%	30.4%	43.4%	30.4%	33.9%
4	24.6%	31.1%	26.0%	40.2%	30.1%
5	4.5%	5.9%	8.5%	7.7%	7.0%
Average	2.77	3.0	3.15	3.23	3.04

Figure 22 : Results of the benefit parameter 'Visibility'

As mentioned in the theory chapter, more visibility can bring better holistic understanding of organization's problem. The participants had relatively high opinion regarding this parameter. The overall organization averaged at 3.04, 93 - VH averaged close to the overall. 97 - VP had significant number of employees choosing 4 and averaged at 3.23. While 91 - CVE averaged the lowest at 2.77.

4.2.2.8 Productivity

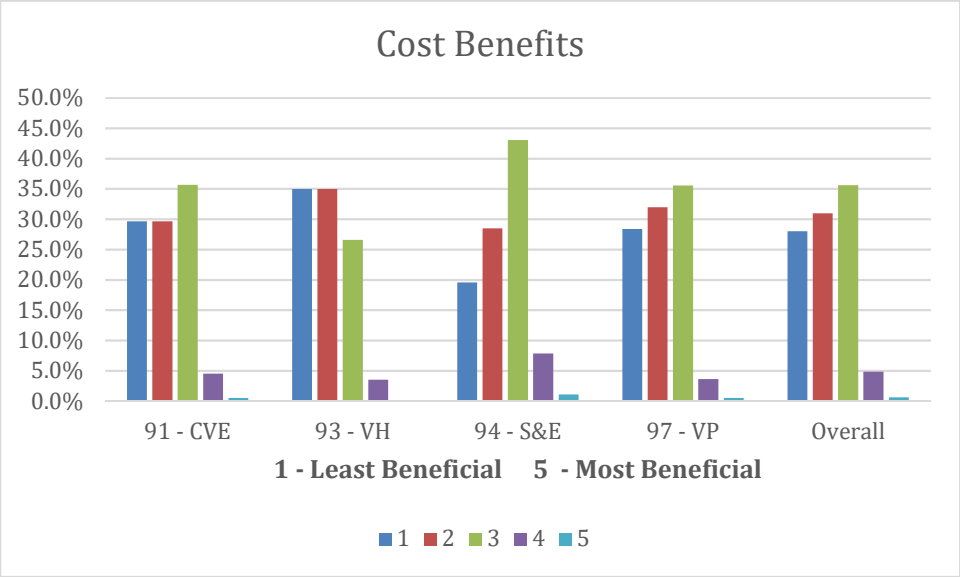


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	31.7%	35.7%	17.1%	28.9%	27.8%
2	28.1%	33.6%	30.2%	28.4%	30.2%
3	30.7%	23.4%	35.2%	27.8%	29.3%
4	8.5%	6.6%	14.6%	13.4%	11.1%
5	1.0%	0.7%	2.8%	1.5%	1.5%
Average	2.19	2.03	2.56	2.30	2.28

Figure 23 : Results of the benefit parameter 'Productivity'

More productivity within the employees give a better reflection to the change and is gauged here regarding SAFe. The opinions lowered significantly for this parameter skewing much to least beneficial overall and for other departments. The overall average remained at 2.28. 91 - CVE and 93 - VH were lower than average while 94 – S&E and 97 - VP were higher than average.

4.2.2.9 Cost Benefits

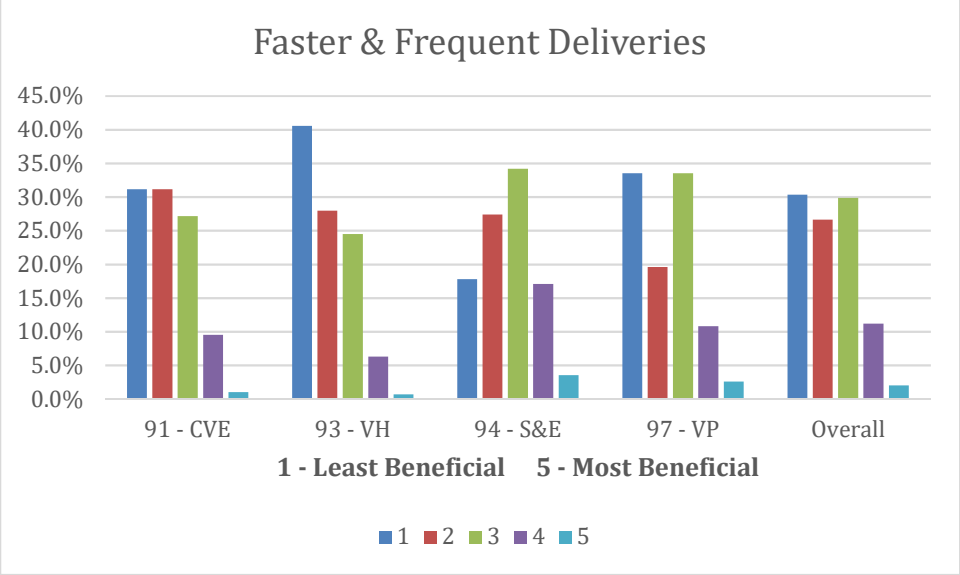


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	29.6%	35.0%	19.6%	28.4%	28.0%
2	29.6%	35.0%	28.5%	32.0%	30.9%
3	35.7%	26.6%	43.1%	35.6%	35.6%
4	4.5%	3.5%	7.8%	3.6%	4.8%
5	0.5%	0.0%	1.1%	0.5%	0.6%
Average	2.17	1.99	2.42	2.16	2.19

Figure 24 : Results of the benefit parameter 'Cost Benefits'

Awards and cost benefits for the employee can be a good motivation during the change and can also increase the morale of the employees. This parameter too like earlier had results heavily skewed towards least beneficial overall as well as in each individual department. Average of the overall also low at 2.19. 94 – S&E remained with the highest average like the earlier parameters at 2.42, however all the other departments were below average.

4.2.2.10 Faster & Frequent Deliveries



	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	31.2%	40.6%	17.8%	33.5%	30.3%
2	31.2%	28.0%	27.4%	19.6%	26.6%
3	27.1%	24.5%	34.2%	33.5%	29.8%
4	9.5%	6.3%	17.1%	10.8%	11.2%
5	1.0%	0.7%	3.6%	2.6%	2.0%
Average	2.18	1.99	2.61	2.29	2.28

Figure 25 : Results of the benefit parameter 'Faster & Frequent Delivery'

Frequently delivering a working product is one of the key areas on which agile development has a focus on. The opinions were much lower in this parameter, for the first time the Least Beneficial had the most number of choosers overall and for all departments barring 94 – S&E. The overall average was low at 2.28 and lower for all other departments except 94 – S&E which was significantly higher at 2.61.

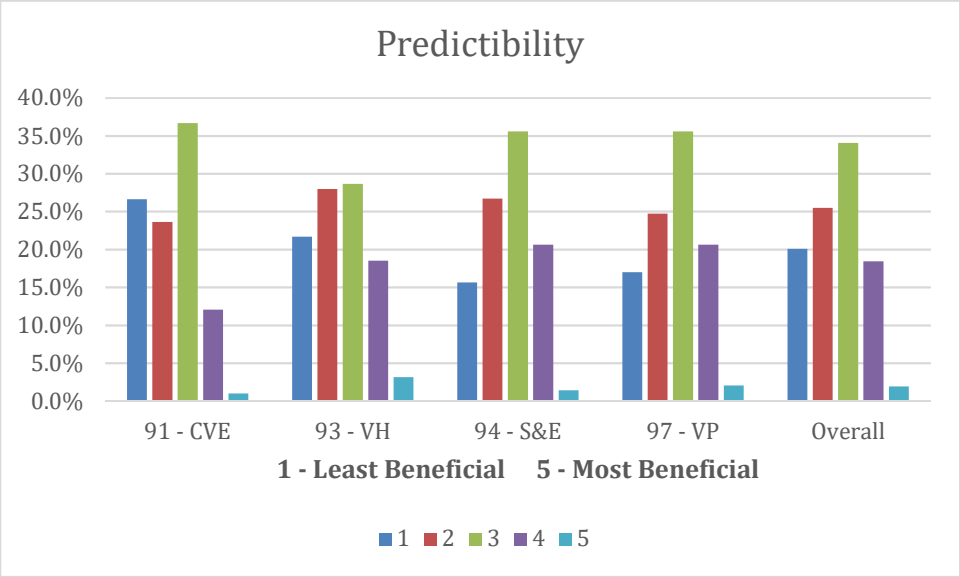
4.2.2.11 Customer Satisfaction

	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	26.1%	26.6%	13.2%	18.0%	21.1%
2	29.1%	28.0%	26.3%	26.3%	27.1%
3	38.2%	40.9%	48.8%	47.4%	43.9%
4	6.0%	4.5%	10.0%	6.2%	6.9%
5	0.5%	0.0%	1.8%	2.1%	1.1%
Average	2.26	2.23	2.61	2.48	2.40

Figure 26 : Results of the benefit parameter 'Customer Satisfaction'

Keeping the customers in the loop and satisfied is also an agile principal first opined by the creators of agile. The opinions of the participants largely remained neutral at 3 for the overall organization, however many more participants chose 2 than 4. The overall average was at 2.4. Among individual departments the employees of 94 – S&E had higher opinion on the matter where they averaged at 2.4, followed by 97 - VP at 2.48. 91 - CVE and 93 - VH remained below average at 2.26 and 2.23 respectively.

