

Peter Nikola Fistonc

Design Sprints as the go-to-method in Agile workflows

A qualitative study of its characteristics and effects on the cultural DNA as a multilevel learning process informing Agile Transition and adoption

Master's thesis in Work and Organizational Psychology

Supervisor: Jonas Rennemo Vaag

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Kunnskap for en bedre verden

Abstract

Organizational learning in any organization is vital to its successful performance, especially in a world characterized by constant and rapid change. Key aspects of organizational learning theory are that learning happens when people interact while finding and solving problems. The main streams of research in this field fall under the terminologies of Organizational Learning and Learning Organization, often used interchangeably. A broad theoretical framework is presented in this study that identifies a critical point of inflexion that links the two streams. The literature also stresses the importance of developing a dynamic learning culture within an organization; the learned, shared, tacit assumptions that vary from culture to culture. The objective of this study is to therefore deconstruct how organizational learning takes shape in a context where Agile innovation methods are introduced. That is to say, the psychological mechanisms present in a socio-technological change process. It also provides an initial empirical exploration of The Design Sprint method, a widely used, battle-tested process, but a topic almost wholly unexplored in the extant literature. The results are based on eight qualitative interviews from practitioners in the management domain. The analysis provides a comprehensive levels-of-analysis framework to review extant research into enabling factors implicated in both creativity and innovation. Key characteristics of the Design Sprint method are reviewed. These factors are then discussed through a cultural lens as antecedents to informing Agile transition and affecting successful agile adoption. This paper concludes that any attempt to try to affect an organization's culture requires a plurality of approaches. The practical implication of these insights implies companies should adopt a more action-oriented methodology when it comes to staff training that engages members of the organization at different levels and throughout the company's functional units.

Sammendrag

Enhver organisasjon må skape sine egne forutsetninger for organisatorisk læring, spesielt i en verden preget av konstant og rask endring. Nøkkelaspekter ved organisasjonslæring er at læring foregår når ansatte samhandler mens de finner og løser problemer. De viktigste forskningsstrømmene innen dette feltet faller inn under terminologiene Organisasjonslæring og Læringsorganisasjon, ofte brukt om hverandre. Det teoretiske rammeverket som presenteres i denne studien vil forsøke å knytte sammen disse to strømmer. Litteraturen understreker også viktigheten av å utvikle en dynamisk læringskultur i en organisasjon; tillærte felles normer, antagelser verdier som varierer fra kultur til kultur. Målet med denne studien er å dekonstruere hvordan organisasjonslæring tar form i sammenheng med introduksjonen av Agile innovasjonsmetoder. Studien undersøker psykologiske mekanismer som er til stede i en sosio-teknologisk endringsprosess. Det setter grunnlaget for en innledende empirisk utforskning av Design Sprint-metoden, en kamptestet og mye brukt prosess, men også et fenomen med svært lite eksisterende forskning bak seg. Studiens resultater baserer seg på kvalitative intervjuer fra 8 informanter i ledelsesdomenet. Funn fra analysen presenteres over tre ulike nivåer (individ-, team- og organisasjonsnivå). Denne studien vil derfor gjennomgå eksisterende forskning på faktorer involvert i både kreativitet og innovasjon. De læringsprosesser og egenskaper ved Design Sprint metoden vil deretter diskuteres fra et kulturelt perspektiv for å se hvordan de informerer videre smidige overganger og støtter en vellykket smidig adopsjon. Studien foreslår at ethvert forsøk på å påvirke kulturen i organisasjonen krever flere tilnærminger. Det bidrar med nyttig innsikt i hvordan bedrifter kan gå over til mere handlingsorienterte metoder til bruk i personalopplæring som engasjerer medlemmer av organisasjonen på forskjellige nivåer og gjennom selskapets funksjonelle enheter.

Preface

This graduate thesis is a major milestone at the finish line of a 5-year study programme in psychology at NTNU. It was written as a completion to a Master's in Work and Occupational Psychology in the spring of 2021.

I would like to thank my supervisor, Jonas Rennemo Vaag, for showing great patience and understanding during the many rounds of constructive feedback - which was sorely needed and appreciated. Initially, the literature review was a somewhat confusing and daunting undertaking due to the complexity of the concepts and seemingly disparate streams of research. Through time and effort, I was able to connect the dots and present novel findings.

I would also like to thank the good folks at Østlyng & Bjerke for a challenging internship and a fantastic learning experience. Without that initial experience as part of a Design Sprint team I most likely would not have been writing about it now.

A special thanks is directed to my loving parents and awesome brother!

Peter Nikola Fistonc
Trondheim, 14.mai 2021

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List of Abbreviations (or Symbols)

OL	Organizational Learning
CM	Change Management
DS	Design Sprint

1 INTRODUCTION

When the world is changing so fast and in such unpredictable ways, making and sticking to long implementation plans is increasingly fraught with problems. This drives many firms to redesign their organization in search for solutions that can keep up with the perceived velocity of ever-changing external conditions. Already as far back as three decades ago, it was argued that organizations, their leaders, and its employees will have to become perpetual learners (Senge, 1990). Organizational learning enables organizations to transform individual knowledge into organizational knowledge (Schein, 2017). This increased ability to react quickly to fast-changing market conditions is just one of the reasons why organizational learning is espoused as a strategic tool in the field of modern management for gaining competitive advantage and stabilizing organizational success (Senge, 1990). Accordingly, the notion of seeking to attain an ideal state of an 'learning organization' has been a central orienting point towards a preferred model for development and management of change (Watkins & Kim, 2018). It is therefore concerned with applying knowledge for a purpose and learning from the process and from the outcome (Brown & Duguid, 1991). Key aspects of organizational learning theory are that learning happens when people interact while finding and solving problems. It also stresses the importance of developing a dynamic learning culture within an organization (Schein, 2017).

The core problems organizations are faced with are adaptation to the external environment and integration of the internal processes to ensure the continuous capacity to survive and adapt (Schein, 1996). The cultural reality is that both these tasks must be attended to and are highly interconnected. This has led to the useful concept of "socio-technical systems" and looking at culture holistically. A great virtue of many pioneering thinkers in the field of organizational learning (Argyris & Schon, 1978; Schein, 1996; Senge, 1990) is the way in which they put systems theory to work. This is then mirrored in the technical and business aspects of Agile innovation, which arguably then leads to the question of whether they are compatible. Agile as a management style involves the application of the principles of iterative software development to running project teams. This type of learning benefits both individuals, teams, and the organization as a whole. Incremental changes not only honor organizations as living systems, they also take a lot less time and resources to experiment with. This has implications on the way change should be conducted. Many suggest securing organizational change by having organizational members take the initiative (e.g., experimentation and improvisation), a form of engagement that can be triggered by changes in the environment but can also be the outcome of internal changes such as product development and innovations (Alveson & Sveningsson, 2015).

Nowadays, Agile has become an umbrella-term that embeds diverse sets of activities and practices that are more flexible than existing ones (Maruping, Venkatesh & Agarwal, 2009). The Design Sprint - a widely popular method - was launched with the goal of eliciting requirements quickly and efficiently (Knapp, Zeratsky & Kowitz, 2016). It is a structured brainstorming framework to solve a critical organizational challenge, rooted in Design Thinking and Agile development processes, that uses rapid prototyping and testing with users. It has since evolved beyond product design to become a general approach to solving business problems; it can be applied to systems, procedures,

protocols, and customer experiences. To relate this to organizational learning, Brown and Duguid (1991) maintain that it is necessary to focus on the sites of innovating, the communities in which work takes place. Organizational learning applied to the domain of new product development can thus be conceived of as a principal means of achieving the strategic renewal of an enterprise.

1.1 Research aim

When we pose the issue of perpetual learning in the context of cultural analysis, we confront a paradox. Culture is a stabilizer, a conservative force, but strong cultures are, by definition, stable and hard to change. If the world is becoming more turbulent, requiring more flexibility and learning, does this not imply that strong cultures will increasingly become a liability? Or can we imagine a culture that, by its very nature, is learning oriented, adaptive, and flexible? Can we stabilize perpetual learning and change and what would a culture that favored perpetual learning and flexibility look like? What would characterize leaders who promoted such a culture? To translate that question into leadership terms, what is the direction in which leaders should be pushing cultural evolution to perceive the needs of tomorrow? As a result, any attempt to try to affect an organization's culture requires a plurality of approaches that engage members of the organization at different levels and throughout the company's functional units through continuous and repeated interventions.

1.2 Thesis statement

The purpose of this study is to identify the mechanisms that are present in a socio-technological change process. In other words, to deconstruct how learning takes shape in a context where Agile innovation methods are introduced. The focus is on theoretical and practical contributions by investigating the Design Sprint method, a topic not yet explored in the literature. The overall focus is on synthesizing perspectives from traditional organizational psychology and innovation management - a combination of the management of innovation processes and change management.

The main research question this thesis seeks to answer is:

How can Agile workflows inform cultural change processes?

To answer this, we will answer the following two sub-questions:

1. *Which enabling factors embedded in the Design Sprint method act as the means of triggering organization-wide learning?*
2. *What is their relationship to key factors supporting the transition to an agile organization?*

2 LITTERATURE REVIEW

Before reviewing the literature, I would like to take the opportunity to first address the conceptual cornerstone of this thesis by highlighting systems theory's ability to comprehend and address the whole. It provides both the incentive and the means to examine the interrelationship between the parts and integrate various theoretical perspectives in order to make sense of organizational questions and issues. One of the key problems with much that is written about, and done in the name of management, is that rather simplistic frameworks are applied to complex systems (Senge, 1990). By focusing on the parts rather than seeing the whole, we fail to see organization as a dynamic process. Thus, the argument runs, a better appreciation of systems will lead to more appropriate action (Senge, 1990).

In the following summary of research, I will first present some key theories underlying definitions of organizational learning, how they can be integrated and the importance of creating a learning culture within an organization. Next, I examine features of Agile innovation methods and how it inspired the next generation of methods and processes, focusing on the focal point of this study, The Design Sprint method. I then turn to the broader socio-technological dimension, with the main emphasis on the determinants of creativity and innovation on the individual, team and organizational level of analysis. Finally, this chapter will come around full circle and highlight how Agile methodologies can be seen through a cultural lens as a transformational device according to the various dimensions of the ADKAR change model.

2.1 Underlying perspectives of organizational learning

Organizational learning is important for all firms, as the creation, retention and transfer of knowledge within the organization will strengthen the organization as a whole (Argyris & Schon, 1978; Senge, 1990). This has become increasingly vital in today's complex, uncertain, and dynamic business environments and learning is seen as a medium for more effective and flexible action (Senge, 1990). Although the organizational learning literature is troubled with conceptual and definitional confusion (Friedman, Lipshitz, & Popper, 2005), it has nevertheless become a core construct in organizational theory (Edmondson & Moingeon, 1998). In the literature, researchers approach the subject from different perspectives when it comes to conceptualizing learning in organizations. These vacillate between the behavioral, cognitive, and cultural/social (Watkins & Kim, 2018). These perspectives form four different conceptual streams: cognitive, cognitive-behavioral, social-constructive, and social-cognitive. The first view seems to neglect behaviors associated with cognition, and although the cognitive-behavioral view accounts for resulting behaviors, they both inadequately address the social perspective. On the other hand, researchers embracing the social-constructive highlight the importance of social learning, but at the expense of considering cognition. It could therefore be argued that the socio-cognitive perspective approaches organizational learning in a holistic way; by integrating fragmented learning theories (including behaviorism, cognition, and social construction). Its proponents argue that organizational learning is an outcome of reciprocal interactions of socio-cognitive constructs connected by organizational culture. As such, individuals are both the source and the target of influence in the organization.

2.2 From Organizational Learning to The learning organization

Understanding the difference between organizational learning and the learning organization is essential. The literature acknowledges that there has been some confusion regarding the explicit meaning of these related yet distinct constructs. They are often used interchangeably or as a synonym (Goh, 2020). Organizational learning denotes collective learning experiences used to acquire knowledge and develop skills and is the *activity* and the *process* by which organizations eventually reach the ideal of a learning organization (Senge, 1990). Research on organizational learning mechanisms and capabilities begins to address what an organization needs to do to become a learning organization. More and more organizational researchers are adopting the view that an organization's ability to learn faster than its competitors is the only sustainable competitive advantage (House, 2004; Stata, 1989; Senge, 1990).

The growing interest during the past few decades can largely be attributed to two seminal works: Chris Argyris's (1990) book on facilitating organizational learning and *The Fifth Discipline: The Art and Practice of the Learning Organization* published by Peter Senge (1990). Moreover, since the central concerns have been somewhat different, the two literatures have developed along divergent paths. Argyris focused on how learning takes place for an individual or group in an organizational setting with an underlying educational psychology perspective. Senge describes, with case examples and from the perspective of leadership and systems theory, what a learning organization does or practices. The former is largely descriptive and deals with the detached collection and analysis of learning processes in the organization while the latter is prescriptive, with a strong practical focus. The intended result of OL research was to be an accurate description of a phenomenon or a robust model of causality. According to Edmondson and Moingeon (1998) this highly philosophical discussion about tacit and experiential knowledge (e.g., Nonaka & Takeuchi, 1995) created too much confusion as it was harder to understand more clearly what a learning organization is.

Senge captured the attention and interest of proponents of a more pragmatic view, both management researchers and practicing managers. The practices that should be implemented to move toward being a learning organization and the evidence of being a more competitive and better-performing organization. Therefore, the learning organizations literature has an action orientation, and is geared toward using specific diagnostic and evaluative methodological tools which can help to identify, promote and evaluate the quality of learning processes inside organizations (Watkins & Kim, 2018). It is thus primarily aimed at creating organizational change. Critics of the learning organization prescriptions have identified major issues in implementation failures (Fillion et al., 2015; Sun & Scott, 2003). These concerns highlight limitations in adequately addressing the learning processes and the barriers involved in transfer of learning to all levels in the organization (for a more detailed summary of critiques, see Hong & Mak, 2019).

2.2.1 Integrating intervention strategies

First off, it should first be noted that Donald Schön worked with Chris Argyris to develop a number of important concepts with regard to organizational learning, particularly on their interest in feedback and single- and double-loop learning. For Argyris and Schön (1978) learning involves the detection and correction of error. Learning starts when actual consequences of an action strategy do not correspond with expected consequences. If something goes wrong, it is suggested, an initial port of call for many people is to look for another strategy that will address the error and still work within the

governing variables, those dimensions that people try to keep within acceptable limits; this is single-loop learning. An alternative response is to question governing variables themselves and subject them to critical scrutiny, which they termed as double-loop learning. Such learning may then lead to an alteration in the governing variables (e.g., underlying norms, policies and objectives) and, thus, a shift in the way in which actions and consequences are framed. Single-loop and double-loop learning concepts apply not only to personal behaviors but also to organizational behaviors in their models. The focus of much of Argyris' intervention research has been to explore how organizations may increase their capacity for double-loop learning. He argues that double-loop learning is necessary if practitioners and organizations are to make informed decisions in rapidly changing and often uncertain contexts (Argyris; 1982; 2002). As Edmondson and Moingeon (1999, p. 160) put it:

The underlying theory, supported by years of empirical research, is that the reasoning processes employed by individuals in organizations inhibit the exchange of relevant information in ways that make double-loop learning difficult – and all but impossible in situations in which much is at stake. This creates a dilemma as these are the very organizational situations in which double-loop learning is most needed.

A number of authors have conceived of a further type of organizational learning, for which the most prominent term is 'triple-loop' learning. Typically, this is described as additional to, and metaphorically at a 'higher' or 'deeper' level than, primary and secondary forms of learning, the metaphor implying that this level has greater significance and profundity (Tosey, Visser & Saunders, 2012). However, current definitions and descriptions of this concept suffer from conceptual confusion and terminological ambiguity, so to not muddy the waters, Visser's (2017) conceptualization of "triple-loop" learning distinguishes between deutero-learning, meta-learning and planned learning. Thus conceptualized, the former is largely unconscious, but the latter two concepts are perceived as discontinuous, cognitive, and conscious and therefore argued to be more amenable to explicit steering and organizing of managerial efforts directed at improving organizational and individual performance (Visser, 2017). Meta-learning refers to the reflection on and inquiry into the process of (single-loop and double-loop) learning at the individual and group level in organizations. As such, it challenges one's existing learning framework as well as one's mental models and assumptions. Planned learning refers to the creation and maintenance of organizational systems, routines, procedures, and structures through which organizational members are induced to meta-learn on a regular basis and in which the results of meta-learning are embedded for future use. Ideally, planned learning links all of the local learning units into a unified learning organization. In accomplishing this task, organizational members learn how to tap the collective knowledge embedded in various parts of the organization. By learning how to learn over time, organizational members discover what facilitates or inhibits their learning and can thus produce new strategies to develop their knowledge as the practices, systems and structures align to enable learning how to learn.

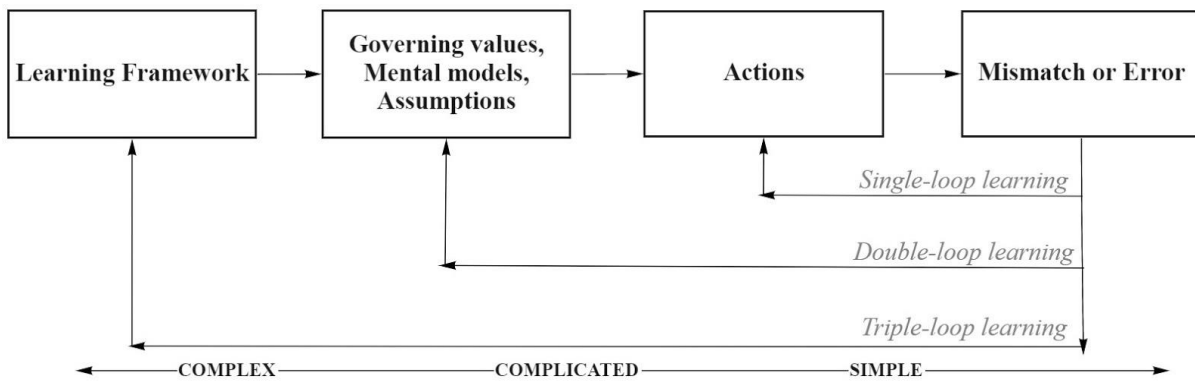


Figure 1.1. Three modes of learning.

Very few organizations attain the triple-loop learning operating modes as systemic thinking is a difficult discipline. Senge refers to this fifth discipline (See figure 2) as the cornerstone of becoming a learning organization (Fillion, Koffi & Booto Ekionea, 2015). Senge’s core message is that without individuals learning to shift their own ways of thinking about systems, organizations will be ineffective (Senge, 1990). Thus, fostering an experience of accountability for results is a central component of the intervention. Senge’s approach includes involving people throughout an organization, even though the system dilemmas uncovered relate to issues addressed primarily by top management. His belief that participation in diagnosis should occur organization-wide is driven by his commitment to team learning and shared vision. Senge’s (1990) model emphasizes personal mastery, mental models, shared vision, team learning, and system thinking as fundamental components of a learning organization.

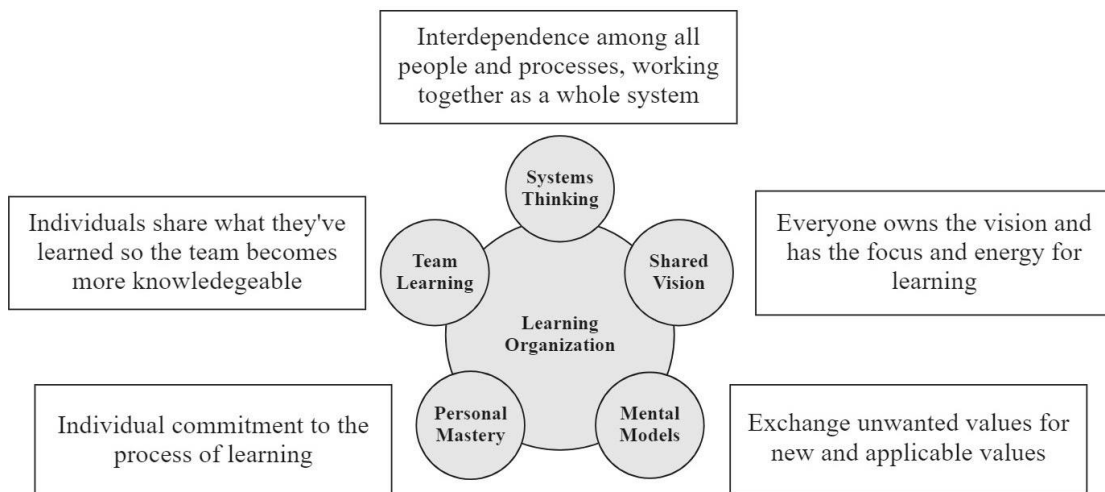


Figure 2.1. Model adapted from *The Fifth Discipline* (Peter Senge, 1990).

Approaches to identifying what an organization needs to do to become a learning organization vary. Other practices and characteristics of successful learning organizations identified in the literature so far have recently been summarized by Watkins and Kim (2018): A learning organization is able transform itself through continuous learning; creates systems that capture and share learning across the organization; its leadership supports learning and helps to create the conditions needed to become a learning organization; and focuses its attention on system learning, as well as individual and group/team learning. These core elements are very similar to the Watkins and Marsick

model (1996) of a learning organization which identifies seven dimensions or capacities of organizations with an enhanced ability to learn and change (Watkins & Kim, 2018). There seems to be consensus among theorists on the learning organization that a successful learning organization needs to develop a set of management practices and some critical characteristics. These should be reflected at different organizational levels—generally, individual, group, and structural or system levels (Watkins & Kim, 2018).

