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The role of leadership in the agile transformation of a non-software development department

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A research dissertation submitted in partial fulfilment for the degree of Master of Business Administration

National College of Ireland

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Abstract

The purpose of this research was to investigate the role of leadership in the Agile transformation of a non-software development department. The author considered two supporting research questions:

- What are the drivers for Agile adoption vs the traditional approach?
- What support does leadership offer the transition to self-organizing teams?

The scope of the research was limited to a single firm that shall not be named in compliance with a non-disclosure agreement. The author conducted interviews with nine employees across different teams and at different levels in the organizational hierarchy.

The findings of the primary research question generally conformed to those in the literature; communication, providing an environment for experimentation, restructuring teams and providing resources for training and new roles. The sub-questions revealed more interesting insights. Transparency and the management of stakeholder expectations surfaced as a significant driver for adoption by the interviewees. The assumption that self-organizing teams were completely implemented was invalidated, which exposed an important gap in the journey of teams to self-organization - at what point are leadership and teams confident that they can decide what to work on?

Declaration

The author confirms that this work is wholly his own and that all materials consulted, and ideas garnered during the research of this dissertation have been properly and accurately acknowledged

Acknowledgments

There are many people for me to thank for their support in completing this dissertation and the MBA as a whole. Chief among them are my wife Lesley and daughter Ellie, who granted me leave to work uninterrupted on many evenings and weekends over two years and encouraged me to keep going when I was at my wits end. My parents encouraged me as they have many times. My colleagues in work (Johann, Eoin, Inna, Stefan and Una) put up with my curve ball questions about Agile. My supervisor Elaine Rossiter accommodated my awkward meeting times and always provided helpful feedback on my work. A former colleague, Leonie Frank helped connect me with a company which made all of this research possible. The interviewees gave me the great gift of their time and experience to make this research possible. My colleagues on the MBA course cheered me up and kept me motivated. Finally, my contact at the company, who must remain nameless for confidentiality reasons, went out of his way to explain the transformation background to me, facilitated my access and organized the interviews. I owe him a debt of gratitude.

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List of Abbreviations

SOT - Self Organizing Teams

AM - Agile Mindset

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Introduction

1.1 Introduction

The purpose of this research dissertation is to investigate the role of leadership in the agile transformation of a non-software development organization. Agile has become increasingly popular in the software development sector. It was formally introduced in the Agile manifesto, which was drafted by 17 developers at a retreat in Utah in February 2001 (Beck, et al. 2001). It emerged from discussions around lightweight software development methods by participants with different methodological approaches. In the context of software development, Abrahamsson et al. (2017) describe Agile as: "*...incremental (small software releases, with rapid cycles), cooperative (customer and developers working constantly together with close communication), straightforward (the method itself is easy to learn and to modify, well documented), and adaptive (able to make last moment changes)*."
This incremental, collaborative and adaptive approach is often described as part of an Agile mindset. Denning (2016) outlines the characteristics of an Agile Mindset as:

- Focused on creating value for the customer rather than short term profit
- Managers enabling their teams to achieve rather than controlling work
- An autonomous team structure
- Customer-focused, iterative practices, rather than bureaucracy
- Transparency and continuous improvement
- Open communications rather than top down ones

The previously dominant methodology is commonly known as Waterfall and is associated with traditional project planning; An objective is determined, and requirements are gathered. Resources and budget are secured and then project begins progressing through different stages until the project is delivered. Critics of the waterfall approach cite its inflexibility to changing requirements and needs, as well as the inability to test progress with the end user until the final delivery.

1.2 Rationale for the research

The majority of the authors career has been spent in operational roles which required short to medium term planning to secure physical, financial and technical resources. This was in diverse

roles such as demand planning for multiple lines of computer hardware as well as report and service delivery to clients. The authors roles have transitioned in recent years towards product management related ones, as well as high degree of interaction with software development teams and as such, Agile approaches have intrigued him to understand if they can be applied outside of traditional software development and with what degree of success.

Agile transformation has become increasingly popular as awareness of Agile has entered other business domains. It offers approaches to deal with the rapid pace of change in the business environment. Such changes happen across different departments, but the author believes that there are core efforts that must be applied in each department, and that these "departmental units" of change hold insights that might be abstracted and generalized to other departments. From the authors literature review, there is plenty of material in agile transformation of software development departments, or organizations whose primary product is software (particularly SaaS enterprises such as Netflix or Spotify). There are some excellent papers on the agile transformation of organizations (ING / Lego) but there is very little research at the departmental level.
The purpose of this study therefore is to discover any important factors in the Agile transformation of a department; where the business is not primarily a software development oriented one.