4.2.2.12 Predictability



	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	26.6%	21.7%	15.7%	17.0%	20.1%
2	23.6%	28.0%	26.7%	24.7%	25.5%
3	36.7%	28.7%	35.6%	35.6%	34.1%
4	12.1%	18.5%	20.6%	20.6%	18.4%
5	1.0%	3.1%	1.4%	2.1%	1.9%
Average	2.37	2.53	2.65	2.66	2.57

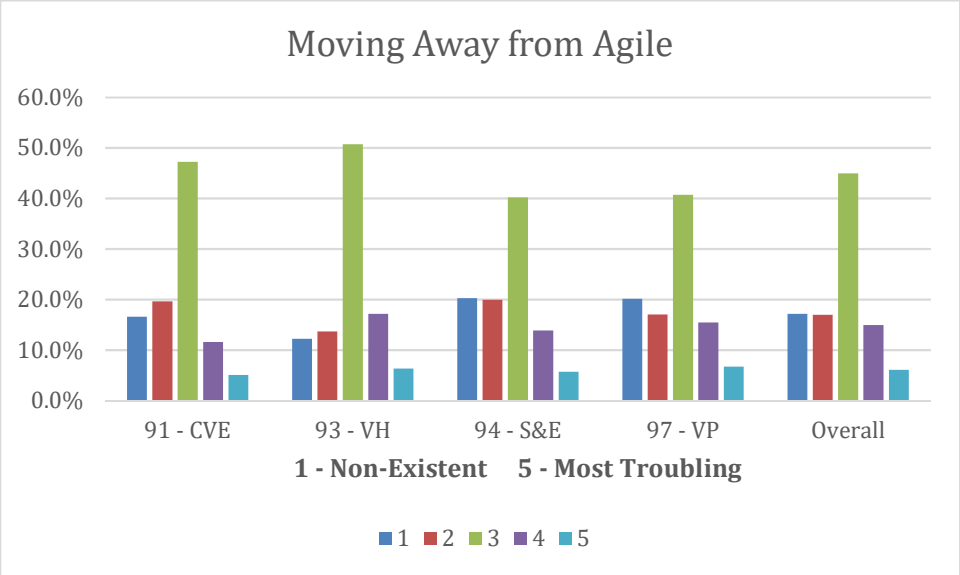
Figure 27 : Results of the benefit parameter 'Predictability'

This parameter was used to gauge if the new framework makes the employees more predictable in their tasks. The overall average of the 'Predictability' was at 2.57 which makes it more skewed to the least beneficial side. Like most of the parameters 94 – S&E and 97 - VP were more than average while 91 - CVE and 93 - VH remained below average.

4.2.3 Challenges of SAFe

The following figures from Figure 28 to Figure 36 show the results of the challenges parameter for the whole organization as well as the four departments that were focused on. Like with the benefits parameters the participants were asked to rate the challenges based on their severity in their respective units and departments. '1' rank stood for 'Non- existent' that a challenge does not affect the organization post implementation while '5' meant 'Most Troubling', meaning this parameter had high severity. The specific challenge parameter for each graph is in the title below each figure. The answers are averaged too like earlier however, it should be noted that higher the average more severe the challenge is.

4.2.3.1 Moving Away from Agile

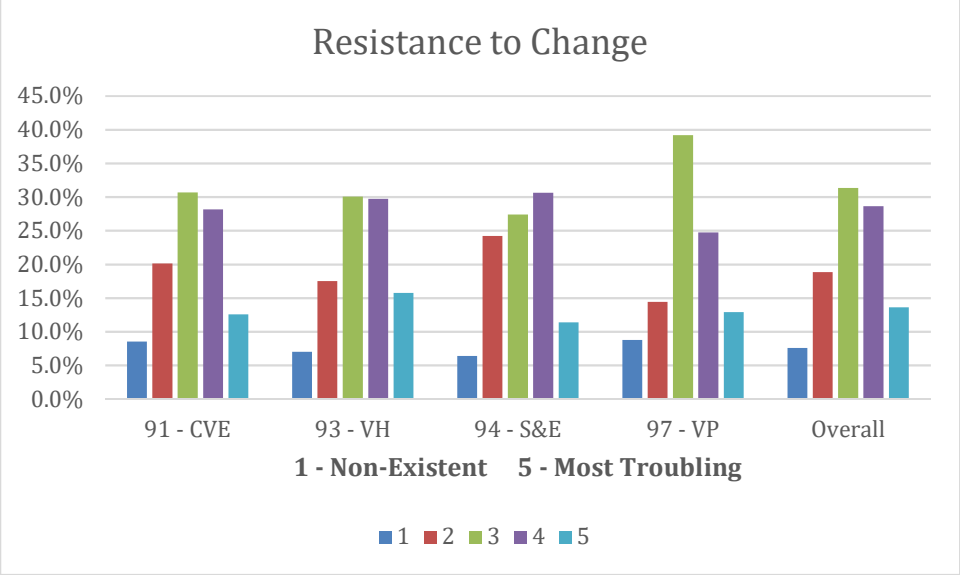


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	16.6%	12.2%	20.3%	20.1%	17.1%
2	19.6%	13.6%	19.9%	17.0%	16.9%
3	47.2%	50.7%	40.2%	40.7%	45.0%
4	11.6%	17.1%	13.9%	15.5%	14.9%
5	5.0%	6.3%	5.7%	6.7%	6.0%
Average	2.69	2.92	2.65	2.72	2.76

Figure 28 : Results of the challenge parameter 'Moving Away from Agile'

Like mentioned in the theory chapter, many consider that SAFe is anti-thesis of agile development. So, to gauge the opinion of the employees in the study this parameter was used. The average albeit higher than the mid-point, was lower overall. 94 – S&E had the lowest average while 93 - VH had the highest.

4.2.3.2 Resistance to Change

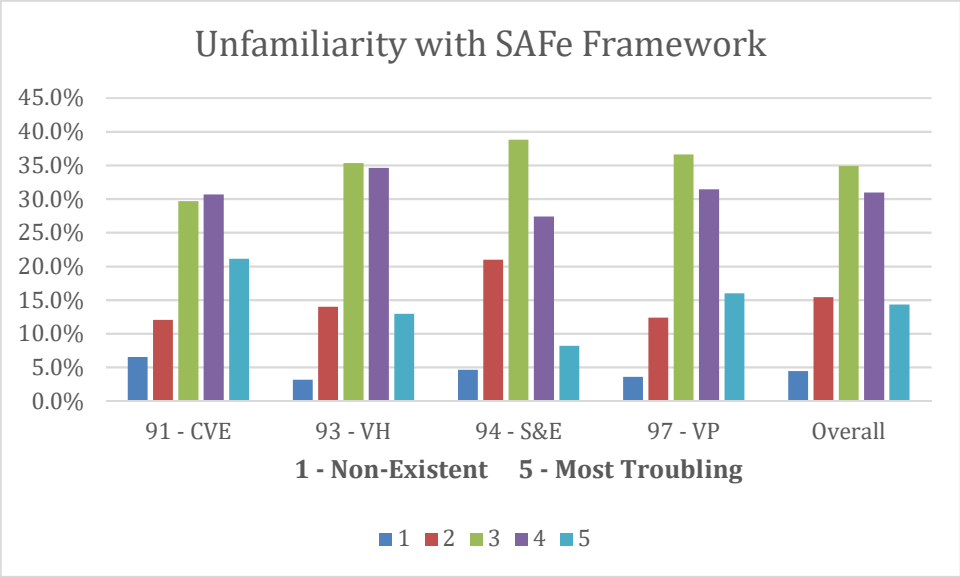


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	8.5%	7.0%	6.4%	8.8%	7.6%
2	20.1%	17.5%	24.2%	14.4%	18.9%
3	30.7%	30.1%	27.4%	39.2%	31.4%
4	28.1%	29.7%	30.6%	24.7%	28.6%
5	12.6%	15.7%	11.4%	12.9%	13.6%
Average	3.16	3.28	3.16	3.19	3.22

Figure 29 : Results of the challenge parameter 'Resistance to change'

The theory chapter discussed in detail how there could be a resistance to any new change in any organization. That was attempted to gauge in this parameter. The parameter had mostly neutral respondents overall, though the respondents did skew the results a bit towards ‘Most Troubling’. The overall average was 3.22. Like earlier 94 – S&E had the least and 93 - VH had the highest average.

4.2.3.3 Unfamiliarity with SAFe framework

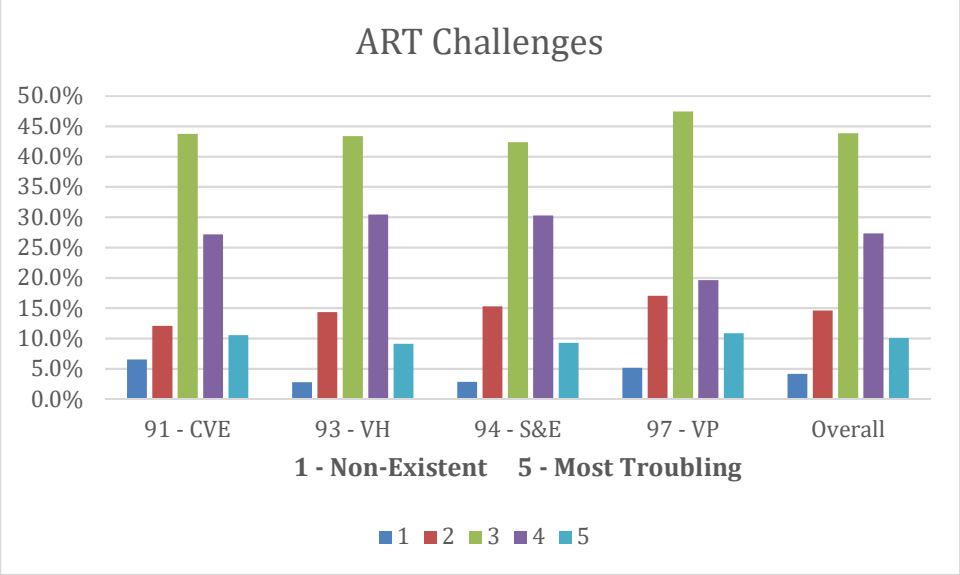


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	6.5%	3.1%	4.6%	3.6%	4.4%
2	12.1%	14.0%	21.0%	12.4%	15.4%
3	29.6%	35.3%	38.8%	36.6%	34.9%
4	30.7%	34.6%	27.4%	31.4%	30.9%
5	21.1%	12.9%	8.2%	16.0%	14.3%
Average	3.48	3.40	3.14	3.44	3.35

Figure 30 : Results of the challenge parameter 'Unfamiliarity with SAFe framework'

One of the hurdles of change management is when the new framework is not understood properly by everyone. This parameter was used to ascertain how much of a problem it is. Like earlier the results are more skewed towards ‘Most Troubling’. The overall average was at 3.35. 94 – S&E had the lowest average like before but 91 - CVE had the least favorable results.