The shortcoming of Senge's model is its limitation at addressing the interpersonal skills required to communicate new insights to others (Edmondson & Moingeon, 1998) and criticism concerning practicability and/or implementation problems (Fillion et al., 2015; Sun & Scott, 2003). Finally, other researchers have pointed out that the wider LO literature also tends to disregard external contextual challenges and institutional complexity with respect to realizing the full potential of a learning organization (Hong & Mak, 2019). Edmondson and Moingeon (1998) identify a point of inflexion between these disparate parts of the literature. Their analysis of these relationships points to individual mental models as a critical source of leverage for creating learning organizations. To illustrate and provide additional support for their implied strategy for creating organizational change, this literature review outlines the works of Senge and Argyris. Senge's unique contribution to system dynamics lies in his proposal that organization members must engage in a process of learning to understand their own system (Senge, 1990). At the same time, the work of Argyris (and Schön) provides the framework; the vehicle through which systemic thinking becomes the cornerstone of a learning organization.

2.2.2 Cultural perspective on organizational learning

To define organizational learning is to understand the importance of creating a learning culture within an organization (Garvin, 1993; Senge 1990). This type of learning benefits both individuals, teams, and the organization as a whole. A cultural perspective is concerned with what is shared across the organization—its vision, values, attitudes, and shared history. Schein (1996) provides a definition of culture as "a pattern of basic assumptions- invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration" (p. 9). According to Schein (2016) studies of effective organizations have consistently shown that successful performance and effective learning hinges on not separating these two dimensions, thinking instead in terms of "socio-technical systems," in which the external and internal are at least aligned if not integrated. Moreover, Argyris and Schön (1996) examined how culture shapes, supports, or inhibits the learning of individuals, groups, and organizations. They argued that organizational learning occurs when organizations challenge and transform dysfunctional prior assumptions and beliefs. They adopted a social action perspective in which the individual acts as an agent of the collective mind-set (the culturally embedded knowledge of the organization) and by changing the mental models of key individuals, the organizational mind-set is changed.

Watkins and Marsick's (1996) learning organization model also employs a cultural perspective of organizational learning in the traditions of Schein (1996) and Argyris and Schön (1996). Their model emphasizes diagnosis over prescription, culture over strategy, building infrastructure and capacities over one-off events or training programs and organization-wide, organization-deep changes over an exclusive focus on what leaders need to do. A learning organization is one that has an enhanced capacity to learn and to transform (Watkins & Marsick, 1993). Central to the culture is that it empowers people to enact a collective vision and learning to anticipate future needs by scanning the

environment and making systemic connections between the organization and its environment. Leadership is transformed as well. A learning culture provides leadership for learning through leaders who facilitate the development of their employees and engage in learning themselves (Watkins & Marsick, 1993; 1996). Organizations structured to promote continuous learning have a culture that facilitates and encourages dialogue and inquiry at all levels, aligning corporate strategy with learning (Ben-Hur, Jaworski & Gray, 2015). Systems are in place to capture suggestions for change and lessons learned. The culture emphasizes team learning and a spirit of collaboration in order to promote cross-unit learning and provides an infrastructure rich with resources and tools for individuals to engage in formal and especially informal learning. This study affirms Driscoll's (2005, p. 9) definition of learning "as a persisting change in human performance or performance potential".

2.2.3 A focus on informal learning

Marsick & Watkins (1990) defined informal and incidental learning as learning outside of formally structured, institutionally sponsored, classroom-based activities. Informal learning can be deliberately encouraged by an organization or it can take place despite an environment not highly conducive to learning. Incidental learning, a subcategory of informal learning on the other hand, almost always takes place although people are not always conscious of it (Marsick & Watkins, 1990). Kim and Marsick (2013) also support this relationship. Nurmala (2014) found that simply offering informal learning opportunities correlated with five of the seven dimensions of a learning organization, but participating in formal learning did not correlate significantly with any of them. Instead, having informal and incidental learning opportunities available and participating in them correlated highly with all seven dimensions of a learning organization.

2.3 Creativity and innovation in organizations

Aside from organizational learning, creativity emerges as one of the most important sources of sustained competitive advantage for organizations (Amabile, Conti, Coon, Lazenby & Herron, 1996). It is indicated that a lack of creativity on all levels can seriously undermine an organization's competitiveness (House, 2004). In order to survive, adapt, and gain competitive advantage, organizations need to unleash their employees' innate creative potential (Amabile, 1996; Nonaka 1991; Oldham, 2002). Employees' creative ideas can be used as building blocks for organizational learning, as well as innovation, change, and competitiveness (Amabile et al., 1996; Woodman, Sawyer & Griffin, 1993; Zhou & George, 2003). Creativity has been conceived of as the generation of novel and useful ideas. Whereas innovation has generally been argued to be both the production of creative ideas as the first stage, and their implementation as the second stage (Amabile & Pratt, 2016). This leads to possible confusion regarding the levels of analysis. As Henderson notes, "most people will mistakenly use them interchangeably" (Henderson, as cited in Hulpke, 2019).

Creativity is an individual level factor and is argued to involve primarily intra-individual cognitive processes. Consequently, innovation mainly represents inter-individual social processes in the workplace (Rank, Pace & Frese, 2004). In essence, since creativity centers on idea generation and innovation emphasizes idea implementation, creativity is often seen as the first step of innovation (Amabile, 1996; Hulpke, 2019). Yet, on the other hand, some authors argue that creativity also occurs in other stages of the innovation process, suggesting a cyclical, recursive process of idea generation and implementation (Paulus & Yang, 2002). Empirical support for this

suggestion comes from several studies showing that the innovation process as it unfolds over time is often messy and reiterative, sometimes involving two steps forward for one step backwards plus several side steps (Van de Ven, Angle, & Poole, 1989).

2.3.1 Barriers and success factors

This literature review reaffirms Anderson, Potočnik and Zhou's, (2014, p. 11) comment that: "Future efforts toward theorizing should hence aim to develop more integrative frameworks which could encourage more bold multilevel designs to explore factors implicated in both creativity and innovation across multiple levels of analyses." The following is a short summary of research pertaining to each factor relevant to the multilevel scope of this study and synthesizes research from several reviews (Anderson et al., 2014; Zennouche, Zhang & Wang, 2014). According to Anderson et al. (2014), the theoretical backgrounds included in their review are major frameworks in the field of creativity and innovation in the workplace. They add that some have received more empirical support than others, but they all emphasize the role of different determinants of either idea generation or the implementation of ideas. Perhaps the major omission of these frameworks is that each one of them mainly centers either on the first step (idea generation) or on the second step of the innovation process (idea implementation). Some of the studies from this review are included below. Moreover, Zennouche, Zhang and Wang's (2014) study summarized the factors that can either foster or hinder innovation at the individual, group and organizational level. This was done by undertaking an exhaustive content analysis on all innovation studies published between 2000 and 2012 in the top rated scientific journals of management. The review indicated the main influencing factors at the individual level were: *personality, motivation and cognition ability*; the group level factors were: *structure, climate, leadership and task characteristics*; and influencing factors at the organizational level were: *structure, culture, strategy and resources*.

2.3.1.1 Individual level factors

Motivation. The motivational state is arguably one of the most important individual factors related to creativity (Amabile & Pratt, 2016; Woodman et al., 1993; Mumford, Scott, Gaddis & Strange, 2002; Prabhu, Sutton & Sauser, 2008). Amabile's (1996) original componential theory of creativity model suggests how and where individual skills and motivation affect the progress of the innovation process. It was further modified into four components necessary for an individual to produce creative work (Amabile & Pratt, 2016). Three intra-individual components– domain-relevant skills, creativity-relevant processes, and intrinsic task motivation. The fourth component adds the social environment in which the individual is working, carrying implications for the work environments created by managers.

Moreover, based on their extensive field study, Amabile and Kramer (2011) illustrate how simply making progress, even seemingly minor steps forward or 'small wins'- has the most prominent positive effect on positive inner work life (emotions, perceptions, and motivation). Their study noted that what mattered most in any work environment, no matter the worker's basic personality or position in the company, "*of all the positive events that influence inner work life, the single most powerful is progress in meaningful work*" (Amabile & Kramer, 2011, p 76). Conversely, of all the negative events, they found that the single most powerful is the opposite of progress – setbacks at work'. In the same vein, Kenneth Thomas in his book, *What Really Drives Employee Engagement* (2009), defines intrinsic motivation as "a sense of meaningfulness and of progress" that will lead the employee to establish that emotional connection without

depending on external factors mainly as a result of their strong intrinsic motivation that often takes them through otherwise challenging times. Work engagement is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli & Bakker, 2010).

That being said, the results are mixed on whether positive emotions really cause changes in creativity. Early research shows positive affective states lead to better creative problem solving (Isen, Daubman & Nowicki, 1987). On the other hand, George and Zhou (2002) found that under certain conditions (such as high rewards, or recognition), negative affect was positively related with creativity. Others yet found that creativity was facilitated by emotional ambivalence; the simultaneous experience of positive and negative emotions (Fong, 2006; George & Zhou, 2007). Additionally, George and Zhou (2007) reported that creativity was higher when supervisors built a supportive environment by providing developmental feedback, instilling trust or provided interactional justice.

Personality. At the scale of the individual, certain factors pertaining to the personality of an individual can be seen to enhance the pursuit of innovation and creativity. Feist and Gorman (1998) identified a common pattern for the creative personality, which was characterized by openness, flexibility, self-confidence, high self-efficacy and a high need for autonomy. In the same vein, Madjar, Oldham, and Pratt (2002) investigated how creative personality traits were related to creativity. These studies are noteworthy because they showed under what contextual conditions employees with fewer creative personality traits exhibited greater creativity. This suggests that managers can in fact nurture and promote creativity in employees who are not naturally predisposed to be creative. Research suggests that openness enhances an individual's intrinsic motivation towards novelty and therefore works in a multiplicative way to produce innovation (Batey & Furnham, 2006; King et al., 1996;). Based on their empirical study, Batey, Chamorro-Premuzic and Furnham (2010) argued that Big Five personality traits (especially openness to experience) predict creativity better than measures of cognitive ability. Openness to experience might not directly cause creativity, but it serves as a "catalyst" for the expression and exploration of creative ideas and activities and is mediated by contextual factors like trust (Jassawalla & Sashittal, 1998).

Cognition. Research exploring the association between innovation and cognition, (Amabile et al., 1983; Woodman et al., 1993) found that creative and innovative performance is influenced by cognitive ability and style factors, since they require knowledge and expertise, however, expertise does not itself necessarily lead to creative excellence. According to Woodman et al., (1993) divergent thinking (the ability to combine knowledge elements from diverse sources), is best combined with convergent thinking (the ability to focus on and select the best solution to a specific problem). Individuals may also have different goal orientations (i.e., self-development beliefs which serve as motivational mechanisms that influence how employees act in achievement situations. A learning goal orientation (as opposed to a performance goal orientation) emphasizes personal development of competence. Hirst, Van Knippenberg, and Zhou (2009) found that learning orientation had a positive main effect on creativity and this result was replicated by Gong, Huang, and Farh (2009).

2.3.1.2 Team level factors

Structure. Over the last decades, the heterogeneous composition of work groups has been recognized at generating innovation outcomes, because of stimulation of divergent thinking in teams in which members have diverse skill sets, knowledge and backgrounds (Paulus and Yang, 2000). Several literature reviews have collated the critical success factors for cross-functional teamwork (Holland, Gaston & Gomes, 2000; McDonough, 2000), which provides some consensus that the effective implementation of cross-functional teams is critical to new product success (Holland et al., 2000). Product innovation is often characterized as a process by which a firm transforms knowledge embedded in cross-functional teams into new products (Madhavan & Grover, 1998).

Climate. Several factors have been linked to innovation and various aspects of the psychological atmosphere in a team and the surrounding organizational environment. Edmondson (1999) defined psychological safety as “a sense of confidence that the team will not embarrass, reject or punish someone for speaking up,” and adds that it “describes a team climate characterized by interpersonal trust and mutual respect in which people are comfortable being themselves”. This is complemented by Van de Ven and Poole (1989) who went on to discuss the importance of information flows in the organization. Innovation performance is influenced by open communication, such as sharing uncertain and provisional information (Hauptmann & Hirji, 1996). This makes team members feel that they can contribute their views on particular ideas without fear of reprisal (Anderson & West, 1998; Bain, Mann & Pirola-Merlo, 2001). Team cohesion is the outcome of good internal communication (Pinto, Pinto & Prescott, 1993) and is highlighted as a binding force (Guzzo & Shea, 1992), and a predictor of R&D project quality and budget/schedule performance over time (Keller, 1986). In contrast, it is argued that that high levels of cross-functional cooperation/cohesion are not or are negatively associated with new product novelty (Subin & Workman, 2004). Similarly, a study by Ayers, Dahlstrom and Skinner (1997) found that the desire for harmonious relationships could suppress diverging views.

Leadership. Leadership style is perceived to be an important individual attribute that influences innovation. Organizational scholars (McDonough, 2000; Mumford et al., 2002; Shalley & Gilson, 2004) believe that leaders are essential as a facilitator creating the conditions and circumstances needed for creativity and innovation to flourish. Leaders that establish and maintain high quality work relationships with team members can increase individual intrinsic motivation (Lowe, Avolio & Dum Dum, 2015); by creating team heterogeneity (Keller, 2001), facilitating team reflection and problem-solving (Puccio & Keller-Mathers, 2007) and by creating and supporting a positive team climate (Anderson & West, 1998). Additionally, team leadership that focused on enabling the development process but not directly engaging carrying out tasks themselves was associated with higher performance (Ekvall, 1996; Hunter, 2007; McDonough & Leifer, 1986).

Task Characteristics. Accordingly, to extant research, innovation outcomes may also be affected by the design and characteristics of tasks when it comes to building upon the ideas of others (Kohn, Paulus & Choi, 2011) and resolving conceptual gaps in information processing (Cronin & Weingart, 2007). Previous research has also established how multi-tasking, that is to say, discontinuous work on several projects incurs ‘switching costs’ and leads to more errors; taking a toll on productivity (May & Kliegl, 2000; Rubinstein, Evans & Meyer, 2001; Yeung & Monsell, 2003). Moreover, researchers (Hunter, 2007; Shalley & Gilson, 2004) suggest intellectually stimulating and challenging tasks, in contrast to mundane and routine tasks, are thought to be a spur for creative thinking and problem solving.

2.3.1.3 Organizational level factors

Structure. The aspects of organizational structure on innovation include centralization, formalization and complexity of the organization. Several studies suggest that structures that promote centralization and formalization are negatively associated with innovation (Damanpour, 1991). Mumford and his colleagues (2002) found that creativity and innovation appear to occur more naturally in decentralized, organic and flexible, rather than mechanistic and organizational contexts. Other researchers conclude that the NPD process is prone to delays due to increasing the number of tasks required and NPD complexity (Murmah, 1994; Smith & Reinertsen, 1992). Additionally, it is reported that product complexity has a more significant effect on cycle time than does newness (Griffin, 1997). Finally, it can also be an obstacle to diffusing new technological ideas and products within a company (Vandermerwe, 1987). Several lines of evidence suggest cross-functional NPD teams must obtain information and resources from diverse sources inside and outside the organization (Ancona & Caldwell, 1992; Brown & Eisenhardt, 1995). Key to this are the team's skills at boundary management – the process by which teams initiate interactions with, and respond to communications from, other parts of the organization, both vertically and laterally.

Culture. Culture is a powerful element that shapes employees' work enjoyment, work relationships and work processes. Innovation also depends on organizational culture, more specifically, on the degree of organizational support: organizational encouragement of innovation, access to resources and empowerment i.e., employee autonomy (Zennouche et al., 2014). West and Anderson (1996) found that organizational support for innovation was the strongest factor predicting overall innovation. Particularly, innovation performance has consistently been linked to the freedom granted to pursue unique ideas and insights (Ekvall, 1996; Hunter, 2007). Autonomy can empower teams, sending signals of organizational trust that invokes a sense of ownership and control.

Resources. Availability of resources is positively related to innovation since resources are needed to develop new ideas. From an organizational perspective, innovation is often resource intensive. Several researchers (Damanpour, 1991; Mumford et al., 2002; Woodman et al., 1993) have proposed that allocating sufficient resources may be a determining factor for innovativeness.

Strategy. A strategy is an integrated and coordinated set of commitments and actions designed to exploit core competencies and gain a competitive advantage (Burnes, 2004). Strategic renewal requires that organizations explore and learn new ways while concurrently exploiting what they have already learned (March, 1991) and places additional demands on a theory of organizational learning (Crossan, Lane & White, 1999). For example, learning applied to the domain of new product development, tends to focus on the exploration side of the exploration-exploitation tension identified by March. Many have recognized the strategic importance of OL as a means of providing a sustainable competitive advantage (House, 2004; Stata, 1989; Senge, 1990). Yet, few organizational learning frameworks have illustrated the tension between exploration and exploitation that is at the heart of strategic renewal (Crossan et al. (1999). Consequently, Crossan et al. (1999) developed the 4I OL framework as the four processes of-intuiting, interpreting, integrating, and institutionalizing: also linking the individual, group, and organizational levels. To summarize, recognizing and managing the tension between exploration and exploitation are two of the critical challenges of renewal and, hence, become a central requirement in a theory of organizational learning. For renewal to be strategic it should encompass the entire enterprise-not simply the individual or group-and it should recognize that the organization operates in an open system, rather than having a solely internal focus.

2.4 Agile innovation management

Creativity is the basis of innovation management; the end goal is a change in services or business processes. By utilizing innovation management tools, management can trigger and deploy the creative capabilities of the workforce for the continuous development of an organization (Clark, 1980). Nowadays, many methodologies have emerged that are more flexible than existing ones and this is one reason they are collectively called Agile (Maruping, Venkatesh & Agarwal, 2009). Among these emerging methodologies are Design Thinking and Design Sprints. These methodologies, unlike traditional ones, bring the end-user closer to the product development team, whether it is an internal or external customer (Awad, 2005). With this type of methodology, approvals are often made in short periods of time, usually 2 to 4 weeks, resulting in several shorter deliveries that support iteration during its construction until the final product is reached (Chamberlain, Sharp & Maiden, 2006). Among these methodologies are Design Thinking and Design Sprints. In the broadest sense, both are characterized by several key principles: an iterative flow of divergent and convergent thinking all the way until the end, a strong orientation to the needs and desires of customers and users, and prototyping (Baraças Figueiredo Correio & Leme Fleury, 2019).

2.4.1 Design Thinking

Design thinking can be thought of as a methodology for innovation that systematically integrates human, business, and technical factors in creative problem-solving (Reimann & Schilke, 2011). A growing documentation of successful implementation and empirical studies shows its value to help deal with complex design problems by sustaining in-depth learning processes on problem perception and diverse solution paths (Dorst, 2008; Meinel & Leifer, 2014). The fundamental principle underlying design thinking is that design problems and solutions are explored in parallel in consideration of different exogenous stakeholder perspectives, not just the user's, but also the client's, the engineer's, the manufacturer's, the supplier's, etc., that finally decide about the solution's viability (Dorst, 2006; Cross, 2007; Lawson, 2006). It has gradually moved beyond designers' professional domains and has since been applied to various disciplines and fields of innovation in both academia and business (Beckman & Barry, 2007; Brown, 2008; Dunne & Martin, 2006). The Design Sprint was launched in order to help reduce existing problems that have not yet been fully resolved through the use of Design Thinking.

2.4.2 Google Venture Design Sprint

The duration of the activity is the main difference from Design Thinking, a Design Sprint is never more than five days long. Second is its structure. Design Thinking and Agile sprint processes are largely unstructured. Whereas, once tailored to its goals and deliverables a Sprint is scheduled down to the minute, ensuring the most effective use of time. The Google Ventures Design Sprint is modified into five stages and the process was popularized by Jake Knapp in his book *Sprint* (Knapp et al., 2016). Since then, an updated semi-official 2.0 version of the original framework was released by Knapp and Aj&Smart, a product Design and Innovation studio based in Germany (Aj&Smart, n.d). The biggest difference is that the Design Sprint 2.0 was cut to four days and is better optimized to work not only in startups but also in large organizations where executives cannot commit a whole week to the Design Sprint process.

The framework

The four phases, each occurring on a separate day, that make up the Design Sprint 2.0 are: 'Understand', 'Sketch & Decide', 'Prototype', and 'Test'. During the 'Understand' phase the team builds shared knowledge, a shared vocabulary, and explores the problem from all angles. Together the team will map out user journeys for the experience, and then establish clear goals and success metrics. The first part of the second phase (i.e. Sketch) is the individual ideation portion of the sprint, when each team member sketches out eight ideas for how to address the challenge and then narrows these down to one well-articulated idea. In the 'Decide' part the team comes together and reviews the solution sketches, comparing them against the goals. The team might also discuss in detail the sprint challenge questions that they would like answered. 'Prototyping' happens in a day or less and is where the ideas take shape and are threaded together to create a coherent experiment. The real learning occurs during the 'Test' phase, with the entire team observing while users test out their ideas. The greatest benefit of using the sprint is to give teams a shortcut to learning without the high cost of building and the long duration of launching the product (Knapp et al, 2016). While the stages are simple enough, the adaptive expertise required to choose the right inflection points and appropriate next stage is a higher order intellectual activity that requires practice and is learnable (Figure 3). The Design Sprint is commonly visualized as an iterative series of four major stages.