1.3 Objective of this study

The research objective is to understand what leadership teams can do to support Agile transformations outside of software development. To this end, the Author poses three research questions:

1. What is the role played by leadership in the Agile transformation of a non-software development organization?
2. What are the drivers of adoption for Agile vs the traditional waterfall method?
3. How do leadership teams support the transition to Self-Organizing Teams?

1.4 Dissertation Structure

In chapter two, the author will give a high-level overview of what Agile as well as popular frameworks that support it. He will review the existing literature on the drivers for agile transformations, contrasting with those for the alternative “Waterfall” method. He will also review material on Self-Organizing Teams to understand their importance and application. Finally, he will review the literature to see how Agile transformations have worked in three case studies of organizational scale Agile adoption.

The author will state the research questions and explain their significance in chapter three.

In chapter four the author will explore the alternative research methods available and discuss the selected method. He will also give some background on the company and discuss any limitations from the non-disclosure agreement that was required by their legal department.

The author will present the findings from the interviewees, structured by the research questions in chapter five. He will cluster the responses into common and interesting themes for later discussion in chapter six.

In chapter six the author will discuss the findings presented in chapter five in the context of the research questions, and in contrast to the findings from the literature review. He will look for consistent experiences between the two, as well as learnings that are unique to this research.

In chapter seven the author will summarize the results of the research, recognize any limitations of the research approach that was taken and identify potential areas for future research.

1.5 Limitations of scope

The research is limited to a case study of a single company. Nine people were interviewed using Microsoft Teams. The author recognizes that interviewing more people and examining more than one company would have offered greater support to the findings.

1.6 Conclusion

Chapter one introduced the dissertation. It stated the research problem, provided a basic overview to Agile and explained the author's interest in this area. In the next chapter the author will examine the available literature.

Literature Review

2.1 Introduction

The dissertation encounters several themes, agile as an alternative to waterfall, the benefits of agile, Leaderships role in transformations and self-organizing teams. The author will address these through the literature review and synthesize the material for application to the research questions and findings sections later.

In this chapter the author will provide the reader with an introduction to agile concepts, as well as the popular frameworks used in industry. This is necessary to give some context as to the outcome that the target organization is trying to achieve, as well as the framework that they implemented. The author will the introduce the waterfall method, which has been the dominant method of project management for the last few decades. The author will discuss the drivers for adoption in the context of why Agile might be more attractive than waterfall.
The author will present industry surveys of agile adoption and experience from Version 1, KPMG and The Business Agility Institute in the absence of similar peer-reviewed academic research to understand common drivers for adoption, so that they can be compared with the findings of this research in chapter 5.
The author will then explore the literature available on self-organizing teams to understand what they are and what role they play in successful agile adoption, as well as trying to find material untethered to the experience of non-software development organizations.
Finally, the author will examine literature on the transformation of three large organizations as they are most like the research that he is undertaking. From these, the author hopes to discover learnings on all three research questions.
The author will conclude the chapter with a summary of the findings from the literature that was reviewed.

2.2 What is Agile and Agile mindset?

“Agile” as a distinct concept formally emerged from a conference of software developers in 2001 who were focused on improving the approaches to software development. They provided 4 guiding values (below) and qualified that while the items on the right had value, there was more on the left:

1. Individuals and interactions over processes and tools

2. Working software over comprehensive documentation
3. Customer collaboration over contract negotiation
4. Responding to change over following a plan

Beck, K., et al. (2001)

Eilers et al. (2022) undertook 15 interviews with agile experts as well as a broad survey (n=449) of participants at different levels of maturity and across different industries to define the agile mindset (AM) as it applied to individuals. Their work produced the following definition: *"The AM is the attitude of an individual within a dynamic work context that is expressed by positively evaluating how they: 1) continuously seek new insights to respond to changes, 2) transparently share and discuss methods and results of work with others, 3) decide for themselves how to proceed, and 4) are continuously customer oriented in a co-creation process at work."* Denning (2018) undertook research through a consortium of high-profile firms such as Barclay's, Ericsson and Microsoft to articulate the AM as it applied at the organizational level. They identified four themes that were congruent with Eilers et al. (2022):

- Delighting customers - continuously adding value for clients and users
- De-Scaling work - Breaking work into smaller batches of value that could be validated by clients more frequently and adjusted if needs ne
- Enterprise-wide agility - The whole organization must function as an interactive network, not as a top-down entity
- Nurturing culture - ensuring that the culture encourages the entrepreneurial mindset.