4.2.3.4 Agile Release Train Challenges

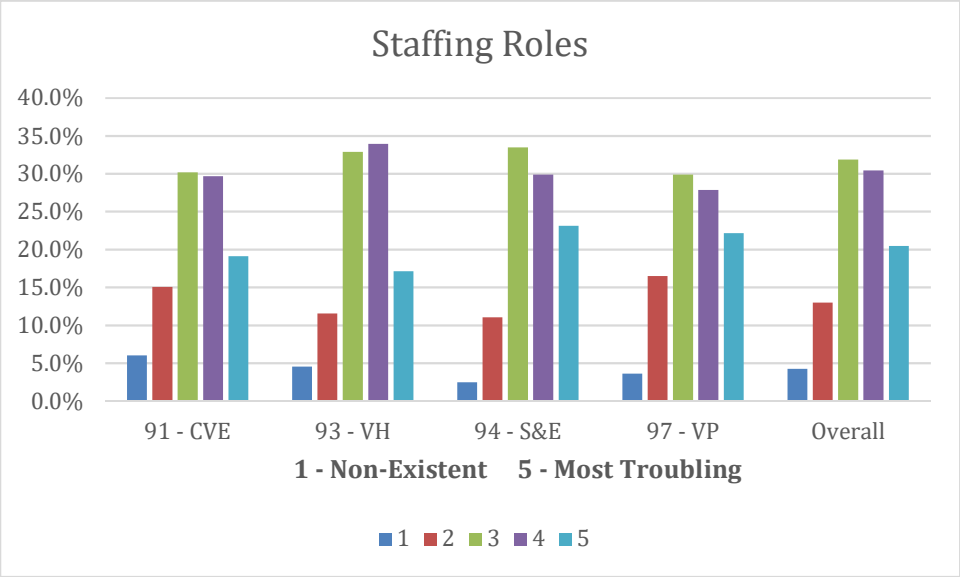


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	6.5%	2.8%	2.8%	5.2%	4.1%
2	12.1%	14.3%	15.3%	17.0%	14.6%
3	43.7%	43.4%	42.3%	47.4%	43.9%
4	27.1%	30.4%	30.2%	19.6%	27.3%
5	10.6%	9.1%	9.3%	10.8%	10.1%
Average	3.23	3.29	3.28	3.14	3.25

Figure 31 : Results of the challenge parameter 'Agile Release Train Challenges'

Agile Release train is a new framework introduced by SAFe and could possibly come with its own challenges, which was gauged here in this parameter. The overall average remained at 3.25, however the 94 – S&E and 93 - VH seem to be at equal setting and at higher average. 97 - VP had the lowest average.

4.2.3.5 Staffing Roles

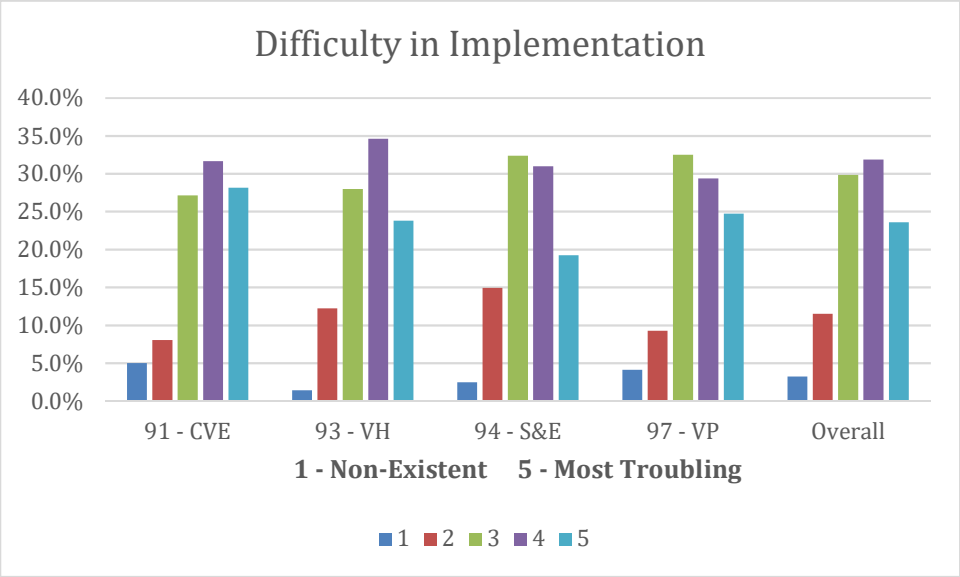


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	6.0%	4.5%	2.5%	3.6%	4.2%
2	15.1%	11.5%	11.0%	16.5%	13.0%
3	30.2%	32.9%	33.5%	29.9%	31.9%
4	29.6%	33.9%	29.9%	27.8%	30.4%
5	19.1%	17.1%	23.1%	22.2%	20.5%
Average	3.41	3.48	3.6	3.48	3.5

Figure 32 : Results of the challenge parameter 'Staffing Roles'

SAFe frameworks come with new roles for the staff and participants and it could be challenging to adopt them initially. The gauging of this parameter has revealed that this challenge exists in this study too. 94 – S&E, surprisingly has the highest average than the rest.

4.2.3.6 Difficulty in Implementation

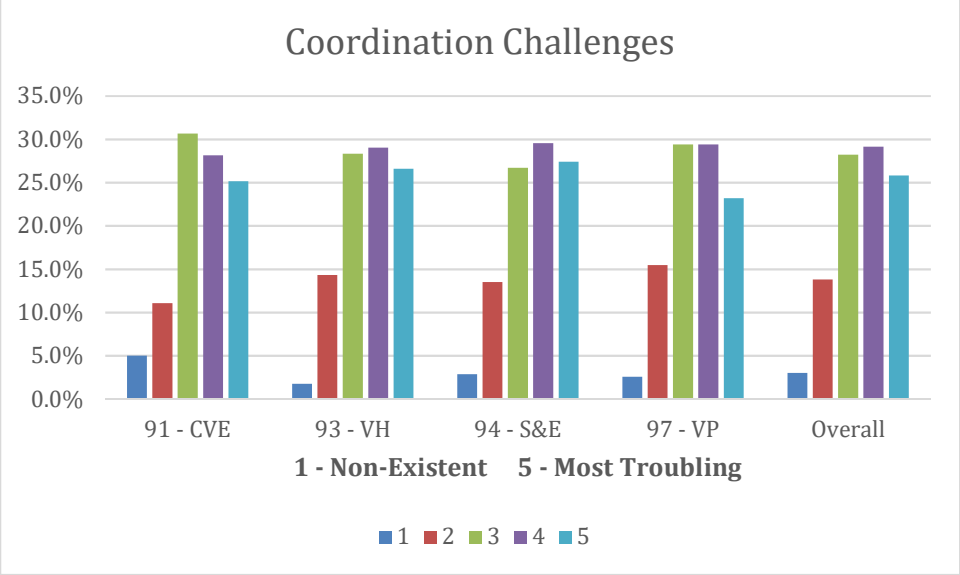


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	5.0%	1.4%	2.5%	4.1%	3.2%
2	8.0%	12.2%	14.9%	9.3%	11.5%
3	27.1%	28.0%	32.4%	32.5%	29.8%
4	31.7%	34.6%	31.0%	29.4%	31.9%
5	28.1%	23.8%	19.2%	24.7%	23.6%
Average	3.70	3.67	3.49	3.61	3.61

Figure 33 : Results of the challenge parameter 'Difficulty in implementation'

This parameter was present to gauge how difficult is it to implement the SAFe framework. The responds are skewed towards ‘Most Troubling’ like the other parameters for this one too. 91 - CVE had the most trouble adopting it as opined by its own employees.