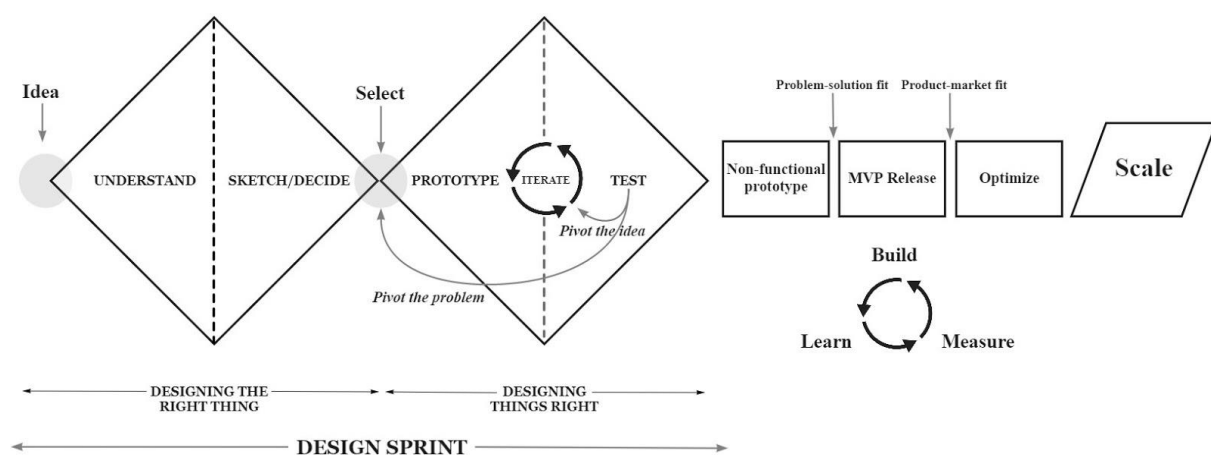


Figure 3.1. Schematic of the Design Sprint's iterative stages

2.5 Integrating Agile with culture change in organisations

The theory part has come back full-circle. The technical and business aspects of Agile innovation reflect the thinking of many pioneering thinkers in the field of organizational learning, such as Argyris and Schon, Schein and Senge. Agile as a concept is focused on responding quickly to change. This leads to the question of whether agile concepts can be applied to change management. According to De Wit and Meyer (2014) change management is concerned with aligning the organization to the environment. The engagement and success of these programmed is usually pretty low when planned and rolled out in a rigid, top-down manner (Alveson & Sveningsson, 2015) with very little experimentation along the way (Senior & Swailes, 2016). Agile practices and methods often have to be customized and tailored to accommodate specific situational factors (Campanelli & Parreiras, 2015; Jovanovic, Mesquida, Mas & Colomo-Palacios, 2020). This drives organizations to challenge and transform dysfunctional prior assumptions and beliefs in order to integrate Agile in the already established company processes.

To this effect, organizational change models such as Kotter's change model (2007) and Hiatt's (2006) ADKAR model have been developed towards unlatching the potentialities of individuals, teams, as well as the organization (Vasudev, 2018). Kotter focuses on senior management making changes rather than any employee or individual making changes, unlike the ADKAR model (Vasudev, 2018). Additionally, Kotter gives a much more in-depth explanation overall of how change should be made. The key advantage of the ADKAR model is in its simplicity, and whether managers follow this model or not; it serves to highlight some vital considerations associated with all major change processes (Vasudev, 2018). It focuses on the individual as the key to any change initiative. ADKAR targets individuals in any group (personal, government, organization) and is a model developed to be applicable to one individual or many individuals. Kotter's model specifically targets what senior leadership needs to do to implement a change (the role of senior management in making an organizational change). While Kotter focuses on leading, not managing, a change, ADKAR does not focus on this as much. This can be said to be one of its limitations as it fails to differentiate between the roles and responsibilities of management and leadership (Vasudev, 2018). Nonetheless, the practical implication of Vasudev's comparative analysis is that both Kotter's and Hiatt's change models have pragmatically been shown to be effective in change implementation. ADKAR can be summarized as follows: Awareness, Desire, Knowledge, Ability and Reinforcement.

3 METHOD

As this study intends to examine learning processes, behavior and culture change in organizations, it was natural to choose a qualitative approach to answer the research question. This chapter will give a presentation of background for the study, the theoretical perspective, the data collection method and the analysis method used to provide a thorough understanding of the study's process.

3.1 Background

I had been exposed to the phenomena of Design Thinking for several years now and was deeply acquainted with its history and uses. Under my bachelor's degree I took a course in Design Thinking, then worked as teaching assistant in the same course. Later on, I applied that knowledge when mentoring other students involved in entrepreneurship. From practical experience I knew some of the pitfalls of the method and wondered if they could be resolved. My first experience with Design Sprints was through an internship in Østlyng & Bjerke, a Trondheim-based consultancy, as part of my master's program in work and organizational psychology at NTNU. During this internship, the student intern group, composed of myself and two classmates, were invited to participate in a Design Sprint together with the senior management. The high degree of structure and the quality of collaborative ideation I was exposed to was similar to design thinking principles I knew well, but the process itself was overall much more efficient. What usually took weeks or months even, was done in two days (excluding the prototyping and testing phase which we were not a part of). My classmates also reported high engagement and feelings of doing 'meaningful work'. The final prototype reflected a vital element of contribution from each member during the creative collaboration process. After that experience I became particularly interested in the different applications and flexible uses of Design Sprints, including its behavioral impact on employees.

3.2 The qualitative method

Hunt (2014) writes that "qualitative methods are used to answer questions about experience, meaning and perspective, most often from the standpoint of the participant". This is achieved by exploring, describing, and interpreting the informants personal and social experiences (Smith, 2015). The method is much more concerned with gathering data material that is rich and in depth, and less about seeking to test hypotheses and generalizable scientific explanations (Howitt, 2013). Thus, it is useful for uncovering central dimensions of phenomena in an exploratory manner when sufficient theoretical basis does not exist (Larkin, 2015). The main argument for conducting an exploratory study is the lack of academic research on the psychological aspects saturating the Design Sprint method as well as its systemic effects on the organization as a whole. The complexity of the case, and the context it is situated in, calls for qualitative data collection because it raises specific issues that are inadequately addressed through quantitative datasets: learning processes, dynamic collaboration, and behavioral impacts on employees. The novelty of these themes in the context of a Design Sprint meant I had little idea what to expect as a researcher. Therefore, in my mind, this 'new way of working' is its own phenomena and deserved a thorough analysis through an exploratory study.

3.3 Data collection

3.3.1 Qualitative interview

I did qualitative research interviews to collect data because it is the most common method to gather qualitative data (Thaagard, 2018) and because it fits the exploratory nature of this study. The qualitative research interview seeks to describe and the meanings of central themes about individual experiences and perspectives on a given set of issues (Kvale & Brinkmann, 2015). The nature of this study was broad and quickly evolving, so it remained important to be flexible to allow for new directions in the research. For this reason, I chose semi-structured interviews as the primary data collection. A semi-structured interview follows a predetermined structure and opening questions are often just a first step and a slightly different line of questioning can emerge so as to allow for the flexibility to follow an interesting thread that may surface during the conversation (Howitt, 2013). In the process of interviewing, I used the provided questions as a guide but often followed up with my own questions and some digressions to gain deeper understanding. According to Markham (1998), straying off the interview structure can feel more relaxed and reassuring, effectively building rapport with the interviewee. The use of neutral probes and triggers made it possible to lead the interview in a loose direction while allowing the respondents to talk informally, often leading to richer and deeper data, compared to highly structured interviews in which the person interviewed acts more as a participant in meaning making than a conduit from which information is retrieved (Dicicco-Bloom & Crabtree, 2006).

3.3.2 Interview guide

As the study used semi-structured interviews, an interview guide had to be designed in advance of the data collection, which formed the basic structure for the interviews (Appendix B). An interview guide can be described as a list of topics and questions that one intends to use during the interview. The themes and questions that are formulated spring from the thesis question that the study wants to investigate. Adapting to the individual interview settings, I asked unprepared follow-up questions when an interesting topic came up and when I wanted the informants to clarify or elaborate the content of their answers (Tjora, 2017).

The first part of the interview guide consisted of a brief introduction about the study, including information about consent and signing of the consent form. The introductory questions addressed the informant's position, work tasks and working day, which were both useful for gaining insight into the informants work context and building rapport at an early stage so the informants felt safe when delving into their personal experiences (Tjora, 2017; Howitt, 2013). A large part of the interview guide's questions focused on Design Sprints, use of the method, creative collaboration and the outcomes. Most of the informants touched upon broader topics like organizational change and culture before I specifically asked them to relate their experiences with Design Sprints to those themes. Finally, I rounded off the interviews by asking if the informant had something to add beyond what had been said and whether he or she had any questions.

3.3.3 Sample

The focus of qualitative research is not the number of interviews, but the information they give (Howitt, 2013). However, the sample must be appropriate and relevant to the research topic (Elo et al., 2014). In my study I focused on innovation managers and leaders who have facilitated Design Sprints workshops in their own workplace or other professional settings (external clients, public sector etc.) I choose to focus on recruiting

informants in leadership positions, as they are more closely linked to the company's core processes. To clarify, interviewing all the myriad roles that make up a design sprint team (designer, engineer, sales representative) could have better cemented the leader's own subjective opinions regarding their employee's work-engagement and creative output during a sprint, but the main caveat would be their ability to relate their experiences to the overall culture of the company. I did purposeful homogenous sampling as the addressed research question is specific to the characteristics of the particular group of interest (Palinkas et al., 2015). This was primarily achieved through the snowball sampling strategy in which existing subjects provided referrals as the informants had traits that are rare to find but are often known to others in the same niche or with the same professional interest. At the end of every interview, I asked for recommendations of other potential informants in their network.

3.3.4 Transcribing the data

All the interviews were conducted and transcribed by me. The recorded interviews followed a literal, i.e., verbatim transcription, with the aim of recording the exact way of how something is said, or as accurately and completely as possible (Braun & Clarke, 2006). This included pauses, repetitions, unfinished sentences, laughter, etc. Particularly emphasized words were marked in italics, short pauses with three dots (e.g., "...") and unfinished words and thoughts ended with "-". Thematic analysis makes a point of transcribing in an accurate and detailed way to avoid overlooking or forgetting valuable information to the analysis process (Braun & Clarke, 2006). The sound recordings were generally of good quality, however certain dialects and muffled sounds in the background made it difficult to hear what the informant said. However, this only applied to a few words in a few interviews, and these were marked as "unintelligible" in the transcription. In line with Tjora's (2017) recommendations Norwegian dialects were normalized to Norwegian Bokmål.

3.4 Data analysis

In the following, I will explain the analysis method that was used, before I explain step by step how the analysis process was performed. In this study, I used thematic analysis based on Braun and Clarke's (2006) guidelines to identify patterns or themes within qualitative data. Braun & Clarke (2006) suggest that it is the first qualitative method that should be learned as "...it provides core skills that will be useful for conducting many other kinds of analysis" (p.78). A further advantage, particularly from the perspective of learning and teaching, is that it is a method rather than a methodology (Braun & Clarke 2006). This means that, unlike many qualitative methodologies, it is not tied to a particular epistemological or theoretical perspective. This makes it a very flexible method from a scientific point of view. It is considered an all-around good choice to recognize and find patterns in large amounts of data (Braun & Clarke, 2006) and when the data is in the form of text, such as interview transcripts (Howitt, 2013).

3.4.1 The analysis process

The study I have done has been a mixture of both inductive and deductive thematic analysis. Due to little existing research and theory on the topic, many open-ended questions were asked to explore the topic. The data analysis followed an interpretative perspective where I developed my theoretical framework and modified the research question in reference to new data. The analysis was therefore an iterative process where I revisited the interviews and looked for overall patterns and how they related to each other. Braun and Clarke's (2006) analysis approach suggests six steps for the analysis

work: (i) Familiarize yourself with the data material, (ii) generate codes, (iii) look for themes, (iv) review the themes, (v) define and name the themes, and finally, (vi) write the report. However, the order of the various steps does not have to be followed in a rigid way but are rather intended to avoid various pitfalls that may occur during the analysis process (Braun & Clarke, 2006). The steps build on each other, and the researcher is encouraged to move back and forth between the different steps to ensure a good analysis (Maxwell, 2005). In my analysis, it has been natural to jump back and forth between the different steps during the analysis, and steps 3-5 were therefore not carried out systematically in this study, but rather as a process in which I moved between the steps to come up with better combinations of codes and themes. As an analysis tool to aid the analysis process, I used NVivo (12), a widely used software in qualitative research, with analysis tools for encoding text, audio, image and video.

(i): Familiarize yourself with the data material. The first step in thematic analysis is getting acquainted with the data material (Braun & Clarke, 2006). By conducting the interviews and transcribing them on my own, I had close proximity to the data material and became well acquainted with the surface-level themes in the data even before the analysis process. After each interview was transcribed I read it in its entirety, and several times again before the analysis. It is important to read through the material several times to make sure you know what kind of information you actually have, rather than what you think you have gathered (Braun & Clarke, 2006).

(ii): Generate codes. The next step in a thematic analysis is to generate codes based on statements from the data material. Codes can be based on a word, a phrase or a whole section that has meaningful content relevant to the study's issue (Braun & Clarke, 2006). The coding can be performed differently depending on whether one follows an inductive or deductive approach. I followed an abductive approach, a blend of both. I developed theories based on the analysis (inductive), at the same time as interpreting data in the light of existing theory (deductive). According to Mason (2018), the strength of such an approach is that it represents a continuous process. This is because you use both analysis of data, draw inspiration from your own theoretical background and in addition develop new perspectives during the analysis. The reason this study is based on an abductive approach, is because my theoretical background from management and business courses and previous theoretical and practical knowledge about Design Thinking and Design Sprints formed some biased thoughts about the results of the analysis. A purely inductive approach would therefore not fit as a starting point. However, I performed an analysis where I did not designate a specific theoretical starting point, other than a broad focus on organizational learning within the context of implementing a new innovation method. At the same time, I did not try to confirm any kind of theory that already exists, which made for a pure deductive approach not the right choice either. With an abductive approach, however, I tied the analysis to previous knowledge on organizational learning and change, and developed novel theories based on the systematic analysis. The choice of either an inductive, deductive or abductive thematic analysis will inform the guidelines for how to encode the data material in the analysis. Within an inductive thematic analysis, it is common to use a semantic way of coding and developing themes; searching for codes and underlying themes that reflect the explicit content of the data material. The researcher is not looking to interpret the code beyond what is expressed directly by informants (Braun & Clarke, 2006). In a deductive analysis, however, it is more common to make use of a latent approach in the search for themes. By a latent approach, one searches for the underlying meaning in the data material that is not explicitly expressed by the informant, which means that the researcher himself must interpret them (Braun & Clarke, 2006). Since this study uses an

abductive approach, it was natural to use a combination of semantic and latent coding and theme development. According to Braun and Clarke (2006) it is okay to make adjustments in the implementation of a thematic analysis as long as the analysis has a good theoretical foundation, and one is consistent throughout the process.

(iii): Look for themes.

After the data material is encoded, the next step will be to search for themes among the established preliminary codes. An organizing theme will identify an even broader component than a code will and is usually made up of several codes. Related codes were therefore grouped and formed the basis for potential themes (Braun & Clarke, 2006). This was done in Nvivo where I went carefully through each code inside the software. The codes that recurred or had relationships with other codes were collated and given a temporary name. As a precaution, before I even started collating the codes into themes, I marked and copied all the initial codes in a new tab in Nvivo to have a default starting point if I had to do the analysis again from scratch.

(iv): Review the themes. The purpose of this step is to reduce many sub-themes to fewer overarching themes (Braun & Clarke, 2006), and involves assessing, interpreting and redefining them (Clarke et al., 2015). To ensure that only relevant codes and themes are included in the results of the analysis, it is important to conduct such a review of the themes after they are identified. In such a review, it is possible to identify themes which are not interdependent or are better merged under other themes (Braun & Clarke, 2006). This was done in the aforementioned Nvivo by a thorough review of the temporary themes. I made sure to keep a copy of the original themes from each review, so that discarded codes and themes were available in case I wanted to do a new one assessment of the themes.

(v): Define and name the themes. Further steps in a thematic analysis will then be to name the themes identified in the previous steps. In practice, the naming began already in step 3 when the search for themes resulted in temporary names to make it possible to separate the groupings from each other. This illustrates how it can be difficult to carry out the steps in a thematic analysis separately and step by step, which supports Maxwell's (2005) advice to move between the steps in the search for the best possible themes on the topic. Organizing themes were then identified according to patterns, similarities and differences in the codes and categories from the initial coding phase. Several themes initially overlapped and were merged or otherwise removed upon closer inspection of the original transcription. The sub-themes were finally organized around a central organizing concept, or global theme. The thematic analysis resulted in the following themes that form the basis for the results part: "Design Sprints for Organizational Learning" and "Agile transition and agile adoption". The first central theme is largely a result of inductive and exploratory coding, while the second is mostly the result of deductive reasoning. I first found out about the ADKAR model after it was mentioned by several informants and realized the data material to be rich in themes that supported an examination of its components. This also led to a re-defining of the thesis question – and including cultural change processes. Ultimately, the analysis is strengthened by considering how OL processes inform culture change, since the OL literature emphasizes a culture conducive to learning. Both themes have sub-themes and underlying supporting factors that are further described in the results section.

(vi): Write the report. The last step in a thematic analysis is to write a report based on the results of the analysis. This happens based on the finally defined the themes mentioned in step 5. The report, or in this case the results part of the thesis, is considered as the "history" of the analysis and shall represent the findings of the study using quotes and interpretations. Here, the reader is referred to which themes and

patterns were found in the analysis and their connection to the issue. It is important to justify the choice of themes well, which is done by selecting quotes that capture the essence of the interpretation (Braun & Clarke, 2006).

3.5 Ethical considerations

In its Code of Ethics, the American Psychological Association, (2010a) warns that confidentiality is one of the main ethical issues in interviews of this nature where sensitive information may be divulged. Several precautions were therefore taken to ensure voluntary participation, informed consent, confidentiality and anonymity (Tjora, 2017). The qualitative nature of this study was also taken into account in regard to ethical issues and ethical approval was granted by the Norwegian Centre for Research Data (NSD), before conducting the interviews (Appendix C).

3.5.1 Informed consent

Informants were initially contacted through email, telephone and LinkedIn. Prior to the interviews, the respondents received information on the study's topic and what I wanted to investigate. This information was then again presented on a consent form that all the respondents were to sign before they participated in the interview (Appendix A). This described the project's purpose, the informants' rights, confidentiality and anonymity in the data collection, as well as the researcher's contact information. To ensure that the informants knew what it meant to participate in the project, the most important points in the information brief were reviewed again at the beginning of each interview. They were informed that the data would be anonymized and that they could withdraw from the study at any time. The informant then signed the consent form, stating that they received the necessary information about the study, and chose to participate on a voluntary basis.

3.5.2 Confidentiality and anonymity

All personal details were anonymized to ensure that the informants identities are kept secret. Furthermore, possible identifying information including company name, product and service were changed to vague descriptions to ensure confidentiality in the transcribed data (Kaiser, 2009). Each informant was also assigned a random number during transcription as an indicator of who said what to be able to identify patterns from the informants' statements. The interview recordings were transferred straight to a password protected memory stick. To ensure the recorded data was kept securely, only the researcher had access to the memory stick and the recorder was wiped clean upon completion of the transcriptions. All further data such as transcriptions were deleted upon completion of this report.

The informants have been randomly assigned codes from (A) to (H) to ensure confidentiality and to distinguish the quotations from each other. In a few examples, to distinguish the different roles, the researcher is marked with (R), while the informants are marked with (I). Three dots in the quotations means that information has been left out, either to maintain anonymity, or due to the information being unrelated to the context. As mentioned in the previous section, I have translated the quotations and tried to ensure they are as close to the original Norwegian as possible. I had to paraphrase in certain instances where Norwegian idioms and expressions frustrated attempts at direct translation. Although using associated English expressions, the gist and the context is the same.

4 FINDINGS

In this section, the results of the analysis process will be presented. The main research question was to investigate how Agile workflows inform cultural change processes. The thematic analysis resulted in 2 central themes, deemed relevant to the initial research aim, respectively answering to the thesis statements sub-questions. The central theme (i) "Design Sprints for Organizational Learning" describes certain conditions inherent to the method that can be seen to influence learning in the pursuit of creativity and innovation. Outcomes are evaluated on the individual, team, and organizational level. The second central theme describes the integration of the multilevel learning processes in relation to managing an (ii) Agile transition and agile adoption.

Table 1.1: Overview over the order of collation.

Central themes	Sub-themes	Enabling factors
Design Sprints for Organizational Learning	Individual level	Informal learning New creative skills and mindsets Work engagement
	Team level	Team climate Cross-functional collaboration Shared sense of purpose
	Organizational level	The efficiency and effectiveness of the NPD process Systems thinking Organizational learning through customer centricity Strategic renewal through widespread utility
Agile transition and agile adoption	Enablement zone	Awareness Desire Knowledge
	Engagement zone	Ability Reinforcement

4.1 Design Sprints for Organizational Learning

4.1.1 Individual level

The Design Sprint is seen to promote the employee's motivation, attitudes, capabilities and interest in creative problem-solving (individual-level factors), leading to learning, understood as a change in performance. This sub-theme describes the following factors:

(i) Informal learning. As the project progresses with the help of facilitators, individual team members apply their existing or newly acquired knowledge to the project tasks. A consensus in all interviews was the notion that the facilitator takes on an active coaching role in the process to help individuals in the team learn-on-the-job. The facilitator has them apply and share their knowledge to get the project tasks accomplished as a team. There seems to be an implied suggestion in the statements below that coaching can deepen the learning process in individuals through constructive feedback and helping to focus their attention on task-accomplishment.

I noticed how it gave me a desire for more the first time I ran it because people wanted to learn more. It was also quite frustrating the first time because it's extremely demanding to facilitate. (...) when they deliver their sketch, I usually look over and then I say "oh, I do not think I fully understand what you mean here and maybe you should do it like that" and so on, so they get some help for that part (G).

(...) whether it helps... those who work with innovation- or those who apply these kinds of processes to refine- to think clearly, "What are we actually seeking to find answers to?". So in a way it trains our brains to be more focused because often there are so many opinions and it gets so spread out- and specially from all possible angles but what's really of utmost importance? And that is something I think this process is very good at. (...) that you design or create a solution that manages to answer those questions. So that has a lot to do with the facilitator. That he has the ability to maintain that structure... keep track of what we are solving, that those questions come up throughout the days we work (H).