2.3 Agile Methodologies

Several frameworks have emerged that support Agile in software development. The author will provide a brief overview of the most popular ones identified in the literature and research. Elena (2019) provides succinct descriptions of the three most common frameworks, as identified in the 15th annual state of Agile report (digital.ai, 2021) a respected industry survey: Scrum (66%), Kanban (6%) and Scrumban (9%).

2.3.1 SCRUM

In the SCRUM framework, agile teams are self-managed and comprise several roles:

- Stakeholder - someone that is financially impacted by the output - usually the end client
- Product Owner - A representative that identifies and prioritizes tasks and is familiar with all the things that must be implemented
- Scrum Master - A resource that knows agile well, removes roadblocks for the team and owns the agile meetings
- Delivery team - the group of people that will deliver the necessary functionalities.

(Schwaber and Sutherland, 2011)

The teams are cross functional, and self-organizing and equipped with the necessary skills to achieve the objective. Work is delivered in sprints of usually 1–4-week periods. Release of functionality are delivered less frequently. A defining factor is that distractions with other work are not permitted. The key is to deliver value to the client on regular cycles.

The work to be done is defined through user stories, a clear statement of the customer request. The delivery team estimates the work to be done as story points. The master list of user stories is stored in a product backlog. The sprint backlog is a subset of the product backlog that has been prioritized for execution in the current sprint.

There are several meetings to discuss and communicate. Sprint planning defines the user stories for the next sprint. Daily stand ups are short meetings where the team discuss what they did yesterday, what will be done today and any challenges. At the sprint review the team shows what was delivered in the sprint. Finally, a retrospective is done after a sprint to identify lessons learned.

2.3.2 Kanban

Kanban is based on a system designed by Toyota (Sugimori et al., 1977) which focuses on limiting the work that is in progress and eliminating waste by managing the flow and implementing feedback loops. It is a visual system that shows “cards” of work in different buckets to represent stages of progress. Policies and processes feature heavily, everyone must be aware of them if they want to suggest improvements.

2.3.3 Comparing SCRUM and Kanban

As Agile Frameworks, both SCRUM and Kanban have some similarities:

- They seek to eliminate obstacles and Waste
- The teams are self-organizing, without a single leader
- The workload is visualized through boards
- Continuous improvement is a goal

SCRUM	KANBAN
Roles must be changed according to the new principles and practices	Keeping the current roles and responsibilities
Cross functional teams, any member can help with any task	Dedicated teams, specialized people that can help in other fields if they have the knowledge
Completely change the old processes	Start for the current processes and adapt them
Rituals, meeting planned from the beginning	No planned rituals, meeting scheduled when the team wants
Timeboxed iterations (2-4 weeks)	Continuous work
Measuring progress - Velocity	Measuring progress – Work in progress
Task estimation - mandatory	Task estimation – optional
Prioritizing the backlog before each sprint	Task prioritization not required
Scrum board is reset after each sprint	Kanban board is persistent

Table 2.1 - Comparison of Scrum and Kanban - Elena (2019)

2.3.4 ScrumBan

ScrumBan has emerged as a hybrid of both frameworks. It leverages the principles of SCRUM with the flexibility of KANBAN. It uses a board to visualize the workflow like Kanban but uses roles like product owner if the team thinks that they need them. It allows for planning and daily meetings if required and encourages retrospectives for process improvement. Since the backlog

is formed with a list of the most important things it does not limit itself to sprint schedules and supports continuous flow rather than iterations (Reddy, 2015).

2.4 Drivers for Agile adoption

In this section the author will explore the drivers for adoption found in the available literature.