4.2.3.7 Coordination Challenges

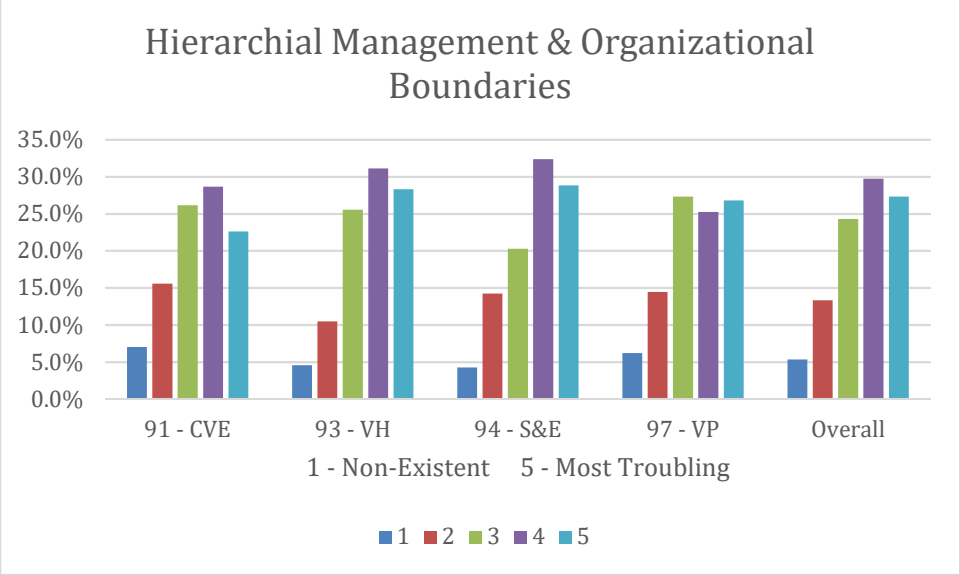


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	5.0%	1.7%	2.8%	2.6%	3.0%
2	11.1%	14.3%	13.5%	15.5%	13.8%
3	30.7%	28.3%	26.7%	29.4%	28.2%
4	28.1%	29.0%	29.5%	29.4%	29.1%
5	25.1%	26.6%	27.4%	23.2%	25.8%
Average	3.57	3.64	3.65	3.55	3.61

Figure 34 : Results of the challenge parameter 'Coordination Challenges'

The new structure came with more inter team and inter departmental connections and more coordination with each other which could be challenging since it could be uite different thanthe ususal way of working. That is what is gauged here in this parameter. The ovrall results and the average seem to be same as the previous one but this time 94 – S&E have the highest average with 93 - VH close behind. 97 - VP seem to face the least challenges.

4.2.3.8 Hierarchial Management & Organizational Boundaries

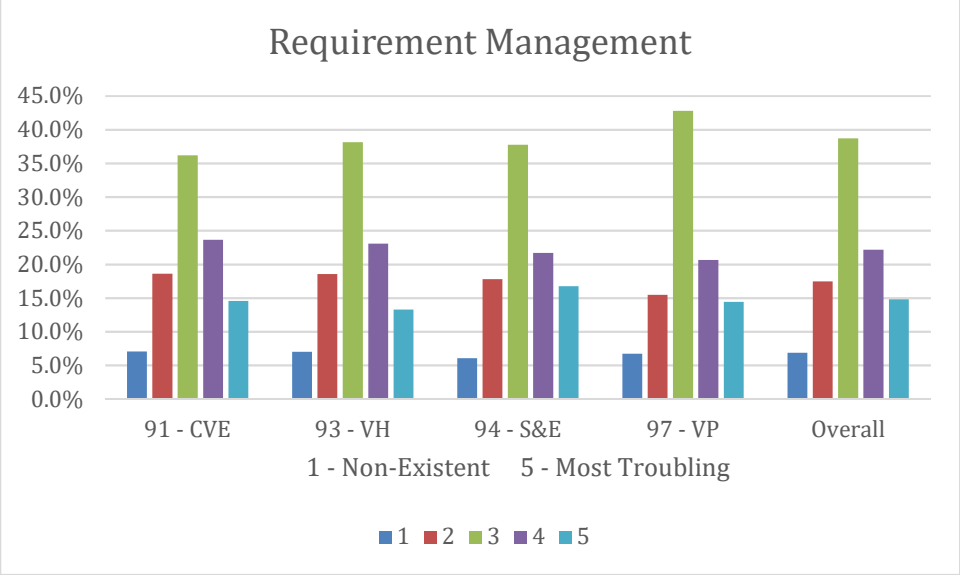


	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	7.0%	4.5%	4.3%	6.2%	5.3%
2	15.6%	10.5%	14.2%	14.4%	13.3%
3	26.1%	25.5%	20.3%	27.3%	24.3%
4	28.6%	31.1%	32.4%	25.3%	29.7%
5	22.6%	28.3%	28.8%	26.8%	27.3%
Average	3.44	3.68	3.67	3.52	3.60

Figure 35 : Results of the challenge parameter 'Hierarchical Management and Organizational Boundaries'

Some critics have criticized SAFe to be going against agile principals due to its hierarchical structure. To understand that in our study, this parameter was used if that is considered a challenge in the organization. The responds were more or less the same as the previous two parameters but with 91 - CVE with the lowest average.

4.2.3.9 Requirement Management



	91 - CVE	93 - VH	94 – S&E	97 - VP	Overall
1	7.0%	7.0%	6.0%	6.7%	6.9%
2	18.6%	18.5%	17.8%	15.5%	17.4%
3	36.2%	38.1%	37.7%	42.8%	38.7%
4	23.6%	23.1%	21.7%	20.6%	22.2%
5	14.6%	13.3%	16.7%	14.4%	14.8%
Average	3.2	3.17	3.25	3.21	3.21

Figure 36: Results of the challenge parameter 'Requirement Management'

SAFe has its own methods of storing, managing and prioritizing its requirements which could be different than many organizations normally do. This parameter is here to gauge how much of that is a challenge. The overall result and average are mainly better than many other parameters. However, the employees of 94 – S&E seem to be facing it higher than the rest and this time 93 - VH has the lowest average.

Apart from the obligatory questions, non-obligatory questions were asked of any additional benefit or challenges not used in the survey and were used for any additional information the respondents would like to present. The question about additional benefits had 230 responds while the one about additional challenges garnered 325 responds. Some of the benefits of SAFe were that it opened the organization more due to multiple inter departmental meetings, has empowered teams and has given more autonomy to them. Others have pointed at better holistic planning and dependencies. Many answers though still claimed there are no benefits coming out of SAFe. The open question about challenges brought out many responses around infeasibility of SAFe in the organization, financial issues, decreasing efficiencies, political mishaps and forced adaption.
The employees' response of *19*, asking any future improvements the participants like to implement, is discussed entirely under *5.3 Analysis of* Research Question 3 of the analysis chapter below.

5.0 Analysis

In this chapter the research questions are answered. This is done first by analyzing the data and information obtained from the survey responses and the information obtained via interviews to perform a gap analysis of the success factors and benefits and challenges parameters while also taking some management studies from the theory chapter into consideration. Statistical tools are also employed when necessary to get a better understanding of the data. Additionally, the third research question concerning the future of large scale agile, appears as a standalone due to lack of theories on the subject in academic literatures.

5.1 Analysis of Research Question 1

RQ1: How successful is the implementation of (SAFe) and how successful is the change process?

Each success factor is analyzed individually in the chapter below for the whole organization as well as the four departments that were focused on.

5.1.1 Management support

A stronger agreeable rate at 94000 (Software & Electronics) could be explained by the fact that this department was the first to deploy the transformation at Volvo Cars giving the change leaders enough time to refine their skills and expertise. Also, the result also aligns with the general consensus that agile is more for software development than anything else. However, most of the respondents chose to be neutral. A relatively high number of employees in 91000 (Complete Vehicle Engineering) did not have an opinion on management support. This could be an indication that SAFe had not yet arrived in some of the units or some employees were not present during the change. Holistically, it is clear that each department needs more effort from the managers to support the ongoing changes, some more than others. Dikert et al. (2016) indicated that a supporting management goes a long way in motivating the employees for the change during the training and coaching and also in execution and implementation. From the interviews it became known that much of the management was involved during the change specially to introduce a new mindset upon the employees. The employees were divided into groups based upon their acceptability to the change and each group was approached differently. However, the results indicate that many respondents remain neutral.

5.1.2 Leadership

As indicated in the interviews, several change leaders and agile coaches were appointed to drive the transformation forward in addition to the pilots in each unit as a motivational example for the rest of the employees. The cases investigated by Dikert et al. (2016) also stated that having a spokesperson of the change is important for its execution. Responsibilities of the line and project managers are also highlighted by those authors and the interviews indicated that these managers too supported and motivated their teams towards the change. However, the employees were cautious of having a higher opinion and most of them chose to remain ‘Neutral’. The open-ended questions also indicated few participants discomforted by the

leadership. 94000 (Software & Electronics) came out on top which could be an indication of their mangers' and employees' higher amount of experience in SAFe. 91000 (Complete Vehicle Engineering) had once again some number of employees who could not answer the question possibly from lack of coaching or SAFe having not reached the respective units yet.

5.1.3 Commitment to change

To conduct a change at a large level, a strong commitment is required from all concerned, however, with problems arising during transformation these commitments can be tested Dikert et al. (2016). Dikert et al. (2016) research have also revealed that since a change is usually made due to problems in the old way, more organizational issues will be uncovered during a change. Therefore, strong commitment should be maintained through the change and beyond. The results on the commitment parameter reveals a rather meek picture where more than two-thirds of all respondents from each department are either neutral or in the negative when asked of the general commitment of the employees. This is also indicated in the interview and open-ended questions in the survey. A few employees are weary of several unsuccessful attempts made to adopt SAFe in their units. While some indicate that time will solve all, however, there is an air of discomfort and weariness towards the change. Large negative response in this question further confirms this sentiment. 94000 (Software & Electronics) remained at the top in this factor albeit significant number of the employees choosing negative response. 93000 (Vehicle Hardware) had responses most skewed towards the negative. The commitment of the managers, leaders and employees were questioned in open-ended answers too.

5.1.4 Choosing & Customizing Agile approach

The results again depict a poor picture on the level of customization of the agile approach done for Volvo Cars. Dikert et al. (2016) suggested that agile practices needed to be adopted in a pragmatic way rather than simple copy-paste and the management should allow teams to innovate the work practices that works best for them. The interviews had suggested that line mangers get numerous feedbacks from the teams and employees on how to approach agile. The company has its own customized large scaled agile framework called VCAF adopted from SAFe, as well as the VIRA software. However, the empirical data does not depict favorable results as more than half of the respondents responded with 'Disagree' or 'Strongly Disagree'. Individual departments too did not fare well within this factor. Stark differences were found between positive (Agree and Strongly Agree) and negative (Disagree and Strongly Disagree) in favor of the latter within every department. The employees seem vary of the customization processes in the responses of open-ended questions as well.