One of the main topics across all interviews were the outcomes of the learning experience in terms of purposeful and intentional change occurring within the learner as a consequence of the learning experience. The recognition of the acquisition and the development of new knowledge, attitudes and skills and the application of that knowledge, attitudes and skills in existing or new contexts is a recurring focus in the interviews.

So what I've done - from this learning is that in I've used that method in other idea generation processes. Both the working alone and where you work together and then also the- where you in a way vote on ideas and get elements from other ideas, I think they've been very valuable. Both the crazys 8s and the- yes and also the fact that you prepare for the idea day and find inspiration from other cases. So the idea generation methods that are in the Sprint I like very very much and I have used it in other areas, by itself- just that part (A)

The following statement had to do with participants experiencing methods like drawing, rapid prototyping or the way to collaborate in a team and suggests that individuals have their own individual learning goals.

I think these are all the ways to get feedback. I think that those are aspects that people take with them, when they have a positive experience, especially drawing is a classic one where people just stop drawing eventually in their life (...) So I guess in that sense, it's those little things, small ideas that they can take with them in the future, and hopefully if they've had a positive experience, advocate for- but it all depends on the person what they take from it as well (E).

(ii) New creative skills and mindsets. Starting a workshop culture in teams and companies can be exciting. It can also make some team members feel uncomfortable and out of place with respect to a whole new way of working in teams that takes some time getting used to. This was a focal point for many informants when reflecting over the creative process and the ways Sprints build up the appropriate cognitive and work style conducive to considering problems and solutions in novel and useful ways (e.g. divergent thinking, perceiving novelty). Examples of their responses included:

(...) so my experience is that- people think it's very scary and sort of, "oh, I'm not creative and I- and no, I've never done this before", but that the three-step sketch- or actually there are four steps, with crazy 8s and how you have to scribble for yourself and gather your thoughts and all that stuff - has an insanely good build up that makes them feel safe (G)

Knowledge creation and sharing practices in project environments seem to provide members with the requisite knowledge to fashion creative responses to project demands, develop a sense of self-competence and confidence, shared commitment to the project and its objectives, and openness and flexibility to project work requirements, particularly when immediate performance feedback is available. In the following statement the informant was asked about the different methods in a Sprint that support the creative process:

Oh, like the crazy 8s? Where everyone is sketching. So a big focus on the drawing element and less focus on writing and PowerPoint presentations. Yes, it's classic ideation, it's you got a piece of paper and you got 8 squares, how can we solve this problem? (...) We don't care about quality; we want you to just put in something. Getting a sort-off ideation and getting people comfortable with the idea that they can be creative and not worry about seeming stupid, which I think is a good mindset shift that comes from that phase as well. And quite important, because you need people to be open and trusting and not defensive and worried about not looking like they don't know what they are talking about (E).

(iii) Work engagement. This factor addresses the motivational state in which the creative act is pursued. When asked if the informants noticed behavioral changes in the participants during or after the Design Sprints it emerges throughout all interviews that they have noticed higher than usual levels of engagement and energy in the participants during the Sprint. The collaborative nature of the process seems to lead to higher levels of energy as it breaks with the participants everyday work-life as pointed out by A: *"It creates a lot of energy and it breaks a lot with their usual everyday (work)life, so this in itself is like a vitamin-shot"* and despite experiencing a more intense work week than usual as highlighted by A3 in the following:

First of all, everyone who participates in these sprints say it's crazy fun, it is much more fun to work like that and work together instead of sitting with tasks alone (...) even though you can get quite tired after such a week- heavy in the head and stuff like that- everyone says that it is very exciting and everyone gets this sort of passion and ownership when they talk directly with the customers and see a tangible prototype so quickly that many are wowed, like, "wow, is it possible to get things like this up on its feet so quickly?". So we have done this several times and it's the same feedback throughout (C).

Intrinsic and extrinsic motivation is perceived to affect both individual effort and the overall quality of the innovative endeavors with respect to organizational innovation and performance. A reoccurring focus by the informants is how the fast-paced work process empowers team collaboration through rapid iteration and feedback that creates forward momentum in individuals who are mostly used to working on projects in isolation. This gives credence to the notion that when people are responsible for actions, the perception of importance of that action grows. Whether a task is meaningful, depends a lot on the perception of the person doing the job.

(...) I think the most- I think the biggest thing is that sort of invigoration and that sort off-the focus builds a sort-of passion for the thing you are trying to do. and i don't think that can be underestimated how powerful that can be. (...) Also potentially a little bit dangerous because people will become too married to an idea. Which is something the Design Sprint tries to avoid but if you spend a whole week dedicated to one thing you become sort of attached to it, naturally as a human being, which can be an upside or a downside, it really depends on the wider context (E).

This demonstrates that engagement is intrinsic and individual. It is a voluntary connection to the business and to its purpose; it also seems to include an emotional component to the workplace in order to achieve its desired outcomes. Several informants make the connection between 'small wins' at work and engagement, joy and creativity. Meaningful work can be as simple as providing a valuable product or useful service to a customer. The people doing the work only need to feel that they are contributing to something worthwhile.

Well, I haven't run hundreds of Design Sprints, but I've run enough to see that something happens to people's heads. They think it's fun. So when you also then manage to create results that you can test, and you can get feedback on what you have done. It's just like a small child who gets feedback on a drawing they made or they have made something or other- they have built a castle! If you get feedback on that and say that it's very nice then they'll be happy. It's the same when we get a little older too, when we have been working for two-three days on something and received feedback on whether it is good or not. It is- it gives you energy (B).

4.1.2 Team level

A reoccurring focus in the interviews is the Design Sprints influence on employee creativity by fostering a social environment (group-level factors) that is conducive to learning exemplified in the following factors:

(i) Team climate. Informants emphasized the psychological safety of each participant as the foundation of high-performing teams that are passionate about solving problems together. At the individual level, the informants reflect over the group dynamics with emphasis on one of the core principles of the Design Sprint: Work together, alone. 'Working together, alone' is basically a sequence of individually writing ideas on post-its in silence, explaining it to the group right after, dot voting to choose, and eventually doing some final touches. Although a Design Sprint requires a team to run it, most of the activities are done individually. The informants emphasize this principle removes personal biases, shortcuts the unproductive debate cycle and helps level the playing field where dominant perspectives within the organization tend to dominate group brainstorming. This is mentioned in every interview as one of the defining differences between the working processes in traditional innovation processes and Design Sprints.

(...) you do not want the direction to be defined by the person who is loudest, or most important, or both, in the room. You want people to be relatively autonomous. So like you say, collaborative but sort-off, in isolation. So by having people working in silence at certain points and things like that, you are deliberately creating an atmosphere where everyone is making a good point and no one is bulldozing the conversation or the whole creative outcome- it requires strong moderation... and good understanding of the group for why it's being done that way. So I think you need- everyone needs to have a basic level of buy-in to the concept of the design sprint itself. So they need to understand "ok the reason that I only get this amount of time to speak is that everyone needs to get time to speak" and they need to appreciate that's how things are being done because otherwise they might just reject it and you have chaos (E).

All informants agree that encouraging active listening makes people feel valued and so they can contribute to the team. A good facilitator will strongly encourage that phones are turned off, show understanding by repeating what was said, ask questions, and actively ask for the opinions of those taking a more passive role, as states by: "*But another challenge is that people like talking, for far too long, including yours truly, but... to establish a setting where you listen, produce and do not sell or have opinions, it is a challenge. But it is also critically important for efficiency in the process*" (B). The informants mentioned that the objective of a Design Sprint is to arrive at the best idea, which is likely not achieved in a short time with discussions where dominant perspectives tend to hijack the conversation. The process creates a safe environment, described by the informants as individuals coming to trust each other as a team by being less inclined to keep their opinions to themselves, but being willing to share and make use of uncertain information. As the following points out "(...)

in my experience with such a close-knit and focused group of people, even if you are a bit nervous to begin with, people come out of their shell because (...) you get to know people just by the fact that you're stuck there with them, and the atmosphere should be that you're encouraged to say things without judging. No one is calling you stupid (E).

This kind of language -either encouraging or discouraging- can seem to affect everything from business idea sharing, ideation, or trust. All the informants mention Sprint participants in such diverse groups quickly develop a degree of familiarity and trust

among themselves. The next quote illustrates how team cohesiveness becomes a binding force that emerges as an outcome of good internal communication and co-location and leads to good project outcomes: *"I think that is perhaps the greatest positive with the Sprint, that you learn and that you work together in a dedicated team which - in a way - is the team that comes together to make it happen. And this leads to a lot of energy and passion! And passion is a must to succeed with innovation (A).*

(ii) Cross-functional collaboration. A cross-functional team is a group of people with different functional expertise working toward a common goal and gathers people of all sorts from different departments, divisions, offices, and at times even companies. It seems the facilitator's role is one of crucial importance as a team leader, creating the conditions that allow others to collaborate effectively as a team. Several informants also mentioned that the critical issue regarding facilitation centers on their ability to remain neutral and recognizing they take the ultimate role of guiding, supporting, nurturing and facilitating others through a highly structured process. Sprint participants are given the freedom to discuss, explore, challenge ideas and decide what technologies to pursue and problems to solve as they see fit, but this requires strong moderation from the facilitator.

So I think it's very crucial that you ensure that- if it is the first time it's being done in an organization before it has become a much more established tool, is that you have to lean on the process since we are very used to arguing and discussing, but the Sprint process does not allow for this in the same way. So I had to prepare them a bit for that, like, "okey now you have to be involved", and he- I feel there are high demands on the facilitators in such Sprint processes, to exude a certain confidence and manage to stay calm and follow the structure, because it is a very tight structure (A).

(...) And on internal stuff I also think there is a tendency to beat around the bush a bit too much so that- it's an advantage to remain- at least as a facilitator, in many ways, a neutral facilitator. That you don't bring in a lot of your own stuff into it. That is a prerequisite for success, that you are paving the way for the others (G).

Most of the informants strongly advocate that the appointed facilitator should screen the core participants based on the challenge and their skills, but nonetheless make the case that some team roles in a Sprint are interchangeable, and can be filled by employees from a range of different professional domains in the company, from intern to sales representative. The informants all unanimously clearly agree that a designer should be present, as the prototyping stage hinges on their specific domain-relevant skills. Aside from those two, the one other team role that nearly all informants mention cannot be excluded in a Design Sprint team is the Decider: someone with authority to make decisions. At startups, this is usually the founder or CEO but in bigger companies, it might be the VP, Product Manager, or Team Leader.

The most important one is someone how can make a decision, so a product owner mindset, they need to be fairly decisive and recognize that sometimes its is more important to make a decision than to know it is the right one. Which doesn't mean obviously "don't try to find information" but the decision maker is taking people's thoughts onboard but ultimately, they have to make the decision. That person is quite important, and then I would say the rest of the people should be a mix of skills, of people who are quite invested in what this thing is or is going to be. (...) an early developer, and an early designer and someone

relatively junior and someone accustomed to the business side or something like that, you want a mix of perspectives. Preferably people who can also have some weight when they articulate the value of what we're doing outside the team. So you don't want it all executive stakeholders but you don't want it all super junior people either, you want people who can make things happen after the DS, I think is quite important as well (W5).

In a Design Sprint, lots of decisions have to be made: which problem to solve, which question to answer, or which idea to prototype. Several interviewees mention the general problem with most meetings and brainstorming sessions is that people wait for consensus and try to make decisions that everybody will agree on. In such cases, it is prudent to have someone make a decision and move on. The Decider is taking people's ideas on board but ultimately decides the direction. One might ask, if the Decider can decide whatever he wants, then what is the point of voting? According to one informant, voting gives the Decider inputs to process his or her decision: it shows a good sense of what the team is thinking, but the Decider is the one who understands the problem in depth and knows the most about the feasibility of the proposed solution.

What I'm very concerned about then, is that we must always have the Design Sprint challenge and the Design Sprint questions on the board because it's easy to forget them and you go voting on something you yourself would maybe prefer or like but then we constantly have to go back to that, "Will this concept give us answers if we make a prototype based on this concept? Will this then give us answers to what we want to get answers to". So that I try to- so when I'm 'the chieftain' I try to listen to the input everyone has given and then when I place my vote I always link them up to these design questions and argue for them so that it sounds like a logical articulation, that it's structured (C).

(iii) Shared sense of purpose. The Design Sprints makes use of many different ideation exercises. The informants are in agreement that the Design Sprint emphasizes individuals sharing what they have learned so the team becomes more knowledgeable, where team learning as a behavioral process – represents the cyclical process of seeking out (e.g., seeking feedback), gathering (e.g., asking questions), and discussing and integrating information (e.g., discussing errors).

That is something I almost like the very most with a Sprint because I've usually run a lot of idea generation based on groups sitting together and then you can easily see that the extroverts override the introverts, but in a Design Sprint you get to create for yourself and at the same time you have the opportunity to build on each other's ideas by not only sharing, but that the end result is picking from certain places. So that- yes it is quite tiring and it demands a lot to sit in it, but oh wow! just how much more comes out it! (A).

(...)it is also very fun to see how multidisciplinary comes into play. And building on each other's- that is also an 'aha-experience' for them, that you're picking the best from all the different- they have the same starting point, the same problem, yet solve it in completely different ways! And when we put it together they go like, "wow, that's so cool, let's add that part there, and then it suddenly all fits together (G).

A recurrent focal point in all interviews are the group exchange processes that seem particularly useful for building on ideas to come up with additional novel and useful ideas. There seems to be an inherent flexibility in this where ideas evident in the sketch may be adopted, or they may be forfeited in favor of other ideas as captured in other sketches. Furthermore, features in one sketch may be interwoven with ideas from additional sketches. These kinds of internal processes sprint-teams engage in seem to build shared meaning from existing information while also identifying and filling in gaps in the team's collective knowledge. Different modalities in the approach to creative brainstorming, like sketching and other visual methods included in the process seem to lessen the gap between mutual understanding and thus enhance team creativity. In the following statement, the informant discusses why the proper use of the techniques and materials is imperative.

(...) I've had Sprints where people used line paper and a ballpoint pen and I think he- the one that made the sketch, which was actually the best- no one understood what was what. Because he used a lot of text and he had somehow not followed our instructions and thus people couldn't understand what he was conveying (G).

Most of the informants are very quick at pointing out that Sprints work best with a good quantity of user research data from customer insights, general trends and general understanding of the competitive situation. There appears to be unanimous agreement that a successful Sprint starts off with a clear goal and well-articulated challenge. This helps to focus the team and make the best use of its time. In the following two quotes, informants highlight how the process benefits from a broader understanding of the situation beforehand as every participant owns the vision and converts it into focus and energy for learning.

So I think it's important that- before you do a sprint- in order to derive the greatest benefit from it, we always do a bit of preparation before the sprint where we- as business developers- are the ones who facilitate and lead (it). It's about whether- if a Sprint is to succeed, you must have a fairly defined scope for the challenge and then it's very important to do a fair amount of work collecting customer insights, collecting trends, the competitive situation, so that all that is done in advance. and it's been analyzed in such a way that we then enter the Sprint with a very specific challenge (C).

(...) we had quite a few weeks of prep-work before we started the Sprint so that everyone had a very clear overview of what challenges we had to solve and then (...) once we got to the Sprint itself, it was solved very efficiently since everyone was onboard (A).

4.1.3 Organizational level

The informant's perception of the implementation of Design Sprints in the context of Agile innovation management as it relates to learning on the organizational level are:

(i) The effectiveness and efficiency of the NPD process. When the informants were asked to evaluate the Design Sprint against other methods the most common answer in all the interviews highlighted the increased delivery frequency. According to one informant, working as a group in the same room reduces 'switching costs', and another affirms that "*The people are protected from distractions and they are protected from, maybe seeing other people and other responsibilities for a period of time*"(E). As they all point out, it is one of the major differences compared to the traditional waterfall methods, and although linear processes can also make use of cross-functional teams, it lacks the same forward momentum of an intense time-constrained Sprint week.

(...) you also get to increase the delivery frequency. So that is an extra effect that comes out of that way of working. And I think that has a lot to do with reducing, among other things, something called 'switching costs'. Where you work very focused on an issue and people don't spend a lot of time switching from topic to topic. And therein lies the efficiency in the sense that- yeah so that you constantly use that time in people's calendars, right? You sit there with the whole team so you aren't expected to be shuffling around and trying to find a time, and then it just gets pushed out in time. And it's been proven that it's much more efficient to work in this way- permanently (D)

So in my experience that's the big difference, it's that you compress the time spent in this Design Sprint and everyone is sitting together in one room and you get much more momentum in the challenges and everyone can contribute to each other's areas so you strengthen the overall output. I've experienced this is one of its great strengths- that things happen faster and more efficiently and you get to capitalize on one another's strengths and not to mention, their differences (C).

The informants reflect over inter-functional communication and cooperation in teams and relate it to forward momentum and ultimately, success in the NPD process. The true value of running a sprint seems more evident when dealing with complex high-risk projects, characterized by uncertainty, unknowns and tight deadlines. Moreover, in order to resolve planning and scheduling bottlenecks where the Decider and other stakeholders had to be present the whole week the updated Sprint 2.0 only requires that main executives are involved the first 2 days. In this context, the benefit of having a Decider present is also evident: (...) *It's not unusual that there's so short time that it's difficult to see which direction one should take. Then it's better that one or two just decide something or other and just get on with it, just to set- to set the direction*" (B). This demonstrates it is crucial to include someone who can force a decision and then have the whole team move on in order to fulfill the promises of a Design Sprint in under a week. Another informant working at a consultancy talks of the value of a Design Sprint that did not validate the clients hypotheses. Teams running Design Sprints are able to quickly gain valuable insights from both successes and failures. This immediate feedback can lead to iterating on certain areas of the solution, by adjusting things or parts that are difficult to communicate but can also be of value if feedback suggests the idea should be scrapped altogether because this saves the organization a lot of time and money.

(...) if the test turns out to be really terrible then there's a huge value in this because then you can close some options that you had open. Although - from my experience the client perceives this to be a tad more discouraging than when it goes very well, it's just not quite

as fun- at the same time it's extremely valuable (...) And then she- the actual client, said that they've been spared a lot of work, even though it was a bit sour but- and sometimes there are small Sprints afterwards where we adjust some things, if it was something that was difficult to communicate, and we see that- in some of the Sprints I've done in the public sector it's difficult to emphasize the time aspect in things, in a prototype, when things happen over a long period of time, over years maybe- so that's a difficult thing to communicate in a short test. So then it's like "okay, we may have to clarify it in another way or tweak it a bit so that we better articulate the value it provides (F).

Complexity can also be an obstacle to diffusing new technological ideas and products within a company, but Sprints do not remove uncertainty per se, but are seen to drastically shorten the time needed to get an answer from the customers. Hence, they reduce the risks of making bad decisions as teams arrive at an initial validation much faster. Nonetheless a general sentiment in the interviews was that the Sprints are not necessarily applicable to any challenge. Some innovation efforts do not require a Sprint, like incremental small changes or if you already have a clear product direction and simply want to build it quickly.

Sometimes I think good old-fashioned engineer work is the answer- when it's a sort of optimization problem, but when it's a bit more diffuse- you don't really know how the guests or the customer or the user will react, well then you have to- perhaps then it's better with such a Design Sprint (...) And when it's complex, then the solution is Agile processes, Design Sprint. Draw things out - single out decisions to weed out the complexity. You are working slowly but surely and producing step by step and not just producing over a very long time (...) and then find out that the customer doesn't even like it (B).

(ii) Systems thinking. The interviewees were all in agreement about the value of cross-functional team formation with respect to combining expertise, knowledge and fresh perspectives from across the organization, sometimes even inviting external participants/stakeholders from adjacent industries to cover problematic blind spots. If you are a stakeholder in something, you have an interest or concern in that thing and its continued success. In Sprints, stakeholders are not considered part of the Sprint team but are vital to the success of the team and the product they produce. Typical stakeholders might be the end-users of a product, sponsors responsible for making product funding decisions, sales or implementation engineers and those working on other related/dependent products – anyone with a continued interest in how a product is developing. "(...) say that we have a project that deals with the Nordic region plus Poland, then we'll bring in stakeholders from each of the countries (...) So that everyone gains ownership of the solution" (A). Several informants have had experiences running Sprints that were cut short, where they found their proposed hypothesis was of little practical significance to the end-user or it became apparent that the solution was dependent on other stakeholders, structural conditions or its launch was timing dependent.

(...) but it was interrupted after approximately half a day once we found out that the prerequisite for running the Sprint wasn't present because there were some dependencies to even test the pilot, the pilot we had in mind. And then- this was actually a positive outcome for the client because then they could at the very least, very quickly, save time. (...) So what we found then at that time was that it was no problem making a pilot but it was completely pointless to start a half year long development project and then end up not being able to put it into production because we lack source data and certain services and so on (B).

In addition, it seems organizations running Sprints gain much from 'failing fast'. Sprint challenges are often validated or rejected as teams try to answer the big questions and start evaluating solutions with respect to the firm's internal resources, or external dependencies (partners, suppliers, etc.). When asked at which phase in the sprint a challenge is most often validated or rejected, some answered as early as on the first day, while most informants who also did pre-sprints (preparation beforehand) answered it is on the test day.

(...) and it's really once you've set your goal and you've set the metrics then the next question is- and you do this on the first day- then the next question is, "what will it take to?", "can we?", or "how might we?". What must be true to get this solution out, and really this principle is exactly the same as strategy development. "What will it take? What must be true? What effect-cause-cause-effect connections must we have in place for us to achieve this?". And then you quickly end up with either pivoting your idea and changing it a bit or otherwise you should cancel it if you see that it isn't going to work out. So on the first day, is the answer (B)

The informants are somewhat split on whether or not certain stakeholders (e.g. customers should be involved in the entire process, but if any other external stakeholders are to be involved in the sprint, they should not be allowed to take control of the session and push certain political objectives or product ideas. The following statement highlights that stakeholders' perspectives are important but should not be defining the direction, it should be the internal team that defines the direction.