2.4.1 Waterfall versus Agile

The author felt that it was important to understand the incumbent approach that organizations were transformation away from. Traditional project management is generally viewed as a sequential, linear process. This term "waterfall" was first elucidated by Winston Royce in an article in 1970 (Royce, 1987) Typically it has 7 stages shown below

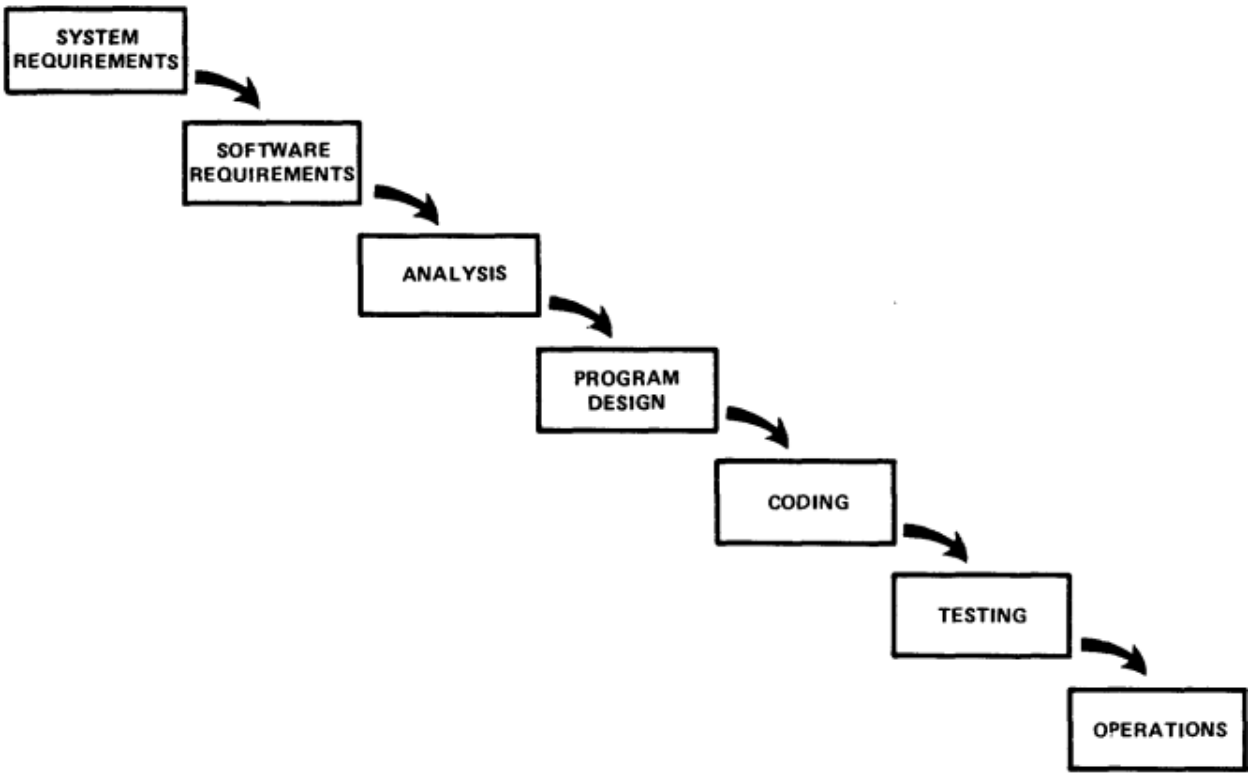


Fig 2.1 - Implementation steps to develop applications Royce (1987)

Proponents placed importance on the gathering of requirements early in the process to avoid fixing issues later. One source estimated that in software terms, discovering a bug later in the development process could increase the cost by 50 to 200x (McConnell, 1996). Critics of the waterfall methodology, including Royce (1987) himself, argue that testing so late in the process

invites failure, since the client can't validate until time and effort has been expended, and so re-design can become even costlier. Bennington (1983), a proponent of waterfall, noted that while the phases were ordered in terms of specialization, that they should occur based on prototypes being tested with the end customer.
These observations by the two earliest proponents of the waterfall approach share a belief in the benefits of the iterative approach with Agile.

Ruël et al. (2010) contrast the philosophical differences well when they observe that Waterfall supporters "*cannot see how users of the Agile approach expect to build anything that satisfies the customers' or end-users' actual demands, without planning up front and carefully analyzing requirements*", and supporters of Agile "*cannot see the point in spending a large amount of time analyzing requirements because they will change anyway.*"

The quote from Ruël et al. (2010) summarizes the driving factor to move from waterfall to Agile well and exposes the weakness of waterfall; The inevitably of change, or at the very least the opportunity to miss something in the requirements challenges the value of delivering everything at the end.