5.1.5 Training

As per the interviews training and coaching was deployed in each unit when scaled agile were introduced in it. External as well as internal trainers and coaches were utilized in the coaching process. The responds on the quality of the training given were mostly neutral. However, the responds from 94000 (Software &

Electronics) were head and shoulders above the other departments and a stark difference was seen between them and the other departments. This could be, as stated above, that 94000 (Software & Electronics) was the first to introduce SAFe into its units and has more time than others to train into the new way of working or the employees of 94000 (Software & Electronics) were more receptive of the training they received. Conversely, it can also be assumed that this department went through better training procedures than other departments. The participants belonging to 91000 (Complete Vehicle Engineering) and 93000 (Vehicle Hardware) showed high level of dissatisfaction according to the responds. Significant number of respondents claiming that they do not know in 91000 (Complete Vehicle Engineering) were also present where SAFe might not have penetrated further.

5.1.6 Communication

Dikert et al. (2016) has stated that it is paramount that the change is communicated thoroughly throughout the organization. Points, agendas, discussions should be communicated multiple times to ensure that the new way of working is cemented. The interviews did suggest proactive communications in multiple channels was attempted inter and intra department including conducting multiple communication events. The pilots in each unit were used as a starting point of communicating SAFe. The results show that these efforts were largely successful to maintain organization wide communications. A significant number of respondents gave a positive response towards the way they were communicated about the change. Disagreement of the sentiment was at an all-time low for this factor making it one of the two factors where the number of positive participants exceeded the neutrals, therefore the results depict that as far as act of conveyance about SAFe go, the respondents were satisfied. 94000 (Software & Electronics) again remained better than the other departments.

5.1.7 Transparency

The interviews suggested both horizontal and vertical flow of information with limited bias to everyone in the organization and both success and failures were reported to all and critical feedback was heard. The results affirm the statement seeing as they were largely positive of the ‘Transparency’ in the organization albeit not as good as the ‘Communication’ above. Employees of 94000 (Software & Electronics) and 97000 (Vehicle Propulsion) responded positively although significant number of employees remained neutral. 91000 (Complete Vehicle Engineering) and 93000 (Vehicle Hardware) were mostly in the neutral camp and would need to see further bouts of transparency in the communication done with them.

5.1.8 Vision and Roadmap

Leffingwell (2007) suggests a complete and robust plan and roadmap is necessary for successful implementation of SAFe. The managers and leaders need to script the roadmap an organization should take to conduct a successful implementation based on the ins and outs of the organization. This roadmap is not possible without the vision of the leaders as to why change in the first place. The interviews suggested the early thinking of the management of the Volvo Cars on the change, a response to rapid changing

environment around automotive industries and the increase of software in modern vehicles and using agile to be at forefront of the industry. The roadmap included using pilots in each unit as benchmarks as well as consistent ceremonies to help further the change. The results from the survey, however, depicts that this vision was not properly conveyed with the employees. More than half of the respondents in every department barring 94000 (Software & Electronics) had negative response to it. 94000 (Software & Electronics) itself did not fare well as in other factors.

5.2 Analysis of Research Question 2

RQ 2: What were the desired effects of SAFe transformation and what is the current state post-adoption?

Gap analysis is conducted between the initial desired effects and the current implications of SAFe at Volvo Car. Nadler and Tushman (1980) congruence model are used to conduct the analysis which can be seen in the Figure 4 above. The model enables the user to dissect various variables in an organization into different components which can help them to self-assess themselves in an event of a change. The six congruence in the model described in the theory chapter relate to different variables in any transformation processes in an organization.

Based on this strategy, several parameters or landmarks are set up from the data collected from the interviews and from the theory chapter. This data is then formulated into two sets of parameters, the benefits and the challenges of adopting SAFe. These parameters were then used in the survey questions to gauge their veracity and effects on the overall organization and the four main departments of Volvo Cars as depicted in the empirical chapter. In the Methodology chapter, these parameters are divided into the six congruence of Nadler & Tushman's model (1980) i.e. work-culture, work-structure, work - people, people-structure, people-culture and structure-culture, which can be seen in the Table 1. Pearson-Fischer Coefficient is then used to determine which congruence or fit have a favorable situation and result in the organization and the department. The result of this statistical tool can be seen below in Table 2 and Table 3.

The empirical chapter depicts the responses of the employees on these parameters in the form of a histogram from Figure 16 to Figure 36. The tables below depict the results of the skew analysis on the parameters for the overall organization and for each of the four main departments of Volvo Cars, color coded and as per the congruence they belong to. With the parameters gauged with the arbitrary classification and categorized within the Nadler & Tushman (1980) model, it will be easier to formulate which congruence in the model needs more attention by the mangers at Volvo Cars. The congruence analysis within the context of the benefits and challenges parameters can be seen below

Congruence	Benefits	Complete Vehicle Engineering 91000	Vehicle Hardware 93000	Software & Electronics 94000	Vehicle Propulsion 97000	Overall
Work - Culture	Transparency	-0.2141	-0.2550	-0.2108	-0.3810	-0.2435
	Predictability	0.0859	0.1860	-0.0797	-0.0648	0.0246
Work-structure	Alignment	0.0189	0.0426	-0.2125	-0.0845	-0.0542
	Built-in Quality	0.2238	0.2985	0.0554	0.2524	0.2035
	Program Execution	0.1343	0.5131	-0.0925	0.3391	0.2099
People - Structure	Defect Reduction	0.1193	0.1630	0.0343	0.0272	0.1313
	Productivity	0.3470	0.5837	0.1696	0.3288	0.3437
People - Culture	Collaboration	-0.1356	-0.0429	-0.2178	-0.3774	-0.1794
Structure - Culture	Cost Benefits	0.1658	0.3486	-0.0182	0.1541	0.1726
	Visibility	-0.0377	-0.2179	-0.1664	-0.6145	-0.2590
Work-People	Faster & Frequent Delivery	0.4230	0.6067	0.1249	0.3148	0.3616
	Customer satisfaction	0.0723	-0.0971	-0.0918	0.0019	-0.0254

Table 2: Skew analysis result of benefits parameters

5.2.1 Work-Culture

The responses from the survey and the Pearson-Fischer coefficient suggests the overall organization has 'Highly effective' result for Transparency. The individual departments' results also depict the same results barring 97000 (Vehicle Propulsion) which has a higher skew rate than the rest at 'Highly effective. The indication given in the interview that managers and coaches striving for transparency in the organization using SAFe framework has brought results. This also suggests that the ceremonies held to edify the employees on the benefits of inter departmental trust and familiarity has depicted much favorable results. For the 'Predictability' parameter, however, the situation is slightly less favorable than 'Transparency'. Overall the organization had 'Low Effect' with the skew analysis and so did the 91000 (Complete Vehicle Engineering) and 'Very Low effect' for 93000 (Vehicle Hardware) department. 94000 (Software & Electronics) and 97000 (Vehicle Propulsion) had somewhat positive results but only fell to 'Some effects'. It seems that, according to the respondents, the manager has not brought the organization to the level where the outcomes and programs can be rendered predictable. Meaning the synergy, cadence and cohesiveness is less than ideal and need some progress.

For the challenge parameter 'Agile Release Train Challenges' as per the respondents, the culture of the organization needs further push to align with the ceremonies and formalities of SAFe framework. The skew analysis showed that the stability of work-culture balance has been rated at 'Some concern' in the organization. The dynamics of 91000 (Complete Vehicle Engineering) though is 'Highly Concerning' and need more effort for their employees to liken the formalities of the framework. 97000 (Vehicle Propulsion) fared a bit better yet far from ideal. As Dikert et al. (2016) suggested managers need to play an active and visible role so that the culture of the organization facilitates the ceremonies of the new adopted framework for the long run so that it can facilitate the work and the tasks in the organization.

Congruence	Challenges	Complete Vehicle Engineering 91000	Vehicle Hardware 93000	Software & Electronics 94000	Vehicle Propulsion 97000	Overall
Work - Culture	Agile release train challenges	-0.2425	-0,1076	-0,0975	0,0670	-0.1081
Work - Structure	Requirement Management	-0.0770	-0,0550	-0,0468	-0,0469	-0.0601
People - Structure	Unfamiliarity with the SAFe framework	-0.4230	-0,2564	-0,0525	-0,2480	-0.2214
	Difficulty in implementation	-0.6197	-0,3416	-0,2048	-0,4200	-0.3916
People - Culture	Resistance to Change	-0.1560	-0,2443	-0,1082	-0,1895	-0.1844
	Coordination Challenges in multi-team environment	-0.4165	-0,2908	-0,3959	-0,2560	-0.3480
Structure - Culture	Staffing roles	-0.3090	-0,3854	-0,2830	-0,2319	-0.3215
	Hierarchical Management & Organizational boundaries	-0.3585	-0,5632	-0,5572	-0,3717	-0.4882
Work - People	Moving away from Agile	0.0302	-0,1679	0,1006	0,0366	-0.0242

Table 3: Skew analysis result of challenges parameters

5.2.2 Work-Structure

The responses from the survey forms the skew in the wrong side for Built-in Quality' and 'Program Execution' where their effects were barely recognizable as per our classification. Meanwhile 'Alignment' parameter falls in 'Some effects' in the organization. The employees of 94000 (Software & Electronics) rated the 'Alignment' parameter higher than the others and rated it as highly effective', while other departments had either low or some effects. 'Built-in Quality' and 'Program Execution' in 94000 (Software

& Electronics) received disappointing rating at ‘Low Effect’ and ‘Some effects’ respectively. In other departments however, these parameters had much harrowing results. ‘Program Execution’ did not have any recognizable effect for 93000 (Vehicle Hardware) and 97000 (Vehicle Propulsion) and ‘Built-in Quality’ had barely an effect for all but 94000 (Software & Electronics). The results make it clear that the respondents do not witness some of the key indicators of adopting SAFe in their departments. The results are also biased against more hardware related departments where employees had poorer opinions on the parameters than more software-oriented programs.