R: And how does the DS explore problems and solutions in consideration of these different stakeholder perspectives?

I: Primarily through 'Ask the experts', right? Where we drag people in and get their perspectives (...) So i think the premise of that is quite good in that way that, you know, this person might know this aspect of commercial operations, but they are not micromanaging the direction you are going in, they are just coming in giving you information that is useful and then they are going away. So that's how I would say it represents the stakeholders in that way, in a balanced way, where their contributions are necessarily used and where they might have input they can wait until later until- the design sprint's only a week so they can wait." (E)

The above informant highlights how the experts invited in the beginning should ideally just sit and observe on the test day as part of a direct knowledge transfer of the results that the team picks up that day. Otherwise, the team can run the test, observe and collect data and then present it and pass it on to the experts; the external client, or product owner within the organization. In the following quote, the informant discusses the pitfall of including stakeholders in the process too early.

(...) the test was actually on the client, we tested the product and tested the ideas on the client and they didn't understand it. So clearly we miscalculated a bit, they didn't believe the findings or didn't believe in the pilot. But the problem was that we should have said, "good job, go test, go find some customers to test on". So they were let in too early, they looked at the results and then they said, "No we can't imagine that this works", but that's the whole point, it's more like, "let's go to the real customers and test", but this was stopped by that management team and it also meant that the Sprint team, they- I think I told you earlier that in six months time 80% of that sprint team had quit as they realized that the degree of innovation in the management team was equal to zero. So that was

unfortunate. So in order to change that, it's to not let in the experts until we have tested. They can see the test, that's effective (B).

(iii) Organizational learning through customer centrality. When it comes to the customer's 'stake' or perspective, the informants agree Design Sprints are a great way for teams to become more customer-centric by involving customers in the early and late (test-phase) stages of the process. *"And more satisfied customers must be, in a way, the ultimate goal, in the end. But I also believe that, in a way, customers are positive to be part of that process. We have only received positive feedback in the cases where we involve customers- that they are grateful that we want to hear their opinion"* (H). Sprint teams use customer insight right from the start to find areas of opportunity and their input is at the center throughout several iterations in the innovation process. The informants mention actions aimed at improving a process or fixing a problem, often immediately, and by fine-tuning procedures and rules, asking themselves *'are we doing things right?'*

When you do a Design Sprint then you often have to- on the first one, on sprint number 1- you have to define a narrow area and get feedback on it. You have to- as a rule, you won't hit bullseye the first time. There might be some minor adjustments or major adjustments. In addition, you might realize that to make this service even more interesting, you have to add something and you may do so in the next iteration sprint, otherwise just fine-tune any minor adjustments according to the need (A).

This above statement shows that, with respect to the decision-making process, in single-loop learning the organizational structure is accepted, the emphasis being on fixing unwanted variances and errors that can be detected and acted upon by organizational members while maintaining the basic structure. *"So that our brain is built to look for patterns, that's how it manages to handle all the information. So it's sort of trying to find a certain pattern so if we are to be able to think of something novel and not just a slightly better version of today's solution- because that is what comes naturally to all of us, that we want a slightly better version of what we have"* (F). A general sentiment throughout the interviews is that the best way for a customer and supplier to work in an agile way, is to share the risk that uncertainty brings. This is because the customer knows that they don't know exactly what they want. The supplier also knows that the customer does not know exactly what they want. The customer also knows that the supplier knows that, and the supplier knows that the customer knows that the supplier knows that too. The following quote highlights this mismatch;

(...) and if you ask the customer or target groups, that's what they will say they want, 'one that works a little bit better'. But it is not until you have shown them a completely different way to solve it that they say, "wow this was really much better", so if you- in the areas you can... can look a little beyond your own industry or your own challenge, I think this paves the way for a lot of positive input - not least of which inspiration! (F).

Assumptions are questioned in order to raise the quality of the decision-making process and efficacy. Here the informants describe actions designed to improve the solution by doing a root-cause analysis and fixing an underlying influence. This implies asking whether they are doing the right things by building upon insights and patterns to reason why a solution works. The informants are reflexively asking if they are *'doing the right things?'*

And the point is that you don't know, you don't know what works (...) the only thing we know is that we can get feedback from the system outside, or from our surroundings, so something or other will come, it doesn't matter how good or bad it is. You have to get feedback on it so you can collect data. (...) And that is perhaps the big, big difference from previous thinking, where you're in a way, sitting by yourself and contemplating exceptionally good ideas without actually assuring of their quality (B).

The informants' quote below illustrates how Design Sprints can be a great way of introducing project teams to agile practices; to get them to think and work differently while simultaneously focusing their energies on solving actual problems through rapid prototyping and deliveries. Making mistakes along the way is part of the learning process:

R: Have you ever taken part in any Sprints that failed, in a way, that is, you found out that the solution couldn't be deployed and what were the circumstances around that?

I: Yes, so the question is sort of what lies in 'failure'. If 'failure' means that a solution should be well on its way, then the answer is absolutely yes. If the goal is- for example, in one that I ran the goal was just as much to teach people to think differently and work differently (....) but I have never experienced that the test has 'failed', never experienced that a solution has totally hit the wall. On the contrary, I would say 80% its good those times and then 20% are with suggestions on how it can be even better. (G)

(iv) Strategic renewal through widespread utility. According to the informants, the essence of a Sprint is about zeroing in on a problem, bringing in the disciplines you need to create something that a user can give feedback on. A sprint can help leverage data to improve your product, or it can help your team to move faster, particularly if you're stalled or having cyclical conversations. The following informant points out the discrepancy in gaining valuable user feedback if organizations focus too much on mass-analytics alone as it doesn't actually tell you why people are doing things.

(...) Like a thousand people clicking on a website is great, but why are they doing it? You can speak to six people and if four of them are confused about the functionality of the thing, you don't need another hundred people there to tell you that's an issue. You know right there and there, that is an issue! People don't understand this thing. So that principle alone, like that's just the core part of the Design Sprint, that is applicable to any kind of product development at any point of product development. You can have a mature product and analytics are a useful resource but it doesn't- it's not providing the same information as speaking to six real users and getting them to give you verbal feedback, at the time with your interactive product, right then and there. So in that sense it is flexible, even if you are not using the entire Design Sprint (E).

The above informant mentions that the Design Sprint is flexible in the sense that its core principle can be applied to any kind of product development at any point of product development. Regardless of whether or not one uses the entire Sprint or certain parts, the goal should be to get user feedback in real-time as they test the proposed solution. According to the next statement bringing the end-user closer to the product development team can inform wider strategic renewal efforts in the organization.

R: Would you say it's important to have the Agile infrastructure in place or can you somehow just jump into it and maybe have it as a springboard to go in that direction?

I: (...) If you already have an agile structure or organization and work in that way then this can be a way to bring it in to some team then who will work on it further with that insight and will find out how to take it further. Alternatively, it's a way of thinking new and then afterwards find out, "Okay, how are we going to rig ourselves to be able to make this?" (F).

Informants agree across the board that Sprints can be applied to many different focus areas and processes, not just pure product development. There is also mention of a certain willingness to engage in the task of continuously redesigning their business to create advances in both innovation and efficiency. The specific problem-solving patterns in Design Sprints rely on internal standards for evaluating the quality of team outcomes, and asks for developing those standards within the process. As a result, it assigns the team itself strong responsibility for deciding and evaluating how to proceed (what knowledge should be attained, which concepts and designs should be elaborated). Therefore, Sprint process models cannot be more than a framework of suggestions that help teams go through their own learning and creativity processes.

Whereas this can be applied to anything ranging from- so as we talked about from strategy to applying it to communication concepts. So there are quite a few areas you can do it in and not everyone sees this, so then I think you have to become confident in the process, and then you have to be able to translate it over to the challenges you are dealing with (A).

(...) It's really about simply compressing working hours and putting people together in a room and arriving at something tangible that you can use in customer interviews. It's my belief that's, 'the new way of working' (C).

4.2 Agile transition and agile adoption

This central theme describes the journey the organizations in this study have taken and the challenges that have arisen. It involves the internalization of accumulated shared learning that occurs while solving problems of external adaptation and internal integration. Furthermore, the dichotomy between 'Agile' and 'agile' is highlighted. Lowercase 'agile' is a culture and a mindset, while uppercase 'Agile' refers to a method of project management, (e.g., tools and frameworks), which is a good place to start in order to become 'agile'. First, Design Sprints help build *Awareness, Desire* and *Knowledge* about change, described in the sub-theme "Enablement zone", which builds upon the learning processes presented so far, but is now mainly concerned with describing how those processes can be understood in the context of managing and understanding people during change. The last two stages (*Ability* and *Reinforcement*) are categorized under "Engagement zone". This sub-theme illustrates the organization's ability to implement the change and demonstrate performance, then provide the necessary positive reinforcement required to sustain the change and to build a culture and competence around 'being agile'.

4.2.1 Enablement zone

Awareness. Awareness is about the organization understanding the need for change and what they want to achieve as an Agile organization. All the informants work in big established companies which are aware and have come to terms with the fact that maintaining the *status quo* is not an option and that customers are increasingly demanding better services than ever before. Establishing awareness for the change is the pivot on which an individual could choose to participate in the change effort.

Yes, and in the area that I work with, it was quite clear that we can't use the existing methodology that we have used all these past years (...) when you are moving into a completely new area that is new to us, you want to reduce the risk in the pre-implementation phase of projects both in terms of people and time you invest in since there is so much risk of failing. So then we wanted to see how we could carry out this type of project much more leaner with the number of people and the time we spend on it (C).

(...) And they think that things must be done as they must be done and as they have always done them. And it's hard for them to think of anything else (...) What they don't understand, is that software development, for example, is exactly the same, Exactly the same. It's just that software development is intangible, it's just ideas, it's not physical components that are put together (B).

Digital development teams have applied the agile philosophy for some time now, but raising flexible values, principles and practices from the team level up to the company level, on the other hand, requires much more. Multiple informants make the case for communicating the rationale from different angles, preferably with personal stories, as an effective way to create awareness for why the change is needed. Other answers included recommendations for middle-managers to work within their mandated scope and budget and implement agile work-methods within their area of responsibility. Once you have evidence from a real case, one could then present aspects of the Design Sprint process in the form of a video or presentation to anchor it as a valid toolkit and create some excitement around it. The following quote highlights the narrative elements of 'a good story' as the most effective way to spread awareness and create a seedbed in which people's desire to change - to participate and engage - takes root and grows.

(...)I think the best way to express your findings, and I think I touched upon that earlier, is you walk people through the story of what the DS was(...) Pictures of you doing it and things like that. Being able to tell a story around actually having done the DS and show it to people is, i think, one of the better ways to demonstrate that information. (...) and also in that way you are also spreading the methodology and maybe getting people interested in doing it themselves. So it's kinda win-win (E).

Desire. Desire is about building momentum and empowering the people who are best positioned to drive change from the beginning. According to most of the informants, the different organizations they work at have mostly experienced bottom-up pressure where local development teams and middle managers such as agile coaches and product managers around the organization became involved and wanted to implement change. In the following, the informant makes the case that at some point you have to get the management involved as well in order to roll out a new way of working in large organizations because you will meet resistance and that will always be the case when there are changes involved. If you do not have leadership support for the outcomes, it's probably not the best time to sprint. When asked how organizations can overcome the challenge of getting upper management on-board, they most frequently mentioned knowledge sharing forums, as the following informant states:

(...) there can be a barrier in the upper level of the organization to trust in these types of tools and set aside that time. So in an organization I worked for, we had leadership training on the value of Design Sprint. We only had it on one day, sort of "okay what can a design sprint give? So concept validation, customer feedback, why might it be wise to do it in the early stages?" so that you had a greater understanding in the organization for when

is it suitable to use and what is it really, because we experienced that there are some managers a little higher up who naturally may not have been aware of what that tool is versus something else, so you don't fully understand why you should spend so many days and so many people on it while... I believe in today's market situation, experimentation must become a much more important part of the leader's and the organization's DNA, and that is a difficult thing because its perceived, at least for highly qualified and competent people, it is perceived as unsafe, to in a way, have experimentation as part of your toolbox (F).

By pooling the answers from the interviews related to this topic, there seems to be several pathways to obtain that support, which also seem to be more persuasive in combination together. Identifying leaders that are more positive than others and getting their support. "(...) *You sort of get a reference in, at the right level. So it's a political game, of course, as in all large systems*"(H). At the same time, referring to cases and examples of other companies that have done well in this way. Finally, by arguing that you have employees who want to work in this way, illustrating what challenges you have today and how the new way of working can help ease those challenges. The core argument, which all informants seem to agree on is: "(...) *it is also easier to communicate within the organization that this is the right way to go because it is user-driven, not subjective interpretations.*" (A).

Knowledge. Accumulation of shared knowledge means that both the staff and upper management know how to make the desired change happen. As the change builds momentum, the organization gains knowledge on how to change and how to implement new skills and behaviors. Sprint teams gain new knowledge by sharing information and learning new technical skills. The informants reflect over the value of in-house competence at running Design Sprints, as opposed to hiring an external design agency. Their reasoning is that this leads to richer customer insight because the value of doing customer interviews themselves leads to a richer picture of the customer's experience; their thoughts, worries and pain points. One informant noted that: "*there's an extreme value in doing those interviews yourself*" (D). In addition, multiple informants highlight the exorbitant cost of hiring external consultants.

Yes, and I think that- what I want to do now is based on the fact that we have often used external facilitators in the Design Sprint, but I now want us to be trained to be facilitators because this is all about a cultural change in the company as well. The more people who get this methodology under their skin, the more driven you become. You also avoid spending a lot of money on external (facilitators) because it costs a lot of money to run those sprints, but if you learn the techniques and methods then it's not so complicated to do yourself. I would like to do it more in-house too (A).

Furthermore, they are actively engaged in knowledge transfer within their own teams, departments and disseminating the method to other departments. There seems to be a willingness in other employees to learn the method and start facilitating and leading their own projects. "(...) *I train others who are going to do Sprints so in- with clients that I work with now I always take someone with me to train them as facilitators along the way too.*" (F). A common view among the informants is that the Design Sprints can act as a springboard towards agile adoption. The following informant point out how this way of working and solving different problems the organization grapples with, is also part of a wider organizational learning process.

R: (...) Yes, so then it's like- because it's all about changing the culture to change behavior or changing behavior to change the culture?

I: Yes, and it is quite clear that if you are going to change behavior to change the culture, it is important that you get those - that is, these slightly more tangible proofs of why we should do this, "Yes, so what we've outlined here now, it excites our customers and they say that they want us to work crosswise or across or collaborate in another way or something like that". So in order to survive, or to be able to deliver, or to defend our market, or gain competitiveness, we have to think new. "How are we going to do that? Should we tear down some silos or should we work in a different way?" (H).

As the word of mouth spreads, more and more people throughout the organization will understand the benefits, if its practitioners can demonstrate its usefulness, especially when it comes to getting upper management onboard:

Yes, and it's often the top management that are the last ones to realize what it actually means to implement this change. They hear the fine powerpoint presentations, but they do not quite understand the consequences because there are some things you have to sacrifice. Such as, for example, leadership. That doesn't fit so well in an agile world where they can point and decide everything that needs to be done. And that is perhaps one of the objections that takes the longest time to (laughs)... to overcome then (H).

As several informants pointed out, Sprints are a step in the right direction, but it is just a single week activity and cannot be overstated. In this sense, the Design Sprint does not cover the entire value chain, and is described as being a bit unclear on where to take it further and how to iterate and scale on it in the future. A general consensus from the interviews maintains that closing the knowledge/ability gap will require some experimentation.

It's a step in the right direction but it's not like a.... a design sprint isn't going to turn your organization from one thing to another, it's a single one week activity so you can't overstate it. A culture of design sprints can help- there is a lot of work around building a product which is completely outside of the Design Sprint, which is also very important. So I think it's a piece of the puzzle, but yeah I wouldn't want to overstate how much it changes an organization (E)

4.2.2 Engagement zone

Ability. Ability is the implementation of the accumulated knowledge with respect to the need and know-how on how to change. While knowledge and ability can seem similar, there can be a very large gap between the two. *"And that's where the agile comes in, when you actually realize that this is the way we have to work all the time. Because then you have it as your way of working, constantly, right?"* (D). While someone can gain the knowledge about a new skill (the tools needed, the process, the proper technique), it may take much longer for this knowledge to translate into ability in terms of performance. A common view among the informants was that it is only a 'piece of the puzzle', a tool that is part of a broader innovation pipeline. The ability to follow it up is highlighted as essential.

So that- I think there are many who try it and with somewhat varied outcomes. I think they also underestimate the fact that the decider must have the mandate to take it further. I have seen far too many Sprints that are very fun that week and then it's just the team

that had a lot of fun that week and then... it's not lifted further. Because you do not iterate on it, you don't take the input with you and adjust and make a new version. So really having a commitment and an anchor that the Sprint isn't just that week, it should be followed up- is absolutely essential! Because people are so busy and suddenly it slips up a bit. So you invest a lot of money and time in a sprint so it's very stupid if you don't have a plan for how to proceed (G).

There is often a large gap between knowledge and ability. A prerequisite for successful change is that the desire for change must come from the bottom-up and top-down, but it seems useful to start with teams or areas in the organization that have already embraced agile principles and working methods and are naturally enthusiastic about this way of working. When asked

(...) and now we have our hub, we are four plus six others who have taken this course. And what I'm seeing now is that the four of us who are in the innovation gang, now all of us will start up new projects where we will run it on all things (A).

The following statement illustrates how different organizations have different needs and should not shirk away from making the necessary adjustments to fit their organizational uniqueness. Organizations pursuing innovation have many such types of tools in their toolbox in different phases of the development stage that require process tailoring in Agile Adoption.

For very many organizations that have a focus on development and most of them obviously do, it will come in as a, what shall I say? A tool that becomes part of several tools in the development processes. So you become better at identifying when to use it, when not to use it and that it's instituted in a system. That it's a fast and efficient way to learn fast... and thus reduce risk (H).

Another informant adds to that from a different angle; one of the most important values from The Agile Manifesto is precisely to put individuals and people in front of processes and tools.

(...) take care of people. Don't think about resources and man-hours and that bit but the people who will carry out that job and how they can best get it delivered. (...) It is the human view that's very important, that you see your colleagues as people and not resources (F).

Reinforcement. The value of a reinforcement strategy in an organizational change process is all about sustaining the change and building a culture that embraces agile. Teams need the support and training. Meanwhile, upper management must act as ambassadors and themselves comply with agile values and principles. Management should therefore focus on incremental steps designed to direct the company towards an ideal state, through exponential change that comes from a broad desire 'to be' agile; by embracing a "test-and-learn" approach and encouraging self-organizing teams to supplement the change efforts.

And it's then you discover that there are bottlenecks in the system which means that you have a limited number of Design Sprints that you have the capacity to do during a quarter, for example. So that's what I'm trying to tell or communicate. But selling that this is an effective way to produce ideas and test ideas. Then it's really just a matter of running

many of them, preferably one after the other (...) But then the culture in such a system is like "we don't have time". So you can't just run! So at some point you overcome a bump and then the culture becomes agile and it is primed for the Design Sprints" (B).

Trust and autonomy are the most important principles management has to live by for agile values to take root and flourish. "(...) *trust is a key factor in achieving agility.*" (I6). Trust is thus strongly influenced by how the company is run from above. Management must be able to delegate responsibility and ownership out to employees and teams in the organization. This responsibility and autonomy will help to give the teams the self-drive that in turn gives the teams speed and the ability to make quick adjustments based on ongoing customer/user dialogue. The management, for their part, should then be present by contributing their insight and experience, but make sure to have a coaching role rather than a command-and-control style of management.

Set the direction in the way. A strategy that says 'where we are going to', but that doesn't say anything about 'how we are going to'. So in a way you have to let go of control and trust that you have good employees who know which direction to go in. But in a large company like [redacted] you also have to make sure that the strategy which has been set is actually being worked on all the way down in the organization (H).

The 'retrospective' portion of Agile involves discussing and resolving issues which also reinforces and supports agile values permeating throughout the organization. "(...) *So you have 'retrospective', which is an evaluation of the work that has been done, what worked well, what worked poorly, what are we going to do differently in the next sprint?*" (D). A majority of the interviews mention they are doing retrospective and other Agile rituals and ceremonies. For example, planning 2 weeks ahead in the light of findings, metrics and data from the past 2 weeks. The reinforcement strategy will also ensure that teams are not simply copying agile working methods, but that the company as a whole, 'is agile'. As pointed out below, employees need to understand that current practices are unsustainable and could jeopardize the organization's longevity if not changed.

(...) So if you pull off a change in work patterns then that will affect the system and the culture. (...) If you don't train in the new way of your new behavior, and it takes some time to create new behavior, then the first time there's a little stress, you sink down to what you are trained for, that is, what you are used to doing. And then you take out- use the tools you have in that toolbox and then you fix the problem in light of the old way of doing things. And that's why cultural change is so difficult because you tend to use the tools you have that you know best, so even if it's suboptimal for use in the design of the organization or the system, you do what you feel most comfortable with. And then you do something that is suboptimal, maybe optimal right there and then for you and for how you solve the task for yourself, but for the whole system it is suboptimal (B).

The above quote illustrates how training and use of new methods is the tip of the iceberg. In a sense, these are the visible aspects of agile innovation management that are easy to copy, while the rest of the iceberg lies under water, and hidden from the naked eye - the agile values and principles that characterize and sustain an agile culture. Furthermore, it is also in times of crisis, that can certainly happen from time to time, that one tends to fall back into old patterns. The OKR (Objective Key Results) framework is mentioned by several informants as a tool used to create alignment and engagement around measurable goals. The majority agreed that organizations seeking to reinforce agile mind-sets should shift their focus from long-term to short-term accountability.