2.4.2 Drivers for adoption in literature and surveys

Research by Sweetman and Conboy (2018) cited the 2016 Version 1 industry survey that found that 87% of interviewees saw ability to deal with change as the main benefit. This is still consistent with the survey in 2021 (Digital.ai, 2021) where "enhance ability to manage changing priorities was the joint most common response.

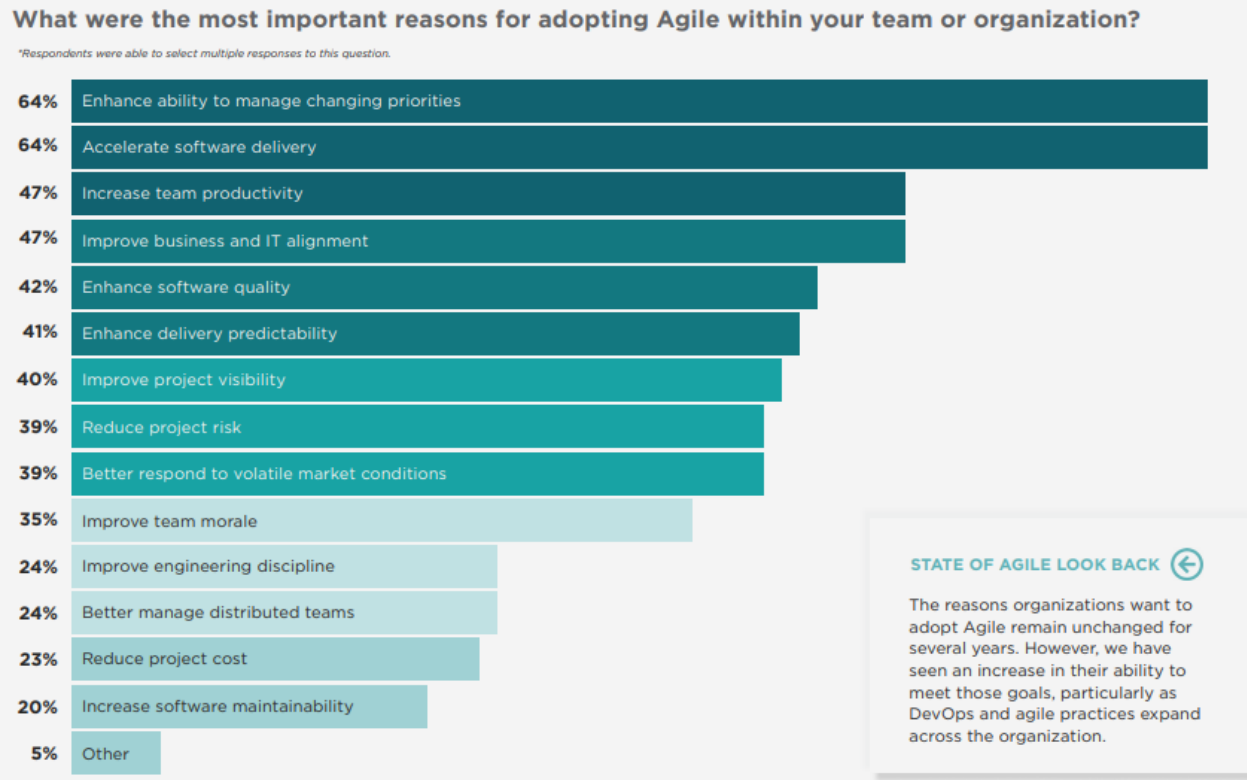


Fig 2.2 - Reasons for adopting Agile (Digital.Ai, 2021)

A survey in 2019 by KPMG (Simonnet, 2022) showed similar drivers for adoption though notably identified items for customer satisfaction and the need for a Digital Agenda. These differences might be explained by the audience - KPMG's survey included a larger proportion of non-software development professionals.