The employees of Volvo Cars do not seem to think the challenges in ‘Requirement Management’ are that concerning issue. The overall organization and the individual departments all had some concerns based on our classification. Working with back logs and stacking of priorities introduced with SAFe seems to be only moderately challenging based on the results.

5.2.3 Work-people

The skew analysis on ‘Faster & Frequent deliveries’ has revealed that the effects are low. The overall organization and all the departments barring 94000 (Software & Electronics) had no effect on the delivery cycle when adopting SAFe as per the respondents. The 94000 (Software & Electronics) employees rate the parameter as ‘Very low effect’. Comparatively, ‘Customer satisfaction’ had better results where the employees rate the benefit parameter as ‘Some Effects’ and ‘Low effect’. The challenge parameter ‘Moving away from Agile’ was rated at ‘Some concern’ by the employees overall. All departments barring 93000 (Vehicle Hardware) rated it as ‘Low concern’ while 93000 (Vehicle Hardware) employees rated it as ‘Mildly Concerning’.

The results seem to indicate that the benefits from some of the key principals of agile are in a disarray as per the respondents themselves and need further exploration by the managers and coaches. They need to find a new method to apply and benefit from these principals with the context of existing ceremonies and SAFe practices. The employees or the people need to get on board to apply these principles on their work and tasks. As per the challenge parameter, the mindset of the people towards agile is not as harrowing as it was thought to be in the interviews though the conditions are still not ideal, especially for 93000 (Vehicle Hardware) which fared the worst.

5.2.4 People-Structure

The employees have responded that ‘Defect Reduction’ has Low to Very Low Effect on the organization and SAFe framework has not necessarily realized its potential at Volvo Cars. Conditions are more drastic towards ‘Productivity’ parameter where employees have opined that SAFe framework have not increase their productivity at all in each department except 94000 (Software & Electronics), where the employees have rated it as ‘Very low effect’. For the challenge parameters ‘Unfamiliarity of SAFe framework’ the skew analysis of the responses has showed that conditions are highly concerning about the state of knowledge of SAFe among the employees. 93000 (Vehicle Hardware) and 97000 (Vehicle Propulsion) also

have the same rating given by the employees for their department. 94000 employees have stated it as ‘Some concern’ while 91000 (Complete Vehicle Engineering) employees have rated at ‘Extremely troubling’. ‘Difficulty in implementation’ had all the departments rate it as ‘Extremely troubling’ except 94000 (Software & Electronics) employees which rate it at ‘Highly Concerning’.

As per the respondents, the departments are not realizing the potential of SAFe structure and are yet to tap into the in-built function of reducing defects and enabling productivity in the employees. Leffingwell (2007) had proposed that the ceremonies and synchronization of SAFe would help with the productivity of the employees however, it seems that much vigorous effort is needed from the managers, coaches and the employees to help realize the potential of a structure. For the challenge parameters in the congruence, 94000 (Software & Electronics) has come forward as better than the rest in dealing with the challenge if implementation although the situation is still dire and needs to be improved. The employees having ample time to face the challenges could be a reason of its slight better results over the others. The rest of the departments have the lowest rating possible and needs urgent attention from all. The knowledge of the framework has some concern over ‘Unfamiliarity of the SAFe framework’ at more software-oriented departments but gets more concerning where hardware-oriented departments.

5.2.5 People-Culture

Overall the employees of the organization have rated ‘collaboration’ as satisfactory within the organization. The employees over at 97000 (Vehicle Propulsion) have rated their collaboration to ‘Excelling Estimates’ showing excellent level of collaboration followed by 94000 (Software & Electronics) at ‘Highly effective’. Employees of 91000 (Vehicle Propulsion) rated it as satisfactory, however employees of 93000 (Vehicle Hardware) had some effects of the benefit. Going towards the challenge parameters, the employees resisting changes were a mild concern for the organization. All departments barring 93000 (Vehicle Hardware) have rated the challenge as ‘Mildly Concerning’, while the hardware oriented 93000 (Vehicle Hardware) opined that there is a highly concerning about the issue. Conditions have taken the turn for the worse for ‘Coordination challenges’ where the overall organization thinks that this challenge is extremely troubling. Each department have also rated the same except 97000 (Vehicle Propulsion) whose employees rated it a step better at ‘Highly Concerning’.

A new framework brings in a new cultural setting along, which demands from the people or the employees to adopt it in the organization for the framework to work. The SAFe framework is heavily focused on collaboration and coordination between the teams at all levels (Leffingwell 2007) and the employees who are used to the old way of working are bound to resist the change. The results of the survey also depict this phenomenon of resisting the new change. The departments have trouble getting used to various coordination meetings among newly formed teams in the organization. The hardware-oriented had the most amount of resistance among all the departments. However, an important facet of the congruence is that employees realize the benefits of collaboration between the teams and have opined that it has helped them in running their tasks but at the same time they have opined that coordination challenges exist in the newly formed environment.

5.2.6 Structure Culture

The overall response of the organization on 'Visibility' was quite positive, the employees rated this change as 'Highly Effective' and so did the employees of 93000 (Vehicle Hardware) department. 97000 (Vehicle Propulsion) took the lead and rated it at 'Excelling Estimates'. The response of 94000 (Software & Electronics) employees were 'Satisfactory effect' while 91000 (Complete Vehicle Engineering) employees believed it to have some effects. 'Cost Benefit' parameter was a little worse off overall where 'Very Low effect' was seen. 94000 (Software & Electronics) faired a bit better where the employees responded with 'Some effects' but 93000 (Vehicle Hardware) employees opined there was no effect at all. Coming towards the challenges the whole organization and every department opined that the challenges of 'Hierarchical Management' in the SAFe framework are extremely troubling and distasteful. Overall, the organization also opined that challenges with the new 'Staffing roles' are also extremely troubling, though, 94000 (Software & Electronics) and 97000 (Vehicle Propulsion) employees claimed that it is 'Highly Concerning' in their departments.

The cultural change which the new structure demanded in this congruence had varying responses from the respondents. The new culture of more visibility in the organization was received positively by the respondents. However, the new structure or framework of SAFe could not keep up or align with the 'Cost Benefits' culture of Volvo Cars. The levels of hierarchies (team level, program level etc.) that SAFe presents did not bode well in the organization as did the new staffing roles as per the employees themselves. The existing roles, values and standards which comprise of the informal structure of Volvo Cars were strong enough to parry the new structure that was imposed by SAFe. Therefore, further exploration is needed form the managers and coaches to create an ideal fit between the culture and the new structure.

5.3 Analysis of Research Question 3

RQ 3: What are the future strategies or improvements in the way of working using Large Scaled Agile?

The lack of literature material available on this topic did not provide us a foundation to build our analysis on. The scaling of agile in large organization is a relatively new topic and much needed exploration on this topic is required. To answer this research question, we will first examine the interviews done on managers and coaches and ascertain what they have stated about future strategies. Next, we will examine and analyze the survey responses, especially the responses from the last question of the survey inquiring about future improvement (Question 19). Finally, we will present some recommendations based on the survey analysis done above.

Specific queries were asked in the interviews to managers and coaches on their perspective of the future of the large scaled agile in the context of Volvo Cars including where do they wish to take it into the future. There was a talk of changing mindset of the people about agile way of working and subsequently SAFe, which, as proven in the analysis above, is a concerning challenge. Employees need to be encouraged and motivated to accept the agile mindset in parallel to making any large-scale agile changes. Additionally, bridging the gap between software and hardware is one of their key focus areas. Although, several studies in the literature points towards feasible and streamline agile development process in hardware-oriented

industries (Cooper & Sommer, 2016, Cao & Ramesh, 2007), the above analysis depict a clear dichotomy between software oriented and hardware-oriented perceptions towards agile. The employees of hardware-oriented departments do not seem to have high opinion towards SAFe compared to more software-oriented program. Therefore, any future strategy at Volvo Cars should also include efforts to ease in the hardware-oriented departments towards SAFe. Moreover, the interviews also opined that the agile should be scaled up even further to accommodate more of the organization and create further synchronization in the organization. It is recommended that the current issues do not take the back seat when further scaling is done.

The final question of the survey, regarding future improvements, had varying responses from the employees of Volvo Cars. Some of them pointed out the same issues and challenges which have already been discussed in analysis chapter. A number of the respondents replied with “Be more transparent”, “Alignment”, Predictability”, “Time optimization for agile (SAFe) ceremonies”, “Better team composition….”, “Roles and Responsibility”, “Better planning methods”, “Make delivery products more agile”, “Need better collaboration” and “Empowering Team”. The optimists were few and pointed out that enough time could work as a learning process and would improve things more. While some respondents had vigorously questioned the customization process of SAFe and feel that the SAFe framework is not fitted with the organization appropriately and need more room to grow. Some have objected that there is an imbalance of SAFe penetration among the departments. Others have suggested a more bottom up approach where problems need to be identified and then apply SAFe framework to come up with a solution. Yet some have pointed out the infeasibility of SAFe or agile in hardware development with comments like “Move away from theory and realize that agile wasn't made for hardware companies”. These made the majority of the responds comprising of approx. 80 – 85 %. A couple of respondents outright claimed that there is no place for SAFe in the organization, comments like “Remove SAFe”, “Not applicable in automotive” were present and made around 5% of the responds. While most of the comments fell into the categories and statements stated above, there were some comments that had some specific or unique suggestions that could help Volvo Cars move forward with SAFe:

1. “…to transform the projects to the Scrum framework...to "create" a common theoretical product that fits the framework.”
2. “...needs to work better together with designers that are working different from developers.”
3. “A separate diagnostic team would help a lot when it comes to the confusion about what team that should handle each issue.”
4. Loosen up the organizational boundaries and get real ART responsibilities cross functional. Allocate budgets to ARTs.”
5. “...either remove function owners or organize them in the team where the function is implemented (not in another ART).”
6. “…the "management" needs… [To] be the ones responsible for re-prioritization and changing of plans so that the developers see as little of that as possible.”
7. “...business goals, and the construction problems...need to trickle down to us the team, and we should plan stories that deliver on those goals and solves those problems. We should have measurements to gauge the impact our changes...”