We are in the process of moving into an agile setting where we do what we call quarterly portfolio investments. We no longer have annual budgets, we have rolling budgets because the world is constantly changing and all that. We wanted to do this before- regardless of COVID or not, it was in the plan, but now it became even clearer that it is wise to think quarter by quarter by quarter. And that means that a week or two before the quarter starts, all product teams get together based on what they learned last quarter and what they see are the challenges of the next quarter. Try to find what gives the best value in the shortest possible time (B).

This shows that frequent feedback enables real-time coaching. Furthermore, it allows managers to place the emphasis on what is most needed from the employee at that moment. Managers should focus on behaviors that will be critical for the future of that workplace and support change objectives.

So if you then come up with a model and apply it to something concrete, then you must be able to actualize it right away. And then, hang on tightly, then you're back to the training principle. You need to go to the gym three times a week and do the exact same things and measure if you get improvements. So that is the key (...) the operational day-to-day is ongoing all the time. So, you have to slipstream yourself into that loop and make practical changes and small improvements in the workflow that they are in. So, there is almost no point in talking theory with them, it's to understand what the challenge is and then say, "Could we manage to make a better decision by doing this and that? Should we plan two weeks at a time? Should we set aside time to plan the team's activities on Monday morning?" "Well... maybe we can try that" ...and so on (B).

5 DISCUSSION

The primary purpose of this study was to investigate how Agile workflows inform cultural change processes. To this end, I will first discuss the enabling factors uncovered in the Design Sprint that trigger learning processes on the individual, team and organizational level of analysis. This is the first part of the discussion chapter, centered around the theme "Design Sprints for Organizational Learning". The second part, centered around the theme "Agile transition and agile adoption" will discuss effects in the context of culture change in relation to factors supporting the transition to Agile workflows and the adoption of agile values and principles. Having looked at both research sub-questions, the third part of the discussion will seek to answer the main research question by presenting two conceptual models that link the discussion of enabling factors in the previous parts into an aggregate and coherent framework.

5.1 Design Sprints for Organizational Learning

This central theme is characterized by the informants' faith and confidence in the Design Sprint process and its outcomes. The methods and considerations of the Design Sprint act as a catalyst for multilevel learning processes.

5.1.1 Individual level

(i) Informal learning. Domain-relevant skills depend on formal and informal education, on the individuals learning from, exposure to, and experience in the domain (Amabile & Pratt, 2016). The informants describe their own learning process and that of other Sprint participants and stages of reflective learning that usually occur incidentally, but that, with coaching, can deepen informal learning. Informal learning, a category that includes incidental learning, is not typically classroom-based or highly structured, and control of learning rests primarily in the hands of the learner (Marsick & Watkins, 1990). Incidental learning is defined as a byproduct of some other activity, such as task accomplishment, interpersonal interaction, or trial-and-error experimentation. It essentially refers to any learning that is unplanned or unintended and develops while engaging in a task or activity and may also arise as a by-product of planned learning. Driscoll (2005, p. 9), defines learning "as a persisting change in human performance or performance potential," adding that the change "must come about as a result of the learner's experience and interaction with the world." The first part of this definition emphasizes learning outcomes in terms of purposeful and intentional change within the learner as a consequence of the learning experience. The second part recognizes that learning is inherently social, and that authentic learning occurs through interaction with the world. According to Boileau (2011, p. 13), "Humans learn when they perceive a need to know, and evidence of learning is in their ability to do something they could not do before." This is evidenced by the informants and other Sprint participants learning new skills and techniques, as well as applying new knowledge in other contexts. The informants mention applying several exercises from the Sprint in other idea generation processes, such as 'sketching', 'looking for inspiration in solutions from a range of industries' and 'voting and merging ideas. In other words, informal and incidental learning is situated in meaningful experiences thereby facilitating the development of new tacit and explicit knowledge. This is different from formal learning where the emphasis is on transfer of

explicit knowledge from instructor to learner (Marsick & Watkins, 1990). It is typically associated with a separation of time and space between the formal learning event and application of the knowledge or skill. Such a scenario usually calls for additional performance support to close the knowledge/ability gap.

Taken together, the Design Sprint's learning by doing approach seems to trigger internalization of learning. It can thus be assumed that informal learning is best situated in workplaces where individuals can make a difference in what and how they learn. Despite these promising results, some questions remain. Informal learning is, by its nature, highly contextual and is affected by the wider culture, structure, processes, practices – that play a key role in enabling or inhibiting the learning process (Watkins, Marsick, Wofford & Ellinger, 2018). Furthermore, informal learning is often implicit or incidental, in which case it is hard to identify or examine in themselves, and not to mention, be perceived accurately in others by the informants. There is value in rendering learning visible so that it can be consciously improved on. In view of this issue, it can be argued that the DS has an orientation towards employing techniques that can turn tacit knowledge explicit. The use of sketches and other visualization techniques drive reflection-in-action and reflection-on-action (Schön, 1983), and is probably a better medium to convey such tacit knowledge, than is language. Sharing through sensemaking in face-to-face interactions might also generate diverse perspectives and new interpretations. Moreover, if learning occurs through interaction with the team, it is further stimulated by the facilitator's expertise and immediate feedback on ideas, drawings, and solutions. In short, tacit knowledge is made visible through collaborative effort.

(ii) New creative skills and mindsets. If the domain-relevant skills constitute the knowledge that an individual applies in conducting a task or solving a problem, then the creativity-relevant skills inform the manner as to how those skills are applied, ultimately influencing the degree of creativity in the response (Amabile, 2016). The informants reported Sprint participants adopting 'new attitudes, mind-sets and behaviours' as part of effective cross-functional team-working. Creativity-relevant skills include appropriate cognitive styles (e.g. divergent thinking, perceiving novelty), effective work styles, and personality traits. These inform the way an individual may perceive, comprehend, navigate, manipulate, and otherwise consider issues and problems in novel and useful ways (Amabile, 1983, 1996; Woodman et al., 1993). Such skills are further influenced by personality traits that support creative exploration such as openness, flexibility, self-confidence, high self-efficacy and a high need for autonomy (Feist & Gorman, 1998; Madjar et al., 2002). Moreover, Jassawalla and Sashittal (1998) examined flexibility and openness to learning and found a link between team members' willingness to change and the degree of cross-functional collaboration achieved. This came up in discussions with the informants with respect to the Design Sprint process building up in a gradual upwards release of participants' creative energies as the sessions progress. As such openness is perhaps the most important personality dimension predicting innovative behavior (Batey & Furnham, 2006). This suggests the inclusion of the right personality types (Madjar et al., 2002) conducive to the Sprint process, preferably employees with a learning goal orientation (Hirst, Van Knippenberg & Zhou, 2009). The informants agree that the process requires a certain tolerance of ambiguity and complexity and a willingness to take risks. Nonetheless, the findings imply that creativity can be generated by employees not only in jobs that are traditionally viewed as requiring creativity, but also in any job and at any level of the organization. It is important to bear in mind the

possibility that a lack of creativity on all levels can seriously undermine an organization's competitiveness (House, 2004).

(iii) Work engagement. The findings of this study are in line with several factors influencing employee engagement that have been identified in the literature review. The Sprint Facilitators in high engagement workplaces create a trustful and challenging environment, in which employees are encouraged to give input and innovative ideas to move the organization forward. This instils trust and steers work engagement positively as employees that are left to work autonomously, will to a certain extent, display self-directed behavior and feel responsible for the choices made (Cardus, 2013) and this focus also builds passion according to several informants. Empowerment has to do with employees wanting to be involved in decisions that affect their work (Sundaray, 2011). Paramount in Amabile's (1996) componential model of creativity is the role of intrinsic motivation. Amabile (1983) and Mumford et al. (2002) found that the personality traits that favor creative outcomes are dependent on a key mediating factor, individual intrinsic motivation. This concept has been defined as a motivational state generated by the individual in reaction to the inherent challenge of a task, rather than to extrinsic factors such as rewards (Amabile, 1983). Prabhu and his colleagues (2008) found that intrinsic motivation completely mediated the personality traits of openness to experience and individual sense of self-efficacy, in relation to creative performance.

Thomas (2009) defines intrinsic motivation as "a sense of meaningfulness and of progress" and in the same vein, Amabile and Kramer (2011) postulate that making progress, however small, is the greatest indicator of performance and satisfaction and improves not only the inner work lives of their employees, but also the organization's long-term performance, which enhances inner work life even more, creating an upward spiral of creativity, engagement, and performance. Both definitions include the employee establishing an emotional connection to their work and the 'dual-tuning' theorizing that positive mood enhances cognitive flexibility in a creative work involvement and negative mood sustains effort (Fong, 2006; George & Zhou, 2007) seems to be the closest match to the informant's description of the Design Sprint's outcome on employee work engagement. This is evident in the informants' earlier observations, suggesting that the Sprint participants experiencing 'small wins' in several iterative feedback loops is particularly powerful. Sprint participants are perceived to exhibit markedly higher passion and engagement at work during a Sprint, even despite, or perhaps in spite of them doing it for the first time and being worn-out by the intensity.

It is harder to make out whether this leads to behavioral change outside the confines of a Sprint. It takes time and discipline to establish new habits, but the actions that set-in motion the positive feedback loop between progress and inner work during a Sprint should not be underestimated according to the several informants. This is further cemented by the informants' comments that most of the people participating in Sprints wish to do them again. Taken together, the findings suggest that truly engaged Sprint participants are primarily intrinsically motivated by the interest, enjoyment, satisfaction, and challenge of the work itself - not (just) extrinsic factors, as outlined by Amabile (1983). To summarize, the foundation of a Sprint participant's engagement is autonomy, trust, and performance (e.g., progress in meaningful work) and is mediated by positive and negative emotional states.

5.1.2 Team level

(i) Team climate. The findings mirror a great multitude of the literature on group psychosocial factors. Psychological safety is the foundation of high-performing teams

(Edmondson, 1999; Anderson & West, 1998; Bain et al., 2001) and affects many facets of a work environment, especially teams and individual performance. It is also worth noting that the work environment has effects on domain-relevant skills and creativity-relevant processes, and particularly on intrinsic motivation (Amabile & Pratt, 2016). You need a team to run Design Sprint, but a Sprint is not (mainly) about teamwork. Most of the activities during a sprint is individual work: brainstorming, sketching, even voting for ideas (using sticky notes and stickers). Working in silence and then voting is made up to avoid the problem of the loudest voice winning in a discussion. What is more, people are encouraged to perform deep individual work in a Design Sprint. Silence allows team members to concentrate and think, therefore "squeeze" the best ideas out of their brains (Knapp et al., 2016). In the wider research on cross-functional teams, the degree of information exchange and internal communication was a predictor of innovation performance (Van de Ven & Poole, 1989). Other research on effective cross-functional collaboration highlights team cohesiveness as a binding force (Guzzo & Shea, 1992) and the best predictor of R&D project quality and budget/schedule performance over time (Keller, 1986). Cohesiveness can be viewed as an outcome of good internal communication and as a mediating factor between inputs such as co-location and project outcomes (Pinto et al., 1993).

In this context, the way ideas are appraised or rejected during a sprint and the use of language goes a long way towards supporting or dissuading other people from offering up ideas of their own. In a psychologically safe environment, individuals come 'out of their shell' and debate ideas without fear of judgment, and people are less likely to blame each other for failures. The extent to which team members release and use incomplete, uncertain and/or ambiguous information has been shown to be positively linked to product development project outcomes (Hauptmann & Hirji, 1996). Sharing provisional information, being prepared to act upon it, and treating decisions as tentative seems to render Sprint teams more flexible in responding to problems. The findings of this study are in accord with Pinto and Pinto's (1990) hypothesis that 'high trusters' are often willing to confront interpersonal issues and therefore spend less time dealing with them and more time on productive, project-related activity. Additionally, this validates previous research that creative output is mediated by a supportive environment (Amabile & Pratt, 2016) in which supervisors provided developmental feedback, instilled trust or provided interactional justice (George & Zhou, 2007).

(ii) Cross-functional collaboration. A number of researchers have suggested that team leaders, senior managers, and champions provide enabling support to cross-functional teams in achieving success (McDonough, 2000; Mumford et al., 2002; Shalley & Gilson, 2004). Amongst these, team leadership is noted as the most frequently mentioned enabler (McDonough, 2000). This study defines the facilitator role as team leader, as this is in line with research that strongly advocates that team leaders do not take direct action to precipitate project success, but rather operate indirectly as enablers of the NPD process by increasing intrinsic motivation (Lowe et al., 2015), designing intellectually stimulating and challenging tasks (Shalley & Gillson, 2004), creating team heterogeneity (Keller, 2001), facilitating team reflection and problem-solving (Puccio & Keller-Mathers, 2007) and by creating and supporting a positive team climate (Anderson & West, 1998). Furthermore, the Sprint facilitator engages in a participatory style of leadership, by virtue of ceding responsibility to team members. That is to say, empowering them by delineating task boundaries for the team and then allowing them to perform within those boundaries without specifying how the work itself is carried out (Hunter, 2007; McDonough & Leifer, 1986). Ekvall (1996) found that team and team

member autonomy were the strongest predictors of innovation performance. At the same time, the Decider takes on an superordinate executive role that is crucial with respect to aligning solutions according to internal capability and resources. By the time the decider picks their choice, everybody will have contributed both in terms of their input and their vote. This is done to curb endless discussions and a boiled down compromise.

A majority of the informants made the point of including a mix of perspectives in the Sprint. The problem-solving literature does indeed suggest that the domain knowledge of experts may limit their ability to generate more radically novel ideas (Dane, 2010; Wiley, 1998). On the other hand, team structure from the angle of high group diversity comes with the risk of low cohesion, which may lower innovation capacity, but according to Jassawalla and Sashittal (1998) trust can act as a strong cohesive force, increasing inter-functional collaboration. Trust was associated with respect for other team members' competence and open-mindedness. Trusting participants were more prepared to share information, admit uncertainty and seek help and take the risk of suggesting creative ideas. High levels of trust 'created a climate of inclusion', where people from other functions were viewed as insiders. One negative aspect of team cohesiveness may be a particular danger for new product development teams. Groupthink - the psychological drive for consensus might suppress dissent and appraisal of ideas in highly cohesive decision-making groups (Subin & Workman, 2004). Adding to this, Ayers et al. (1997) suggest that the 'too good friends' syndrome allows the desire for harmonious relationships to suppress the expression of important divergent viewpoints. The Design Sprint seeks to resolve this by facilitating a safe team climate and focusing on individual work followed by anonymous voting, but this issue is again highlighted by several informants with respect to taking on the role of Sprint facilitator in their own departments. One way to deal with this internally (where possible) is to have the facilitators run Sprints for different departments/teams.

(iii) Shared sense of purpose. The reported findings in this study also reflect the work of previous scholars that also stress the importance of shared vision and a unified sense of purpose. It is claimed a shared vision informs the successful integration of individual thoughts and actions to achieve project objectives (e.g., McDonough, 2000; Senge, 1990). Most informants echoed that a good quantity of user research data is a crucial prerequisite of a successful Sprint. The benefit is greater when teams enter the sprint prepared by doing some work beforehand and analyzing it in such a way that teams can enter the sprint with a broad but well-defined challenge. Sprint goals have the effect of not only telling people what to do, but also what not to do. In this way, creating a shared vision in a sprint, focuses the team's efforts. This accomplishes two objectives. On one hand, they provide a common frame of reference or focal point for the team's efforts, while also constraining their efforts within boundaries, keeping the members oriented towards a common task outcome. Providing teams with clear, consistent goals is also a way to create boundaries for the project team so that it is not continually redefining its direction. There is considerable evidence that group goals are a critical success factor for cross functional teamwork in new product development performance (Guzzo & Shea, 1992; McDonough, 2000). Pinto et al. (1993) demonstrated that superordinate goals improve cooperation in cross-functional teams, as well as a strong direct impact on project outcomes. These were defined as 'goals that are urgent and compelling for all groups involved, but whose attainment requires the resources and efforts of more than one group'. Groups working towards specific, difficult goals consistently perform better than those working without a specific goal, regardless of task, setting, and type of goal (Weldon & Weingart 1993).

Most informants are aware that conceptual gaps can inhibit the creative process as well as optimal group decision-making in functionally and cognitively diverse groups (Cronin & Weingart, 2007; Kohn et al., 2011) arising from difficulties in understanding each other's ideas and building on them. Therefore, the proper use of the techniques and materials is imperative. Recent research highlighted the importance of the elaboration processes for the effective realization of creative potential in diverse groups (van Knippenberg, 2017; Paulus, Baruah & Kenworthy, 2018; Coursey, Gertner, Williams, Kenworthy, Paulus & Doholi, 2019). As observed in the interviews, the Sprint makes use of many drawing and visualization exercises towards achieving mutual understanding. Elaboration can be defined as "the exchange of information and perspectives, individual-level processing of the information and perspectives, the process of feeding back the results of this individual-level processing into the group, and discussion and integration of its implications" (van Knippenberg et al., 2004, p. 1011). In other words, the extent to which Sprint participants elaborate on the shared ideas and make them more novel.

5.1.3 Organizational level

(i) The efficiency and effectiveness of the NPD process. Early research suggests that centralization and formalization are detrimental for innovation as it restricts information flow and communication (Damanpour, 1991). Conversely, decentralization gives rise to greater participation, allowing more viewpoints to be considered during idea generation (Mumford et al., 2002). Evident in all interviews is the perception that traditional project management often takes longer to complete because it stretches out in time, as employees usually work on several projects in parallel, and not necessarily in the same room. Most of the informants say this relates to 'switching costs' between tasks. There has been a lot of research on how doing more than one task at a time takes a toll on productivity, and leads to more errors (May & Kliegl, 2000; Rubinstein, Evans, and Meyer, 2001; Yeung & Monsell, 2003;). If the tasks are complex then these time and error penalties increase. The speed of NPD can be delayed due to difficulty in communicating and transferring ideas and the learning that is required. According to Vandermerwe (1987), the difficulty in transmitting observable benefits is the most frequently mentioned barrier to new idea entry. This becomes particularly difficult when ideas are complex and cannot be tested. Accordingly, promising ideas are likely to be blocked or, at least, delayed due to complexity. Consistent with the literature, this study broadly falls in line with the work of other researchers with respect to NPD complexity. The task characteristics of the Design Sprint arguably remove barriers to communicating, transferring ideas and quickly learning from mistakes.

Efficiency is doing things the right way, while effectiveness is doing the right things. In other words, the reported findings are consistent with research looking at how inter-functional communication and cooperation strongly correlates with success (Souder, 1989). Sporadic communication among team members is associated with failed products while team members involved in successful products exhibited consistently high communication across many topics (Dougherty, 1990). Jassawalla and Sashittal (1998) reported a strong association between effective cross functional collaboration and 'transparency' – 'a condition of high awareness achieved as a result of intense communication. The findings suggest that Sprints fast-paced work schedule creates the conditions of 'intense communication' by empowering team collaboration through rapid iteration and feedback that creates forward momentum in individuals who are mostly used to working on projects in isolation. This is in line with the aforementioned research stressing that high-quality teams interact and communicate well and often. In the examples, the Sprint facilitators deliberately organize and direct the "dialectics" in their

teams to ensure timely and adequate decision making. The next paragraph will discuss how systems thinking perspectives save the organization time and money.

(ii) Systems thinking: It seems evident that Sprints include a strategic element that seeks to build internal alignment across disciplines and teams, according to what is actually feasible. As mentioned in the literature review, the degree of project complexity determines the effort needed (Murmman, 1994; Smith & Reinertsen, 1992) and thus influences the length of the development cycle (Griffin, 1997). The informants observe that combining the information of related product elements, internal cooperation amongst functional units and reflective feedback and learning has an effect. Even projects with a high number of new parts can take significantly less time and resources to complete. Functional diversity in teams increases the amount and variety of information. This helps project members understand the design process more quickly and more fully from a variety of perspectives. In addition, this can help catch downstream problems such as technical difficulties or market mismatches before they happen, when these issues are easier to fix.

The external processes in high-performing teams are also highlighted as another critical success factor. In accord with the findings, a substantial thread of innovation literature focuses on this topic (Brown and Eisenhardt 1995). High-performing teams carried out more external activity and did so with a purposeful strategy to secure needed resources and information (Ancona & Caldwell, 1992), while teams that were isolated, passive or overly technical were far less successful. Sprint teams that challenge their assumptions can therefore gain clarity before building or decide not to build at all. Therefore, it is argued that organizations running Sprints gain much from applying a system thinking approach to complex challenges with many uncertainties and unknowns. 'Failing fast' saves the company both time and money, avoiding huge pivots in the middle of a project and working in the right direction from the beginning.

In this context, it is encouraging that the Sprint employs a holistic systems approach, which is built into it through the creative process, and by virtue of having a people-centered approach. Dealing with a design problem's complexity is a matter of negotiation between many different and probably conflicting perspectives. The DS process can thus be regarded as a "reflective conversation with the situation" (Schön, 1983, 1992). To conclude, Sprints seemingly support all activities relevant for accessing the diverse knowledge and multiple perspectives that reside in the different stakeholders in order to use them for inspiration. That is to say, it facilitates the creative transformation of the knowledge base into new concepts by linking people's needs; what is technologically feasible; and what is economically viable as a business.

(iii) Organizational learning through customer centricity.