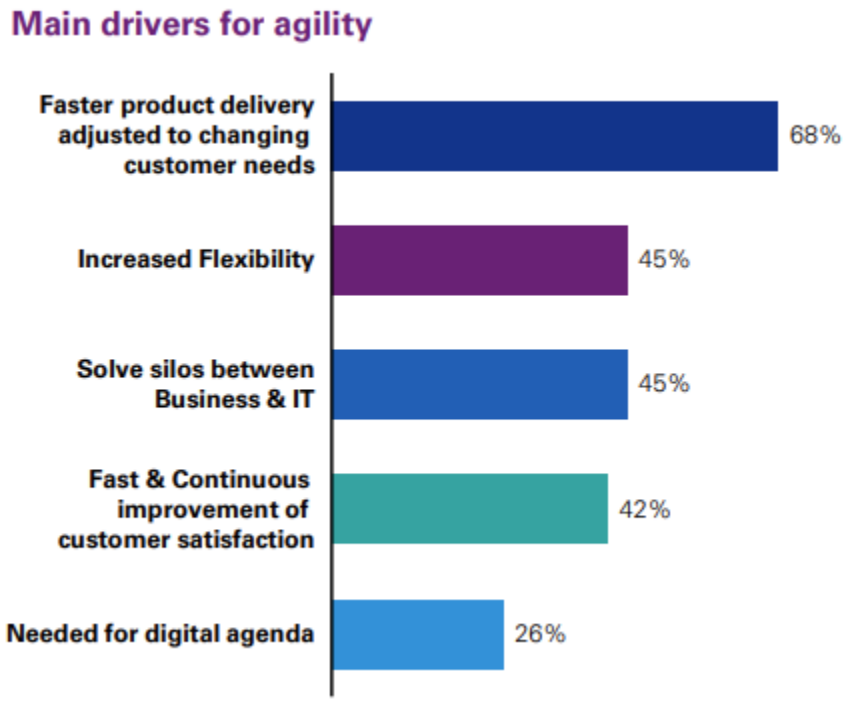


Fig 2.3 - KPMG Agile Survey - Drivers for Agility (Simonnet, 2022)

Denning (2018), concurred with these findings, noting that as the rate and complexity of change increased in the environment, organizations needed to be spry, and that the Agile approach to software development needed to be applied to business and strategic agility.

Another driver for adoption was customer centricity. Blank (2019) has previously observed that this is not a new concept and was part of the narrative for such frameworks as Six Sigma and the Lean Startup. Calnan and Rozen (2019) and Denning (2018) all cite this as a driver in their research on why whole organizations decide to adopt Agile. The author would argue that customer centricity is related to adaptivity to change, as changing trends in consumer demand require responsiveness from firms to stay current. This is reflected in the highest scoring item in the KPMG survey above KPMG (Simonnet, 2022), but notably absent in the Digital.ai (2021) survey.

A final driver commonly cited was productivity. Sweetman and Conboy (2018) confirmed this and indeed the Version 1 survey for 2021 cited it as a driver in 47% of interviewees (Digital.ai, 2021). Parker, Holesgrove, and Pathak (2015) performed an extensive review of the literature

and found that there was limited research on the productivity gains of self-organizing teams, a key component of Agile, which contradicts the perception from the research.

2.5 Self-Organizing teams

Self-organizing teams (SOT) direct their own work, and plan based on the details of their own tasks (Hodan and Marshall, 2010). They were identified in the Agile Manifesto as one of the 12 principles:

"The best architectures, requirements, and designs emerge from self-organizing teams."

(Beck, et al. 2001). They assume a degree of homogeneity such that different team members can do the same task. Moe et al. (2008) observe the importance of autonomy for SOT and describe three types:

- External autonomy as the influence of non-team actors on the activities of that team such that they can decide what work gets done in what order
- Internal autonomy as the ability for all team members to share the decision-making process, instead of a single leader directing the rest of the team, or individuals deciding what to work on themselves in isolation
- Individual autonomy as the discretion that an individual has to execute their tasks

The importance of autonomy in SOT is echoed by Takeuchi and Nonaka (1986) and is especially relevant to this research as it was primarily focused on non-software development examples such as the development of the personal computer by IBM and the Honda City car.

One of the research questions focuses on the role of leadership in supporting self-organizing teams. Gren and Lindman (2020) performed qualitative research in this area and found 2 differing behaviors depending on the maturity of the teams: Mature teams required little leadership, and those in a leadership role were more consultative. By contrast, less mature teams needed Agile practices reinforced by the leader. They posited that Agility emerges over time and that leaders need to be more involved initially, and then step back to a facilitative role dealing with other teams in the organization's ecosystem. This view is reinforced by Spiegler et al. (2019). Hodgson and Briand (2013) identified an alternative challenge to the adoption of self-organization in their case study of a Canadian video game company. There they observed that while leadership explicitly encouraged self-organizing teams, power hierarchies tended to

emerge, and individuals influenced the team decision making. They also observed that the parent organization tended to override the SOT in order to meet its objectives. These behaviors represent a risk to the adoption of self-organization, which is considered a key tenet of Agile.