7.0 Discussions & Recommendations

The passages below discuss the results and analysis done in the previous chapter and recommends certain aspects from the theory chapter which could help the organization during and after the change process. The results of most success factors of SAFe change process were neutral without a high or low opinion, in the context of the whole organization while results only slightly differed from department to department. The congruence analysis however, produced rather uncomfortable results for the overall organization and individual departments. Based on these results we can conclude the organization is transitioning between Lewin's 'change process' and 'refreezing' phase in many departments.

Like many large scaled change attempts in organizations, the one discussed had shortcomings and challenges in adoption. The change process could use some modifying and tweaking based on the identified success factors and the post-adoption state too need more time and room for improvement. A big impediment in any change is the existing mindset of the employees that needs changing and this hinderance creates obstructions in adoption of a framework. It was seen in the current study as well where several parameters like 'Difficulty in implementation', 'Unfamiliarity with the framework' and 'Staffing roles' proved to be quite challenging. However, an intriguing concept which rose in this study is that the cultural inference which came with the SAFe framework or which the SAFe framework promotes in the organizations, resonates greatly with the employees. Parameters like 'Transparency', 'Visibility' and 'Collaboration' were scored highly by the participants as realizing benefits. 'Communication' and 'Transparency' during the change too were highly rated. It would not be unwise to claim that based on these results the employees are very recipient in changing the culture in accordance to the framework, even when other technicalities of SAFe are not fully realized. The managers and coaches can set this cultural acceptance as a foundation to create more familiarization of the SAFe framework in the organization.

Observing the results of the success factors in the change process, it can be seen that, leadership, management support and their commitment received fairly good results but could be significantly improved. However, the factors that go along the support and leadership like vision, & roadmap and customization processes received poor results overall. Therefore, a robust leadership plan is needed in the organization to move forward. As pointed out earlier in the theory chapter, the type of leadership is vital during the 'change process', Bass (1997) presented two types of leadership, transactional leaders and transformational leaders. A good combination of both can garner the benefits and reduce the challenges of almost all congruence completely or partially. The benefit parameter 'cost benefits' i.e. the reward systems in the organization has been proved to be effective motivation for the employees in the literature while it shows poor results in the organization. So, a transactional leadership can prove to be beneficial at Volvo Cars. In the same way to tackle the challenges of 'Difficulty in Implementation', 'Coordination challenges' and 'Hierarchical management' and 'Unfamiliarity with SAFe framework' can be tackled by transformational leadership style. Cummings and Worley (2014) have proposed that an analysis of 'who stands to gain or lose from the change?' should be conducted to build relationships and useful influence. Moreover, it is deemed necessary by Dikert et al. (2016) that leadership support should be visible and the corporate level support of agile will lead to more spontaneous adoption. They have also said that it is important to educate the management on agile thoroughly before they are to bring out the change.

Although transparency was viewed favorably both in the change process and in work-culture fit, as did visibility and collaboration in the congruence between culture-structure and culture-people respectively, several employees have opined the lack of their say in matters of SAFe. Employee involvement should be encouraged more rigorously in the change process. The support and suggestions in the process by the employees will bring more advantages of commitment and more effectiveness (Higgins et al., 2003). This will also encourage more positive feelings in the employees for the change and also enhance the acceptance of the change process. A number of studies done on Employees Involvement (EI) have suggested that it provides empowerment in authority and responsibility to individuals and teams, creates successful behavior integration in work and social dimension and ease of making suggestions in different levels of the organization (Mathieu et al., 2006). More Employee Involvement (EI) could help improve any congruence with people involvement like People-Structure, People-Work and People-Culture, where focus is on the people.

An important aspect to consider during Training and Coaching is that it should continue even during the implementation and instead of prescribing people what to do, emphasize a mindset of accepting the change (Dikert et al., 2016). Furthermore, it is advised to engage everyone broadly in the organization to gain acceptance of the transformation. Dikert et al. (2016) have poised that by being inclusive towards all as a key factor in the transformation processes and encourages more participation among the employees. Studies on literatures done by Dikert et al. (2016) has stated that compartmentalized customization as per the needs of the units or departments shows better results of agile implementation. Based on the needs, it may require deviating away from some typical agile recommendations. So, as long as the customization does not largely deviate from agile principles it is perfectly fine to tweak some standard practices. The lack of benefits as well as high challenges in work related congruence like Work-People, Work-Culture and Work-Structure could be remedied using better training and coaching methods.

It is also important to make efforts to sustain and stabilize the changes made in the organizations and not let it decay back to the old way of working. Many interviewees claimed that the organization is in no-man's land now, so it is necessary to make all efforts to stabilize the new framework firmly. Many participants of the survey however, had criticizing views of SAFe and complained about one or many aspects of the framework and the change process. This and the perception of high amount of challenges of adopting SAFe, as mentioned in the analysis chapter, indicates that signs of decaying are present and need to be attended. It was stressed in the theory chapter as well that in Lewin's Unfreezing stage, efforts should be made to sustain the new changes. One of the methods was institutionalizing the change in the organization (Kotter 1995) which can be done by focusing on the intervention process i.e. the managers and leaders applying proper support and control mechanisms for the change and solidifying different congruence of the organization (Jacobs 2002). For the latter adhering to find adequate fits and congruence is already discussed in detail. Proper intervention processes can be achieved by focusing on the myriads of change success factors also discussed above. Therefore, good leadership, appropriate Employee Involvement (EI) and more robust training and coaching methods discussed in this chapter earlier can also help sustain the change in the organization.

According to the analysis done above and number or responds from the last survey question, it seems that SAFe has hard time fitting in more hardware-oriented departments. However, many literature studies have produced ways to for agile frameworks and structures to work in quasi-hardware environment. For meeting

the ever changing customer demands and to stay ahead of the competition, many manufacturing companies look for agile way of working (Cao and Ramesh, 2007). Cooper and Sommer (2016) states that scrum techniques are one of the few agile frameworks which are widely used in product manufacturing but are mostly used in testing and technical development phases. They argue that scrum has the potential to be utilized in many other stages as well especially in concept, feasibility and business development phase. However, Cooper and Sommer (2016) also argue that since hardware is not divisible as software is, adjustments need to be done mainly in the context of the organization and the product. For instance, prototypes, CAD drawings and even 3D printing can be employed. The important thing is to have something on which immediate feedback can be given. Similarly, the planning methods for hardware need to change as well, sprint planning to be done for the entire development stage instead of for only two weeks like software. A case study done by Cooper and Sommer (2016) on scrum methodology in hardware development resulted in increased productivity, improved team communication, improved work flow and decreased misunderstandings.

8.0 Conclusion & Summary

The current turbulent and competitive market requires organizations to adopt flexible work methodologies to keep up with the trends and stay ahead. Organizations, especially the ones with in-built software development capabilities are adopting large scaled agile frameworks to enhance their efficiencies and increase innovation. Software has been an integral part of automobile industries for quite a while now and large-scale agile frameworks are used in hope to stay ahead in the competition and meet the changing customer demands. Traditionally, agile was used for software development in small teams. Scaling agile accommodates non-software units like hardware development, HR and finance to tackle dependencies issues and for less ad-hoc work.

Scaled Agile Framework (SAFe) is one of the favored scaling frameworks used in many industries and is also used in the organization focused in this thesis. While many studies in literature focus on how to initiate the transformation process to SAFe, very few studies exist in gauging the change and its post-implementation analysis. This master's thesis is a case study in the automotive industry to gauge the change process and to perform a gap analysis on the expected and presupposed effects of SAFe and its current status. For this purpose, semi-structured interviews and anonymous survey were conducted in the company to answer the research questions described below.

8.1 Summary & Findings of Research Question 1

How successful is the implementation of (SAFe) and how successful is the change process?

To analyze the success (or failure) of the SAFe implementation process at Volvo Cars, several success factors were sorted out from various literature studies. These success factors were then gauged through the survey on the employees of Volvo Cars. Several issues came to light when analyzing the survey responses. The success factors are then analyzed both for the whole organization and then for individual departments in the organization. Holistically in the organization, Transparency and Communication during the change

process received favorable results. Leadership, support from the management and their commitment to the change received fairly good results too. Training and Coaching was a mixed bag where departments had differing opinions on the matter. However, customization of the SAFe, the vision and the roadmap to the change received poor results and therefore need further attention.

In reviewing the individual departments, it was found that 94000 (Software & Electronics) had most favorable results overall. The department had the most positive results in all success factors. The most significant being 'Training' where the department was head and shoulders above the others. This could be explained by the fact that this was the first department to begin the implementation of SAFe and has more software-oriented tasks. The vision of the change and the customization process specifically needs further attention in this department. The results of 97000 (Vehicle Propulsion) department were not lagging far behind the 94000 (Software & Electronics) and were fairly good. The vision of the change, proper customization and appropriate training of Agile and SAFe is needed here. The 91000 (Complete Vehicle Engineering) department had most respondents who were unable to answer the survey. The reason could be that SAFe implementation had not reached their units yet. So, the most urgent response is to spread the implementation uniformly across the department, as well as focus on all other success factors. 93000 (Vehicle Hardware) department had the least favorable response of all. Transparency, Leadership and Communication had somewhat more favorable response than the rest. Serious attention is needed for all the success factors in this department.