The informants express a general rule; without customers or the potential to attract customers, a company is not viable, as customers are very much the reason an organization is in business. According to several informants, this is a major positive effect on the organizational level and illustrates how customer satisfaction and retention affects their bottom-line. It seems that it is hardly ever the case that 'the customer does not

know what they want'. They do – they just do not know 'exactly' what they want. And in the unlikely event that they really do not know what they want, no one should be working on delivering it. The customer typically changes their mind during a project because they do not have the same in-depth insight at the start, but the customer is the one who ultimately decides whether the team is on the right track or not and whether the solution aligns with the initial Sprint goals. The response to new evidence can lead to incremental improvement (single-loop learning) or the modification of goals (double-loop learning). Single-loop learning refers to constantly adjusting actions until desired results are achieved. It is used when the current goals, values and strategies are sound, not questionable and the emphasis is on techniques and their effectiveness. Reflection and inquiry involves "stop-and-think" activity. In the examples described by the informants, when actions yield unexpected consequences, the teams workflow activity is temporarily halted as they think about the phenomenon at hand and confront it with previous experiences. A core principle of the DS is to experiment with new actions that change the situation and generate new understanding (e.g., Argyris & Schön, 1996; Schön, 1983).

Furthermore, a common pattern, discussed in every interview, is the importance of questioning fundamental underlying assumptions as result of customer feedback. This is double-loop learning, where after identifying errors, the organizational rules, policies and objectives are reexamined and modified, and the emphasis is on learning and reviewing previous situations. Senge (1990) maintains that failure often provides the richest learning experience, something few organizations understand and use effectively. When asked if the informants could relate any experiences from DS's that "failed", without flinching, one informant said, "Depends how you define 'failure'". Other informants reflecting over 'failed' sprints tend to agree, e.g., "it saved the client a lot of time and money" or "we found out the customer was not interested". This confirms that success is ambiguous and depends on how it is interpreted. Firms might not find the solution to solve a particular problem, but it makes sense to find that out quickly. The DS does not necessarily generate better ideas than competing methods; it simply moves on testing as soon as a concept is fleshed out to quickly see which ones hold promise. Conversely, with respect to managing DS's, rewarding success and looking down upon 'failure' can potentially prove detrimental in the long run and long-term health of the organization. The foremost impediment is the lack of focus for double-loop learning. This is implied and hinted to quite often in the interviews in various examples and is also emphasized by Edmondson and Moingeon (1999). Double-loop learning is difficult – and all but impossible in situations where much is at stake – the very situations in which it is most needed. Teams running Design Sprints and applying agile practices and methods might have all the properties that should facilitate double-loop learning, but that does not imply that they are able to do it. Proper training and understanding of the pitfalls could offset further inquiries into solutions to problems instead of solving the issues that made the problem occur in the first place. When errors occur, responsible managers and employees should inquire into the causes of error, and reflect on possible ways to correct them (Argyris & Schön, 1996; Schön, 1983, 1992).

(iv) Strategic renewal through widespread utility:

Given that organizational learning seems to lead to more organizational knowledge, it might, consequently, generate new changes in the organization. Based on this premise, Crossan et al. (1999) proposed a multilevel framework of organizational learning addressing the phenomenon of strategic renewal consisting of four psychological and social processes of intuiting, interpreting, integrating, and institutionalizing- that occur

over three levels of learning: individual, group and organization and emphasize that organizational change starts with individual change. Intuition and interpretation occur at the individual level, integration of new knowledge at the group level, and institutionalization at the organizational level. According to their framework, organizational renewal can become strategic if the process encompasses the whole organization, not just some groups or individuals, and if the organization operates as an open system. More ambiguous, yet equally important, is the need to root organizational learning as both a formally supported strategy and an integral part of the culture, in line with Senge (1990).

The Sprints focus on learning from customer feedback and widespread utility seems to inform and realign organizational structure with strategic goals. According to the informants, the Design Sprint framework can be applied to many of the challenges an organization may be facing. Informants mention they have run Sprints to evaluate everything from brand positioning, concepts and marketing campaigns to innovation and growth strategies. While the content and focus areas vary between these, the philosophy and working methods behind them are the same. According to Knapp et al. (2016) this fast-paced 5-day sprint can be used to build and test nearly any idea rapidly, because instead of waiting to launch a minimal product to understand if an idea is any good, teams get data from a prototype. Informants describe it as a great tool for kicking off a new product, bringing the team together to create a shared vision, and testing initial concepts with users. Another great use of the Design Sprint is when you have a mature product that is encountering some hiccups or the limitations of mass analytics

Widespread diffusion and use imply that the learning and development strategy must recognize both employees' individual talent development needs and the company's needs in terms of functional team strengths. Finally, the process itself is only a framework of suggestions that helps teams learn and evaluate the quality of outcomes according to internal standards and the strategic goals of the organization. To summarize, Sprints are seen to bridge the gap between working and learning. This helps root organizational learning into the company's culture through proper alignment; if the overall corporate strategy is to promote strong, sustainable organizational learning. Consequently, organizational change cannot be separated from organizational strategy, or vice versa as change is an ever-present feature of organizational life, both at the operational and strategic level (Burnes, 2004). This finding has important implications for the premise that many corporate learning and development programs focus on the wrong things. Hence, it is argued that a better approach to developing a firm's leadership and talent pipeline involves designing learning programs that link to the organization's strategic priorities, in line with Ben-Hur et al. (2015).

5.2 Agile transition and agile adoption

The second central theme presents a mapping of the issues and factors affecting a successful Agile transition and agile adoption. A design sprint alone does not result in innovation, and a prototype is not a successful product. Nonetheless, according to the informants, Design Sprints can be viewed as an opportunity to influence employees and

managers' thoughts about the system. It is therefore perceived through a cultural lens as a transformational device. It involves the gradual transfer of individual learning to internalization on the organizational level, whereby the bottom-up and top-down processes build and sustain an agile culture. At the organizational level, change is understood as the sum of successful individual transitions, achieved in five phases (Hiatt, 2006). The change model strongly emphasizes not skipping a step or leaving people behind - potentially ruining the initiative. Without the right "building block" at the bottom, the change will be, at best, short-lived. ADKAR can be summarized as follows: Awareness, Desire, Knowledge, Ability and Reinforcement.

5.2.1 Enablement zone

Awareness. Any change starts with Awareness of the need to change. Not that change will occur because of this shift in mindset, only that a person has come to terms with the fact that maintaining the status quo is not an option and understands what risks are involved. All the informants described their organizations following an established structure on how to launch new products and sticking to a very well-known business model but because of the fast-changing pace of modern market conditions, the need for change arose, and due to the nature of that change, the informants were inspired by agile practices. There is consensus in the literature that the need to change must be clearly articulated by the change proposers so that the 'awareness' phase shows areas of congruence to other change theory models (Kotter, 2007, Hiatt, 2006). In the context of disseminating the use of Design Sprints and making the change more compelling to employees most informants make the case that people don't need another "bullet list"—they prefer to listen to true stories about what challenges there are in the current state and what could be achieved in the desired state by highlighting significant positive effects it has for both customer satisfaction, employee engagement and performance results, as well as the consequences of not changing with the times. This study therefore argues that knowledge-sharing forums can act as the seedbed in which people's Desire to change takes root and grows.

Desire. According to Hiatt (2006) it is not sufficient that employees and managers understand the reason for change and must actively desire it. There is a general sentiment in all interviews there might be a barrier to adoption in the upper management as they naturally might not be aware of the benefits of using that method versus others. Moreover, with respect to the current market situation, experimentation should become a much more integrated part of the organization's DNA. This creates tension in upper levels of the organization that perceive it as unsafe to have experimentation as a tool of their toolbox. According to Christensen (1997) this skepticism is understandable, as one of the most difficult things for organizations to do is to critically reexamine something they have painstakingly built and that has served them over time. To this effect, early "victories" inherent to the sprints scheme must be told, shared, and visualized, for they create momentum and have a measurable impact on the change process. The informants are clear that the organizations desire to support the change and to participate and engage depends on active and visible sponsorship from upper management.

Knowledge. Employees endowed with awareness and imbued with desire to participate in the change process, but who do not have enough training or education to successfully contribute to it, will lead to limited readiness for change (Hiatt, 2006). Knowledge represents the information, training, and education necessary to know how to change.

This can include information about behaviors, processes, tools, systems, skills, job roles and techniques that are needed to implement a change. This is when change truly comes to life and where coaching activities can make a real difference. For this, it must offer a clear value proposition for employees. Several informants are training their colleagues in the method which speaks of a willingness to adapt and learn the skills needed to participate in the change. Employees must be able to understand the link between executive education and their professional ambitions. Online training courses and seminars will be limited in their ability to build a true learning culture. More than half of the interviewees are leading coaching and Sprint Facilitator training initiatives in their respective companies. The value of in-house competence at running Design Sprints instead of hiring an external design agency makes sense. This is with respect to understanding the customer's pain points better if customer satisfaction is the goal. On the other hand, as several informants pointed out, Sprints are a step in the right direction, but it is just a single week activity and cannot be overstated, and while a culture of Design Sprint might help, there is still a lot of scaffolding around building a product that is completely outside of the Design Sprint. Nonetheless, it seems the accelerated flow of Design Sprints can quickly build up change momentum as it is both exciting and educative for corporate teams, who're typically used to more planning-intensive and regimented modes of work.

5.2.2 Engagement zone

Ability. The fourth step refers to the realization or execution of the change. Ability is turning knowledge into action. In nearly all interviews the informants reflect over their organization's ability to gradually close this gap and integrate, build, and reconfigure internal competences to address, or in some cases to bring about, changes in the business environment. A successful change initiative must come from the bottom-up and top-down, but if possible, it seems useful to start with teams that have already embraced agile principles and working methods and are naturally enthusiastic about this way of working. Design Sprints can also be a great way of introducing project teams to agile practices, while at the same time focusing their attention on solving actual problems. This helps bridge the gap between working and learning. By understanding the difference between knowledge and ability, firms can help employees not only learn new behaviors and skills required by a change, but make sure they can put that knowledge into practice. Brown and Duguid (1991) describe organizational learning as "the bridge between working and innovating." This once again links learning to action, but it also implies useful improvement. The link between informal learning and innovation holds promise for the Design Sprint's usefulness as part of managerial efforts towards continuous learning for continuous improvement. Nurmala (2014) found a significant correlation between a learning culture and access to and participation in informal and incidental learning opportunities. Likewise, Kim and Marsick (2013) found that informal learning opportunities on the job created as part of a multiorganizational learning organization initiative led to organizational performance benefits. Organizations should therefore encourage and allow for adaptive and transformative processes as well as leaving room for making mistakes (Senior & Swailes, 2016).

As mentioned in the interviews, the Agile adoption process strongly depends on specific aspects like organizational environment and culture (Campanelli & Parreiras, 2015; Jovanovic et al., 2020). An organization embracing the lessons that can be learned from failure and studies its own processes (Argyris & Schön, 1978) will contain more knowledge about best practices and be much more able to adapt (Watkins & Marsick, 1993). Through all of this, mistakes are inevitable but without them learning is limited.

This ultimately allows true change to be realized at both the individual and organizational level. Moreover, learning by doing differs from a typical change process scenario, where employees participate in training events, then return to work and are expected to apply that learning to their specific roles. Such a scenario often calls for additional performance support to close the gap between existing knowledge and skills, and expected performance (Marsick & Watkins, 1990). The informants advocate moving towards a more continuous learning model that extends beyond an initial training event to include learning reinforcement and performance support on the job. To summarize, ability is when a person or group has demonstrated the capability to implement the change, master the use of new tools adopted new behaviors and are comfortable with the new process.

Reinforcement. Finally, reinforcement activities and monitoring aim at making the change long-lasting. Informants highlight the importance of preventing people from reverting to their old habits, something quite usual and inherent to human nature. Proper reinforcement will affect many factors on the individual, team, and organizational level. A general view in the interviews is that upper management plays a key role in a smooth transformation, both as a facilitator, ambassador, and culture builder. They must wholeheartedly be on-board if the goal is to build a trust-based culture, again driven by trust-based management. This includes "leading" rather than "steering", setting direction, and daring to relinquish decision-making authority to prioritize holistically across the organization. The general gist, and my impression, is that an agile culture is mainly built from the bottom up but building internal alignment across disciplines and teams is mostly the job of upper management, ensuring that it is met with the right set of values with respect to building a culture of trust, autonomy, and accountability. This means that they must be willing to lift their gaze and see that their own initiatives are prioritized away in favor of other initiatives that benefit the company to a greater extent.

The virtues of the shift from annual performance reviews to frequent check-ins become apparent to leaders looking to drive rapid behavior change. The 'retrospective' portion of Agile is truly a mechanism for reinforcement on its own - discussing and figuring out how to resolve issues that have occurred, which could include the development methodology itself. Reinforcing such activities validate the view that meta-learning is, to a large extent, amenable to explicit steering and organizing (Visser, 2017). Good organizational inquiry requires that managers and employees be aware of their own role in the occurrence of errors and that they reason openly and productively about it. The quality of this reflection and inquiry, in turn, is positively related to successful error detection and correction (Argyris & Schön, 1978, 1996). Several informants also mention that the OKR goal-setting methodology provides the necessary framework that helps companies align goals and ensure everyone is going in the same direction. There is no peer-reviewed academic research on its effectiveness and performance as of yet, but it seems fairly empirically derived. Asmus, Karl, Mohnen and Reinhart (2015) found that involving employees in goal setting led to 12-15% increase in employee performance. Moreover, there is ample empirical research showing that specific goals can lead to better performance and goal attainment (Locke & Latham, 2002). Hence it can conceivably be hypothesized that the OKR framework blends formalization and agility in a flexible tool that can be applied both strategically and from a governance perspective; where the entire company gets ownership of the goal and how they can deliver on it. Communicating small wins (Kotter, 2007) will also ensure that the change is reinforced.

Therefore, it is critical that leaders do everything they can to eliminate obstacles to progress, since these can have such a profound impact on inner work life and

ultimately performance. Supporting progress is the number one thing that leaders can do to keep workers engaged and happy at work. While it might seem obvious that people want to make progress in their work, Amabile and Kramer (2011) found that most leaders do not act as if they understand that. Only a minority of managers, across the companies they studied, consistently facilitated people's progress. Providing people with autonomy in how they achieve the goals of the organization allows them to feel that their efforts and talents are contributing to the success of the organization.

An agile way of working assumes autonomy. Autonomy can only exist if there is trust. Trust is a fragile but essential element of culture and needs confirmation all the time. Therefore, it is better to introduce agile slowly, build experiences and go step by step. A Bing bang will hardly ever be the right approach. Leaders who apply agile principles should try and find a balance. Between alignment and autonomy, between steering and supporting. Agile methods can be used for both sides of the balance. But leaders who use daily check-ins only for control are undermining the agile culture in its essence so removing barriers for cooperation is thus one of the biggest challenges' managers must overcome to make sure that people adopt agile principles. Organizations should select people on their ability to work together and coach them. When organizations change and move towards agility, they must build and maintain trust at the same time. If they fail to do that, agile will be just another empty phrase that is pushed through the organization. This shows that organizations should not simply focus on just copying methods, while the values and compliance with these do not stick. Is trust-based management exercised? Is there actually openness and transparency, and is there a focus on continuous learning and sharing? Is there actually room for error?

5.3 Integrating Agile with culture change management

5.3.1 The SLC (Sprinting-Learning-Changing) model

The SLC model is the researcher's own modified model illustrating variables of interest in line with the first research sub-question (the DS's effects on learning applied to several levels). Regarding the relationships proposed in the model, (see Figure 4.1), the theoretical framework and complementary theories that support the findings were employed in the analysis and development of the model. Within each component, specific factors are needed, and they are dependent on other factors to be realized. The model was originally meant to be 'standalone' as the relationships and mediating effects can certainly be understood in the same way without including Senge's (1990) five disciplines to build a learning organization on top (in parenthesis). It was ultimately decided that their inclusion broadens and amplifies conceptual understanding. My interpretation is that an overall strengthened model emerges by integrating previous well-established thinking and concepts. It also provides a useful frame of reference, a new and useful mental model so to speak, for the following discussion. Senge's five disciplines are briefly outlined below.

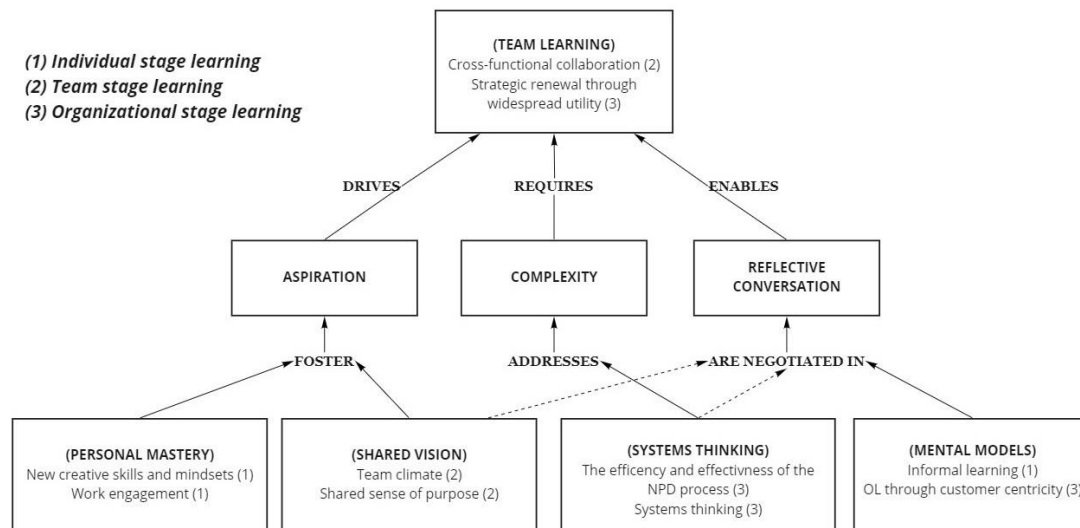


Figure 4.1: Conceptual model synthesizing all the enabling factors.

Personal mastery highlights that organizations learn through individuals. Personal mastery is one's drive (*work engagement*) towards continuous improvement by learning (*new creative skills and mindsets*). This results in employees with a deep knowledge and understanding of the people, the job and the processes they are responsible for. Systems thinking, everyone learns how the whole organization works (*systems thinking*) and how they support the organization (*the efficiency and effectiveness of the NPD process*). Shared vision, people have a *shared sense of purpose* and commitment in a group (*team climate*). Mental models, everyone sets aside old ways of thinking (*informal learning*) and/or question current ways of thinking (*OL through customer centricity*). Team learning is all about how dialogue and skillful discussion transforms teams into a cohesive entity (*cross-functional collaboration*). Their combined energies and abilities are greater than the sum of individual members' talents. Moreover, organizations attempting *strategic renewal through widespread utility* seek to resolve bottlenecks by establishing and training new project teams - leading to more team learning. The ad hoc SLC model resolves some of the criticisms aimed at, not just Senge's model, but a few other OL frameworks as well. Barriers to the learning transfer process need to be understood (Sun & Scott, 2003), and the study of these is key to progressing organizational learning.

Sun and Scott (2003) argue that Senge, Argyris and Schön, and Crossan models all have limitations, the most important aspect being the practical difficulties encountered with the implementation. On the other hand, the Design Sprint was developed as a relatively simple-to-use framework for brainstorming and testing ideas. Taken together, these findings suggest an association between the factors embedded in the Design Sprint and other OL frameworks. It also takes some key concepts from each and integrates those learning processes in a holistic way, but the greatest advantage is practicality. I have used Senge's model as a starting point because his concepts had the best overall 'fit' in the model. Both Senge (1990) and Watkins and Marsicks' (1996) models have a strong focus on team learning, as does the Design Sprint. Crossan et al. (1999) and March (1991) consider strategic renewal tension- perhaps even placing too heavy emphasis on this at the expense of other factors - while the others do not. Furthermore, some are not multilevel, missing an organizational level (Senge, 1990) or group level (March, 1991). The Crossan et al. (1999) and Watkins and Marsick model (1993, 1996)

are multilevel and discuss the process linking the levels. Senge's does too, but only between individuals and groups. According to Crossan et al. (1999) common to all the above, their model notwithstanding, is that they do not consider how one level affects the other. As a result, the transition between these processes from the individual to the organizational level is well developed in their model. One noticeable aspect is the focus on communication between individuals through sensemaking in a team setting; individuals seek to *interpret* their *intuition* of a new opportunity and *integrate* these insights in such a way that it would make sense to *institutionalize* it in the organization as a better or a new way of working. This, again, is very similar to the learning process described by the informants.

Based on the work and learning models of Argyris and Schön, Edmonson and Moingeon (1999) further elaborate on OL as a process in which the organization's members actively use data to guide behavior. As shown in the informants statements the Sprint involves regulating actions based on data-driven observations and testing assumptions in such a way as to promote the ongoing adaptation of the organization. Adaptation is a change in response to external changes –both problems and opportunities. This implies sustained attention to relevant data, especially with respect to the results of new actions. Schön (1983) describes such an iterative cycle of action and reflection as integral to the practice of highly effective individual professionals. The model explicitly discusses and integrates theories regarding learning loops in the "OL through customer centricity" component, but single and double loop processes implicitly permeate many of the other factors across all levels of analysis through constant "reflective conversation with the situation" (Schön, 1983, 1992).

The main research question had to do with investigating how Agile workflows inform cultural change processes. An Agile innovation culture relies heavily on cross-functional teams, hence team learning accrued during NPD processes (e.g., the Design Sprint) can be conceived as the principal means of informing and achieving the strategic renewal of an enterprise. In essence, 'learning by doing' triggers internalization, so the Design Sprint framework can be operationalized as an ad hoc learning framework. The conceptual model shows how integrating these different approaches may help to overcome the shortcomings of other OL frameworks implemented in isolation. This definition views organizational learning as a process – one that requires individual cognition and supports organizational adaptiveness. A process of acting, assessing, and acting again – in an ongoing cycle of reflection and action. This cannot be taken for granted in organizations, noted for their adherence to routine. However, as thus defined, organizational learning is a process that can be initiated, developed, and practiced by engaging individuals in reflecting upon and developing their own thinking processes, an essential component of creating learning organizations.