2.5.1 Role of leaders in emergent self-organization

Frequently cited research by Plowman et al. (2007) on leadership in an emergent, self-organization is highly relevant to the authors area of research as it explores the role of leadership in transformations, and their specific case study outlines the importance of self-organization as one of the outcomes of the transformation itself. It is distinctive for the lack of reference to Agile, in spite of it being a few years after the Agile manifesto was published. It explores the nature of leadership in what it terms “complex adaptive systems”, and importantly it focuses on a non-software development situation, that of a church that was in decline, but that through an emergent strategy redefined itself and became a voice for the homelessness problem in a major city. Their findings focused on how leaders enabled, rather than drove emergent self-organization. They termed a leader such as this a complex leader as they were dealing with complex adaptive systems. The authors of the paper identified three mechanisms applied by the leaders of the church:

2.5.1.1 Disrupting existing patterns

Plowman et al, (2007) proposed that transformative leaders disrupted the status quo by destabilizing organizations. They created conflict and highlighted the uncertainty that results, in contrast to traditional leaders that minimize conflict and uncertainty. This makes sense in the context of our definition of a transformation - The act of changing a previously “stable” organizational structure to something whose end state is uncertain, both in shape and time to execution, is highly disruptive.

2.5.1.2 Encourage novelty

Plowman et al. (2007) proposed that leaders encourage innovation by establishing simple rules that supported their goals. In their example, what would Jesus do? They also identified non-linear interactions as stimulating innovation. This manifested as people from different groups, both inside the church and out, engaging on various topics, leading to new thinking and

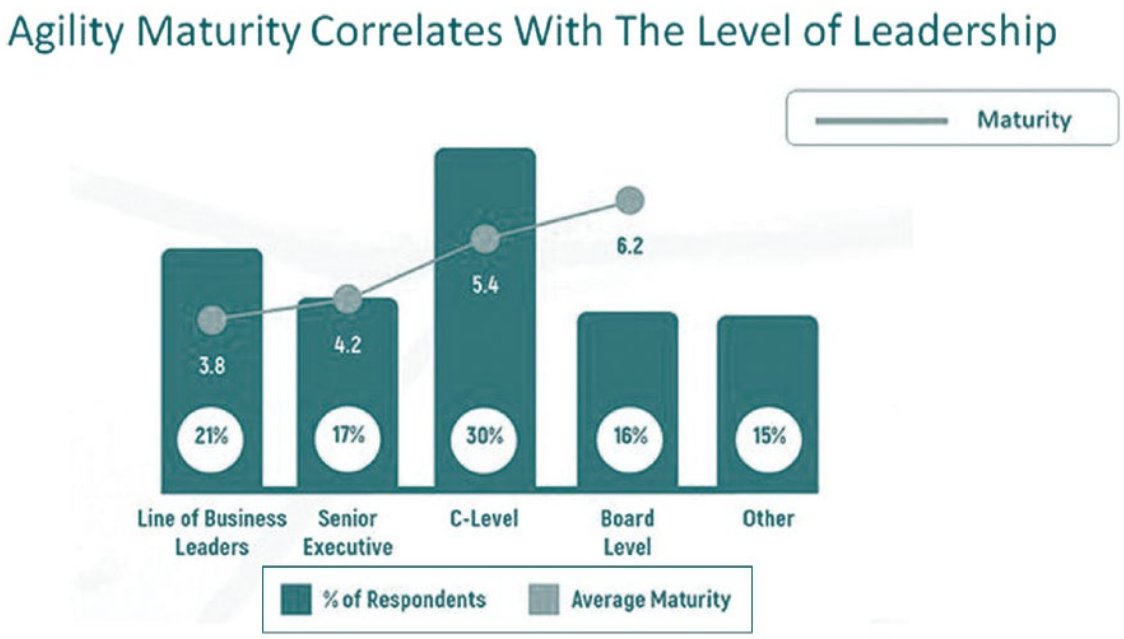
approaches. Research by Regine & Lewin (2000) concurred that novelty was possible when agents engaged, shared information, and reacted to information that had been shared.

2.5.1.3 Sense making

Plowman et al. (2007) also recognized role of the leadership in sensemaking. They compare this with the work of previous research (Gioia & Thomas, 1996; Smircich & Stubbart, 1985) that leaders influence strategy by scanning the environment and interpreting issues. This activity helps the organization by making sense of what's happening, whether it's expected or not.