8.2 Summary & Findings of Research Question 2:

What were the desired effects of SAFe transformation and what is the current state post-adoption?

In order to find the presupposed and desired effects of the change, interviews were conducted and help from literature was taken to identify several parameters. These were then divided into benefits and challenges parameters and then further divided into six congruence; work – culture, work – people, work – structure, people – culture, people – structure and culture – structure. The parameters were gauged using the survey and then analyzed using statistical tools. The summary of the results is described below.

The benefits of the work - culture fit was deemed to be realized by the employees to good extent. A minor setback was witnessed in the challenges of the fit. Overall, it seems significant progress is been made to mold the culture for the new tasks of the SAFe framework. 94000 (Software & Electronics) and 97000 (Vehicle Propulsion) came out as the best while both 93000 (Vehicle Hardware) and 91000 (Complete Vehicle Engineering) need further attention. The organization has yet to realize the benefits of work and structure fit. The benefits the SAFe framework promised has barely an effect on the tasks performed. The effects of the challenges were mildly concerning but still need attention. Observing individual departments, some had better results than the others, but significant attention is needed in all of them. The people or the employees of Volvo also do not seem to mold themselves to the new structure of SAFe as both the benefits were found to be low and the effects of the challenges to be high. More or less, the same results were seen both for the whole organization and the focused departments. The benefits of the people and culture fit seemed to be realized greatly in the organization and the focused departments, however, high impediments were observed when considering the challenges of the fit. Therefore, this congruence can be seen as a double-edged sword where the benefits comes with the challenges in the organization. The structure-culture

congruence had average results overall; the visibility parameter realized but cost benefits did not as per the respondents. However, extreme negative response was seen for the effects of its challenges. This mismatch of the benefits and the challenges of structure over culture needs to be addressed. Finally, the effect of the new way of working on the people had generally a negative response all over the organization, however not to the extent of few earlier congruence discussed.

The first two research questions were founded upon theoretical frameworks and the results too were analyzed using change management theories. It was recommended to institutionalize the change in the organization, which can be done by adhering to a good intervention process and finding good behavioral fits. A combination of transactional and transformational leadership, sufficient Employee Involvement and continued Training & Coaching with proper customization were recommended for proper institutionalizing.

8.3 Summary & Findings of Research Question 3:

What are the future strategies or improvements in the way of working using Large Scaled Agile?

The lack of literature did not allow us to research much deeply into the future strategies and improvements and interviews and survey questions were used to try to answer the question. The managers and coaches would like to scale up the SAFe further up in the organization, bridged the gap between hardware and software-oriented developments and attempt to change the mindset of the employees towards agile. However, they would be facing resistance from the employees. According to the survey questions, most of the employees have opined the same facets and terms we have used in our analysis. Others have given specific recommendations on how to approach the matter, which includes giving more power to the teams to make decisions, realignment of function owners in the Agile Release Train, better collaboration between designers and developers and budget allocation to the ARTs. It is imperative for managers and coaches to take these opinions and recommendations into consideration when furthering SAFe and agile into the organization.

9.0 Further Research

A key recommended research should be to find a perfect fit of agile for hardware development. Customization and tweaking of agile functions can be done without straying away too much from agile principals. This could help bridge the gap between software and hardware developments and help accommodate larger parts of the organization within large scaled agile. A somewhat similar study of gap analysis is also recommended after a year or so preferably with more recent literature and studies to ascertain where does the company stand then.

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Appendices

I: Interview Questions

We are two master students from Chalmers University of Technology who are doing our master's thesis at Volvo Cars within SAFe. The intention with this work is to perform a gap analysis of the SAFe framework and transformation which had been recently implemented at Volvo Cars. The outcome from our work aims to create a better understanding of Large scale Agile, first seeking out the initial expectations towards SAFe followed by ascertaining the current status of SAFe in terms of those expectations, while pointing out shortcomings and further areas for attention. Additionally, the future strategies of SAFe and Large Scaled Agile will also be researched.

Before starting, we would like to ensure you that you will be anonymous during this work. During this interview, you will have the possibility to skip certain questions, if you do not want to answer them or cannot answer them. You are also permitted to stop the interview, to ask for clarification or change the pace of the interview.

1. How long and in what position have you worked in Volvo Cars?
2. Which department do you work in? (e.g. 94XXX first 2 digits)
3. What does it mean for you to work with Scaled Agile Framework?

4. What is your role in the organization in the SAFe framework?
5. Have you worked with Agile before the large-scale implementation Volvo Cars?
6. What did you know about SAFe before it was implemented?
7. What drove Volvo Cars towards adopting SAFe?
8. How did the overall environment (e.g. market, trends, business, politics etc.) effect the decision of adopting SAFe?
9. What did you envision SAFe to be before it was implemented in the organization in terms of future benefits and probable challenges?
10. What were the key benefits you hoped would be achieved with SAFe?
11. Were there any hindrances or roadblocks you expected to occur after SAFe would be adopted? How did you plan to tackle them?
12. What measures (actions) did you partake in motivating the people towards the change?
13. How did you imagine the new organization structure (e.g. new staffing roles) would affect Volvo Cars?
14. Did you have to make strong cultural changes to drive people towards the new behavior?
15. What key changes has been done in work settings or tasks handling for SAFe framework to be successful?
16. What benefits of SAFe have you seen so far? Were there any unforeseen challenges that came with SAFe?
17. Where do you plan to take SAFe into the future at Volvo Cars and what future strategies would you like to be implemented?

II: Survey questions

(Text in brackets are indicative only and is removed when the survey is sent)

We are two Master students from Chalmers University of Technology who are doing our master's thesis at Volvo Cars within Scaled Agile Framework (SAFe). This Survey aims to investigate the current status of Scaled Agile Framework (SAFe) in terms of its benefits to Volvo Cars compared with its initial expectations. In addition, the future strategies within the SAFe are also investigated.

The survey contains 19 questions and will take maximum of 5-7 minutes. We would really appreciate if you could participate in it. If you have any questions please do not hesitate to send them at jazib.kabir@volvocars.com

Regards
Jazib Kabir & Rashid Mahmood

1. How long and in what position have you worked in Volvo Cars?
    a. Duration: multiple choice (0-5, 5-10, 10-15 years)

2. What is your role in Volvo Cars? (Open Question)

3. Which department do you work in? (90, 91, 93, 94, 97) 80?

4. Have you always worked in the same department? Yes /No

5. Have you worked with Agile before it was implemented at Volvo Cars? Yes/No

6. Have you taken an active part in the SAFe transformation? Yes/No

7. The change leaders have given support needed during the transformation process at all levels of the organization (*Management support)*
    Strongly Agree
    Agree
    Somewhat agree
    Disagree
    Strongly disagree
    Not Applicable

8. The line-management has displayed leadership qualities (e.g. teach, empower, engage) during the transformation. *(Leadership)*
    Strongly Agree
    Agree
    Somewhat agree
    Disagree
    Strongly disagree
    Not applicable

9. The line-management and the employees of all departments were committed to the change to SAFe which was brought forward *(committed to change)*
   Strongly Agree
   Agree
   Somewhat agree
   Disagree
   Strongly disagree
   Not applicable

10. The agile and SAFe frameworks has been molded and customized within the context of the organization to achieve best efficiency optimization in time and resources used (*Choosing and customizing the agile approach)*
   Strongly Agree
   Agree
   Somewhat agree
   Disagree
   Strongly disagree
   Not applicable

11. The training for SAFe provided helped employees work with SAFe and appropriately conveyed the reasons and benefits of the new way of working before the transformation *(Training)*
   Strongly Agree
   Agree
   Somewhat agree
   Disagree
   Strongly disagree
   Not applicable

12. Intensive communication was employed to reach as many people in the organization for the new way of working *(Communication)*
   Strongly Agree
   Agree
   Somewhat agree
   Disagree
   Strongly disagree
   Not applicable

13. The information and guidelines of the transformation process were shared transparently without bias with everyone *(Transparency)*
   Strongly Agree
   Agree
   Somewhat agree
   Disagree
   Strongly disagree

Not applicable

14. The vision and roadmap of the transformation to the new way of working was clear and apparent during the change. *(Vision)*
    Strongly Agree
    Agree
    Somewhat agree
    Disagree
    Strongly disagree
    Not applicable

15. Rank the following benefits which have been achieved by using the SAFe framework in Volvo Cars based on your judgement, where 1 is not achieved at all and 5 is fully achieved.

Key Benefits	1 (not achieved at all)	2	3	4	5 (fully achieved)
Transparency					
Alignment					
Built in Quality					
Program Execution					
Defect Reduction					
Collaboration					
Visibility					
Productivity					
Cost Benefits					
Faster and Frequent Deliveries					
Customer Satisfaction					
Predictability					

16. Are there any other benefits of SAFe in your organization which are not mentioned above (Open Question / Non-Compulsory)

17. Rank the following challenges which you have faced while using the SAFe framework in Volvo Cars based on your judgement, where 1 is non-existent and 5 is most troubling?

Challenges of SAFe	1 (non-existent))	2	3	4	5 (most troubling)
Moving Away from Agile					
Resistance to Change					
Unfamiliarity with SAFe framework					
Agile release train challenges					
Staffing roles					
Difficulty in implementation					
Coordination challenges in multi-team environment					
Hierarchical management and organizational boundaries					
Requirement management					

18. Are there any other challenges of working with SAFe in your organization which are not mentioned above? (Open Question / Non-Compulsory)

19. What do you think could be improved with SAFe in your organization? (Open Question)