5.3.2 Agile transition and agile adoption in the ADKAR CM model

Schein's organizational culture definition uses the metaphor of cultural DNA to represent a deeply embedded set of underlying assumptions. Changing a culture therefore requires interaction from all members of an organization (Schein, 2017; Senior & Swales, 2016). As such, a new culture can neither be imposed by directives coming from upper management nor can one expect that new values and norms will simply trickle down to permeate entire organizations. Cultures are by nature deeply rooted and tend to be resistant to change. Top-down approaches seem to facilitate the incorporation of agile norms and values, but can also limit the effective institutionalization of them, if leaders do not live by those values themselves. Conversely, bottom-up processes have the

opposite effect, enabling institutionalization, but raising resistance from managers. As a result, attempts to try to affect an organization’s culture requires a plurality of approaches that tackle all levels of culture through continuous and repeated interventions (Senior & Swailes, 2016). As Senge describes it, “Organizations learn only through individuals who learn;” however, “individual learning does not guarantee organizational learning, but without it, no organizational learning occurs” (Smith, 2001). Focusing on teams involved in NPD seems to be a useful starting point as embedded knowledge in teams is transferred into new products and to embodied knowledge in the organization (Madhavan & Grover, 1998). The informants make it clear this is practically achieved by implementing more frequent and continuous deliveries. Simply focusing on the build-measure-learn loop in teams starts off with feasible incremental changes that lead to exponential change that comes from a broad desire ‘to be’ agile.

Moving forward, can we conceive of a model that integrates Change Management (CM) and iterative project development? To add to the interpretation and discussion of CM and Agile integration, I will first suggest how ADKAR gets reconfigured in Agile. In other words, how ADKAR supports individual transitions in an incremental environment (e.g., Agile initiatives). Supporting individual transitions boils down to a balancing act between the project level, sprints or release level and in Agile as an approach in the context of culture change. Because many Change Management assumptions and standards find an echo or are mirrored in Agile, both disciplines can work in synergy to deliver extra value.

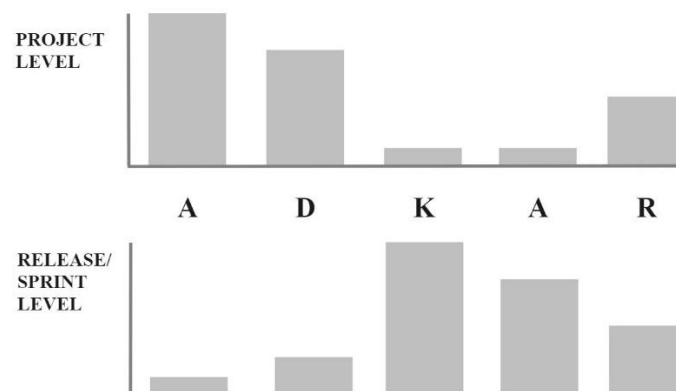


Figure 5.1: Integrating Agile and Change Management (Creasey, n.d.)

To use an example, we can imagine that managers have become aware that a new customer service system is necessary. The Awareness process therefore starts at the project level. Creating the desire around actively participating in its implementation is also mostly project specific. Granting that it makes sense that employees can express the desire to take part in a particular release. Moving on, the development and release of the new system is iterative, so it is logical that employees be equipped with knowledge and ability in accordance with the specificities of each release. The point of inflexion corresponding to these phases is where sprints or releases are rendered into ADKAR’s principal operational levels. Knowledge as to what should be done during and after a particular release, and ability as to what a particular release requires in terms of tangible actions or performance. Reinforcement takes place at both levels. On the release level, the new system can be tested in several iterations. Once the solution has been deployed on the project level, in parts or as a whole - it requires reinforcement and adoption of the

new system on an uninterrupted basis. Reinforcement also takes place in the case of mature projects from the angle of taking corrective actions based on ongoing customer feedback and monitoring. At this point, improvements can be added by doing the “Test” phase of the Design Sprint again.

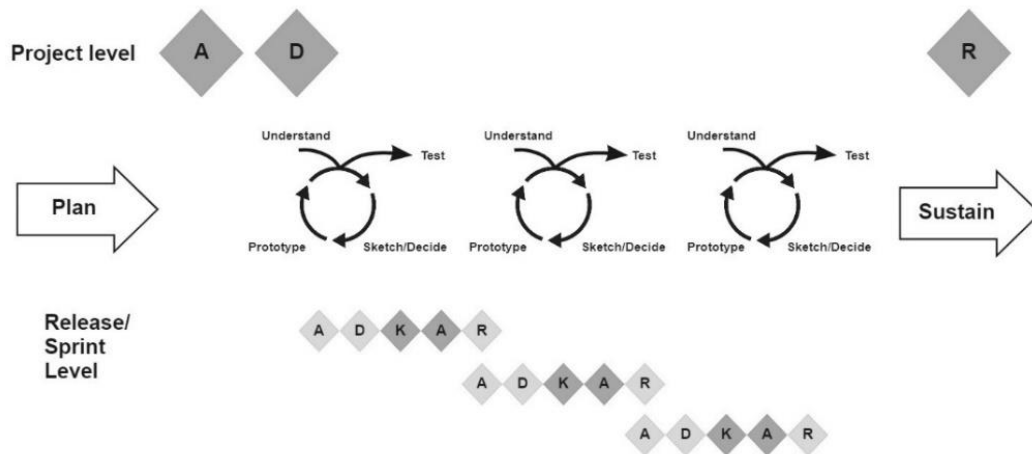


Figure 6.1: ADKAR milestones in Agile workflows (Creasey, n.d.)

To operationalize ADKAR in an agile management framework, one would begin at the project level by creating Awareness and Desire for the new customer service system. The next step is to align Knowledge and Ability with each Sprint. Promoting Awareness and Desire at this sublevel will help with onboarding of the team, which can involve different participants in each Sprint, resulting in iterative ADKAR trajectories. The main focus in each Sprint is on Knowledge and Ability although each release also benefits from reinforcement-related actions. Finally, as a final step, reinforce the whole project. These efforts are supplemented by mechanisms, metrics, and support in relation to working more goal-oriented such as the OKR framework.

To summarize, ADKAR pretty much stays the same while its key components are redistributed across the whole project and individual releases. As a process, it acts upon three different interdependent levels. At the Sprint level, people are expected to understand the reasons for the release, be willing to participate and know how to do what is needed according to a particular case. ADKAR can then also be applied at the project level. Collaborators should understand why it makes sense to develop and adopt a new system and become engaged and have the desire to participate. At the meta level, Agile as an approach, must be adopted and sustained in much the same way as the project/change itself.

Table 2: Integration of CM and Agile (methods/practices/values)

ADKAR `s 5 phases	Definition	Answers to:	Individual transitions on 3 levels
Awareness	...of the need to change	Why? Why now? What is the risk of not doing it?	"I understand why..." <ul style="list-style-type: none"> • For this release • For this project • For Agile as an approach
Desire	...to participate in the change and support it	What is in it for me? Personal incentives Organizational incentives	"I have decided to participate..." <ul style="list-style-type: none"> • In this release • In this project • In Agile as an approach
Knowledge	...on how to change	In context (after R&D) Knowledge before Knowledge after	"I know how to do what is needed..." <ul style="list-style-type: none"> • For this release • For this project • For Agile as an approach
Ability	...to implement skills and required behaviors	Size of the gaps? K=A Barriers/Ability Practice/coaching	"I am able to do what is needed..." <ul style="list-style-type: none"> • For this release • For this project • For Agile as an approach
Reinforcement	...to sustain the change	Mechanisms Metrics Support	"I will continue to do what is needed..." <ul style="list-style-type: none"> • For this release • For this project • For Agile as an approach

5.4 Limitations

According to Bryman and Bell (2011) a qualitative research design is appropriate when the purpose of research is to understand innovation culture as perceived by individuals in firms. That being said, the most pressing limitations in this study are the sample size and scope of transferability. These will have the greatest potential impact on the quality of the findings and ability to effectively answer the research question. The study is limited to focus on Norwegian firms, and in particular, large industrial firms. While innovation culture likely exists in departments other than R&D as well, those have not been included in this study. This rather narrow sample likely has implications for the success factors and barriers that are identified since these could be different for small firms. At the same time, there are many large industrial firms so that can act a counterpoint. The study is also limited in the choice of informants (DS facilitators). A broader understanding might be derived from including other perspectives that form a cross-functional Sprint team. This is in part defended by the aim of the study, which was to explore an evolving phenomenon, and not to produce accurate research from a representative selection. At the same time, my desires to conduct this study are inspired by pragmatism. In this study I developed a framework for understanding Design Sprints as a multilevel learning

process that is, while not empirically tested, at least in part, empirically derived. The findings reflect many of the results in prior literature which may imply a better generalizability. In the choice of topic, I have been concerned that the study should have practical utility for companies and hope that my findings can contribute to further research in the field. Despite the desire for a study with practical utility, I recognize that the results are not necessarily transferable to other contexts than those applicable in this study.

5.5 Methodological considerations

Within quantitative research, focus has traditionally been on validity, reliability and generalizability. Since qualitative research is fundamentally different from quantitative research, these concepts do not easily translate to qualitative research (Lincoln & Guba, 1985). However, quality in qualitative research is just as important, but there are no universally accepted criteria as to how to ensure this (Howitt, 2013). The most widely used criteria for assessing qualitative research validity were developed by Lincoln and Guba (1985) under the umbrella term trustworthiness. The presented findings must reflect the participants' voice and interpretations must not be invented by the researcher's own biases (Lincoln & Guba, 1985). Elaborating on this, they proposed four alternative criteria more in line with qualitative research: credibility, transferability, dependability, and confirmability.

Credibility refers to confidence in the 'truth' of the findings, whether the results and potential conclusions drawn are believable and trustworthy. Transferability has to do with showing whether the findings have applicability to other contexts. To increase transferability, rich in-depth description of both the specific research context and the phenomenon being researched are of vital importance as this gives the reader a suitable understanding of the specific context and provides the means to be able to compare the research across situations, Dependability is similar to reliability, and concerns itself with whether the results are consistent and could be replicated. In order to achieve this, a thick description of the research context should be given, so as to allow future readers to repeat the research and show adherence to correct research practice. (Shenton, 2004). Confirmability mirrors objectivity, in other words, the extent to which results and conclusions are based in the data, rather than being shaped by the researchers own bias or subjectivity. Researchers are not neutral when it comes to qualitative research. There is a certain amount of bias, motivation or interest that can influence interpretation and choices made in the process, and different researchers may not arrive at the same results. By being mindful of, and documenting the choices made throughout the research process, is the way to achieve confirmability (Lincoln & Guba, 1985).

The quality of findings may have been impacted by my prior understanding of the phenomena under study. My background in Design Thinking and business studies may have led me to perceive only that which I recognized as familiar, i.e., meaningful and patterned. Failure to develop a complete understanding of the context can result in failure to identify key categories, and thus failure of accurately representing the data as a whole (Elo et al., 2014). Evaluating how well categories covered the data and identifying similarities and differences between categories was one way to ensure trustworthiness and especially credibility of the results. Interview snippets help confirm the connection between the results and data as well as the richness of data (Elo et al., 2014). Self-awareness on the part of the researcher is also crucial (Koch, 1994). I have attempted to minimize interviewer bias from the start to the best of the ability of an intermediate researcher by reflecting over my interview style and possible improvements.

5.6 Practical implications and future research

This study focuses on theoretical and practical contributions by investigating a topic not yet explored in the literature. It provides further insight into the socio-psychological mechanisms that underlie Design Sprints in relation to other more established innovation methodologies. The present study is significant in at least three major respects. First this study clarifies how practitioners in the management domain have defined the Design Sprint method and how it addresses the biases and behaviors that hamper creativity and innovation. Previous research on Design Sprints has often been restricted to practitioner-oriented case description studies, reflecting its early stage. Prior research on creativity and innovation helps broaden our understanding of its practical uses. Towards this goal, I have provided a useful overview as a starting point; discussing how these processes turn individual learning to organizational learning, by drawing systemic connections in the development of a model. Besides investigating important psychological properties, this research also integrates a more traditional management literature to isolate relevant learning mechanisms. The practical implications of the study are limited by the small sample size but seeks however to steer the discussion towards a more sophisticated and contextual analysis of learning in action. Companies are increasingly embracing learning by doing; a more action-oriented methodology when it comes to staff training where organizations challenge and transform dysfunctional prior assumptions and beliefs. Future research could build upon the findings of this exploratory study and try addressing the limitations of this study, by looking at larger and more representative sample sizes.

6 Conclusion

The main goal in this study was to examine how Agile workflows inform change processes in organizations. To this end, the methods and considerations of the Design Sprint method have been identified and its effects on organizational learning examined. There has been scant little research aimed at exploring the psychological processes that saturate this new method of working, a gap this study wanted to address. Therefore, this project is the first comprehensive investigation of its characteristics. The first major finding in this study is an accurate, contextual and multilevel description of the method. This has practical application in three main aspects. First, it informs how the Design Sprint can be applied more efficiently to create new products and services; secondly, it provides a bird's-eye perspective on interdependencies among complex systems. The third practical implication has to do with the second significant finding to emerge from this study. As mentioned, the principal theoretical contribution of this study has been to investigate the Design Sprint, but as a by-product of this, I identified gaps and limitations in existing OL frameworks. A lot of the criticism centered around practicability, and at the same time many OL assumptions were seen to be mirrored in the DS. The empirical findings of this investigation led me perceive and make sense out of that which previously seemed to be white noise.

The SLC or Sprinting-Learning-Changing model, thus operationalized, brings together these conceptual categories into an integrative multilevel learning framework of relevance for managing Agile transformations in organizations. A brief discussion of best change management practices according to the ADKAR model provides further support for an incremental change strategy. One requiring a lot of experimentation, tailoring to organizational needs, and the gradual release of individual capabilities across the organization. The empirical findings broadly support experimentation and reinforcement activities, suggesting it is only logical, to take into consideration the integration of Agile in ADKAR, in order to build momentum.

The generalizability of these results is subject to certain limitations. The small sample size, absence of other Sprint team roles and focus on large industrial companies are potential sources of weakness. Furthermore, the SLC model is not empirically tested. Although it is to a certain degree at least, empirically derived – as a result of the findings, but also in a great deal of (mostly) empirical research that was found to support the individual factors in the model. Wide support for the concepts in the model in prior literature may imply better generalizability.

Towards future research and examination of the Design Sprint, the SLC framework may certainly act as a useful orienting point.

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NSD NORSK SENTER FOR FORSKNINGSDATA

NSD sin vurdering

Prosjekttittel

Pilotering av nye prosesser og løsninger – Et casestudie som belyser individuell og organisatorisk læring i praksis

Referansenummer

800209

Registrert

15.08.2020 av Peter Nikola Fistonic - peternf@stud.ntnu.no

Behandlingsansvarlig institusjon

Norges teknisk-naturvitenskapelige universitet / Fakultet for samfunns- og utdanningsvitenskap (SU) / Institutt for psykologi

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

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Type prosjekt

Studentprosjekt, masterstudium

Kontaktinformasjon, student

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Prosjektperiode

20.08.2020 - 01.06.2021

Status

17.08.2020 - Vurdert

Vurdering (1)

17.08.2020 - Vurdert

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 17.08.2020, samt i meldingsdialogen mellom innmelder og NSD. Behandlingen kan starte.

MELD VESENTLIGE ENDRINGER

Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke type endringer det er nødvendig å melde:

https://nsd.no/personvernombud/meld_prosjekt/meld_endringer.html

Du må vente på svar fra NSD før endringen gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET

Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 01.06.2021.

LOVLIG GRUNNLAG

Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER

NSD vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om:

- lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen
- formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke behandles til nye, uforenlige formål
- dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet
- lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER

Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20).

NSD vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER

NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET

NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

- Jeg er (navn) ... masterprosjekt... Institutt for psykologi, NTNU
- Anonymitet, frivillighet, bruk og oppbevaring av data

Introduksjon - Informasjon om bedriften

- Kan du fortelle kort om bedriften du jobber i?
 - Hva jobber dere med?
- Kan du fortelle kort om din stilling?
 - Hva går arbeidsoppgavene og ansvaret ditt ut på?

Hoveddel - Erfaringer fra Design Sprint

- Kan du si litt om din første opplevelse med designsprint?
- Hva var grunnen til at dere valgte å implementere design sprints?
- Leier dere inn eksterne eller har dere egne sprint teams?
 - Hvis ja: Hvorfor har dere valgt å gjøre dette internt?
- Er denne metoden forskjellig fra andre innovasjonsmetoder, og i så fall hvordan?
 - Bygger den eller spiller på lag med andre innovasjonsprosesser? Hvilke?
 - Hva er hovedtrekkene i DS som gjør det til et attraktivt verktøy?
 - Er det en fleksibel metode? Kan den brukes på ulike probelsmtillinger?
 - Hvordan ville du definert de De ulike fasene i en DS? Skjer det noe i forkant av et sprint også?
- Kan du beskrive ideation fasen?
 - Hvilke metoder brukes i denne fasen? (brainstorming, prototyping, storytelling)
 - Hvilke spesifikke verktøy brukes innenfor disse metodene?
- Hva er kriteriene for valg av deltaker?
 - Hvilke roller er det viktig å ha i et DS-team?
- På hvilken måte er alle deltakerne involvert?
 - Er noen vanligvis mer passive / aktive enn andre?
- På individ nivå, er det visse forhold under et DS som fremmer innovasjon og kreativitet?
 - Sprints er kjent for konseptet Working Together but Alone. Kan du forklare dette konseptet?
- Hvordan utforsker DS problemer og løsninger med tanke på ulike stakeholder perspektiver?
- Har du ledet eller vært med på sprints som feilet? Hva var omstendighetene rundt det?
- Hvordan er kunder involvert i utviklingen av tjenesten eller produktet?
- Hvordan sikrer Design Sprint at feedbacken fra kundene blir nyttiggjort?
- Hva synes du om involvering av kunder i utviklingsprosessen?
- Fører DS til endringer på organisasjonsnivå?
 - Har du merket endring i atferd hos ansatte som var med på sprintene?
 - Kan design sprints være med å løfte smidig praksis, prinsipper og verdier fra teamnivå opp til selskapsnivå?
 - Hva krever det av selskapet?
- Hva er de største positive effekter av DS på organisasjonsnivå?
 - Time to market?
 - Kundetilfredshet?
 - Resultater?
 - Trivsel?
- Hva er forholdet mellom kreativitet og innovasjon og en organisasjons konkurranseevne?
- Kan DS bidra til organisasjonenes evne til å utnytte ny informasjon og lære?
 - Hvilke effekter har dere oppnådd etter innføringen av Design Sprints? Eksempler.
 - Dvs. KPI-er, dersom dere måler spesifikke bruker-KPIer eller andre sukseskriterier
- Blir resultater synliggjort for resten av selskapet?
 - Er dette for det meste kvalitative endringer som er vanskelig å tallfeste?
- Hva er sukkseksoppskriften for å lykkes med smidig transformasjon?
- Hvilke holdninger og verdier er det som karakteriserer en smidig kultur?

Vil du delta i forskningsprosjektet

”Pilotering som fremmer organisatorisk læring”

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke og evaluere nytten av pilot-tester i bedrifter. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Pilot-tester brukes ofte for å teste utformingen av det endelige prosjektet i realistiske omgivelser og i mindre skala. På denne måten kan man minimere risikoen for unødvendige omkostninger og oppdage feil ved prosjektets design før det egentlige og mye dyrere fullskalaprojektet igangsettes.

Med utgangspunkt i arbeids- og organisasjonspsykologi vil denne masteroppgaven undersøke erfaringer fra pilot-tester og faktorer som kan føre til organisatorisk læring. For å undersøke disse prosessene, vil studenten gjennomføre kvalitative intervju av informanter som har tatt del i pilot-prosjekter (spesifikt «Design Sprints») i ulike bedrifter og analysere datamaterialet ved hjelp av tematiske analyser.

Hvem er ansvarlig for forskningsprosjektet?

Ansvarlig for prosjektet er NTNU, Institutt for psykologi.

Hvorfor får du spørsmål om å delta?

I prosjektet ønsker jeg å intervju personer har deltatt i Design Sprints. Prosjektet vil søke å kartlegge erfaringer med slik arbeid, med den hensikt å forstå hva som stimulerer og hindrer individuell og organisatorisk læring i selskapet.

Hva innebærer det for deg å delta?

Deltakelse i prosjektet betyr at du vil bli intervjuet av masterstudent (Peter Fistonc) om din arbeidssituasjon og dine arbeidserfaringer. Hvert intervju vil bli tatt opp på bånd, transkribert ordrett, anonymisert og deretter vil lydfilene bli slettet.

Det anonymiserte materialet vil deretter analyseres av masterstudenten som en del av masteroppgaven. Respondenter som ønsker kan få tilsendt en kopi av utredningen.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Alle personopplysninger vil bli behandlet konfidensielt. Det er kun masterstudenten som har tilgang til dine personopplysninger og lydopptakene vil slettes når intervjuet er transkribert. Det transkriberte intervjuet vil ikke inneholde personopplysninger om deg.

- Det er bare masterstudent (Peter Fistic) som har tilgang til ditt intervju.
- Det vil gjøres lydopptak av intervjuet med deg. Denne lydfilen vil kun lagres på en minnestikke og ikke på en datamaskin med internettilgang.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Opplysningene anonymiseres og lydfilene slettes fortløpende og prosjektet skal etter planen avsluttes juni 2021.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra NTNU, Institutt for Psykologi har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- NTNU, Institutt for Psykologi ved Jonas Rennemo Vaag (jonas.vaag@ntnu.no) eller masterstudent Peter Fistic (peternikolafistic@gmail.com)
- Vårt personvernombud: Thomas Helgesen (thomas.helgesen@ntnu.no)

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:

- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig
Jonas Rennemo Vaag

Masterstudent
Peter Fistic

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Pilotering som fremmer organisatorisk læring» og har fått anledning til å stille spørsmål.

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet

(Signert av prosjektdeltaker, dato)