2.5.1.4 Not using the pulpit

Plowman et al. (2007) express an interesting view on what leaders did not do in their study; They did not use the pulpit to tell the teams what to do, rather they reminded people of the values and principles (the simple rules) and challenged them to react. The analogy of the pulpit enforced by research by Denning (2019). He noted the importance of support and involvement by top management, but provided examples in Amazon, Microsoft and GE whereby the success of an Agile transformation was about creating an environment for experimentation and allowing progress to emerge from the teams, rather than as a top-down strategy. He cited a report by the Business Agility institute (Leybourn, 2018) that charted the average maturity level of companies against the % interviewees at different leadership levels. The chart below shows a linear relationship between maturity and the leadership levels.



Source: The business agility report, 1st edition 2018, creative commons 4.0 international license

Fig 2.4 - Business Agility report 2018

On a broader scale, the transition to SOT is notable in the literature as one of the biggest challenges to adoption. Sommers (2019) and Dikert, Paasivaara and Lassenius (2016) explain the challenges in transitioning partly as a feature of incomplete training for management. They also cite legacy delivery schedules as a factor restraining the transformation, which Calnan and Rozen (2019) observed that it impacted deliveries to some customers by as much as 6 months.

2.6 Research on Agile transformations of whole organizations

The purpose of the dissertation is to explore the role of leadership in the Agile transformation of a department. Having described Agile and discussed its principles and frameworks the author will now investigate what role leaders play in Agile transformations. As material on the Agile transformation of individual departments is limited, the author will first examine the literature as it relates to transformations to understand general views. He will then explore material relating specifically to Agile transformations of software development, and of whole firms to understand how leadership have acted.

2.6.1 Defining Transformations

The term “transformations” appears to be used regularly along with “change management” so it’s important to differentiate the two. Ashkenas (2015) contrasts the two by considering the time frame and breadth - Change management is about finite programs whose necessary shift is well known. Transformations are broader in scope and usually longer in duration. Their outcomes are less well known from the start and their eventual conclusion follows an iterative, often experimental cycle. Gouillart and Kelly (1995) further enforce this by differentiating change as restructuring exercises while transformations are less tangible and definite.

In the scope of this research, transformation is more suitable, as Agile adoption requires a change in mindset, which is intangible. Gouillart and Kelly (1995) assert that transformations cannot be initiated until enough team members have been transformed themselves so that they believe in the initiative.

The research by Plowman et al. (2007) is generally relevant to transformations and has shades of Agile in spite of not being directly related to it, in particular the importance of self-organization (or complex adaptive systems as they describe it). It provides an abstract lens towards the role of leaders in transformations, drivers for adoption and SOT. As observed earlier, the literature is somewhat lacking in the area of Agile transformations of a department. In this section the author will review the case studies relating to the Agile transformation of whole organizations as the closest proxy with a focus on the research questions in this dissertation.

2.7 Organizations that have performed an Agile transformation

The author identified three relevant case studies on Agile transformation at the organizational level, Lego (Sommers, 2019), ING (Calnan & Rozen, 2019) and Ericsson (Paasivaara. et al., 2018). It is important to note that two of the three papers (Lego and Ericsson) were authored or co-authored by practitioners working at the company. This introduces a risk of bias in the findings, though none that this author could explicitly identify.

The Lego group (Sommer, 2019) initiated an Agile transformation of several digital departments in 2018. Research on the change at Ericsson by Paasivaara. et al. (2018) focuses on the Research and Development organization, while the transformation at ING bank (Calnan and Rozen, 2019) was part of a broader initiative to move from being a traditional bank to a platform bank. Lego and Ericsson are more similar in scope to the Authors target company, while the ING study focuses on the organization as a whole.

2.7.1 Drivers for adoption

All three cases identify a desire to remain competitive by being able to respond to the market faster, which is a common theme that emerges from the other research previously discussed and is consistent with the survey results of both the Business Agility institute (Leybourn, 2018) and the State of Agile report (Digital.ai, 2021). Sommers (2019) describes responsiveness as a key competitive capability for the Lego Group.

2.7.2 Support by leadership for Self-organizing teams

Surprisingly none of the three papers focus much on Self-organizing teams, in spite of the importance placed on it as part of agile. The Ericsson paper doesn't mention it all in the scope of its agile transformation, and the Lego paper casually alludes to self-organization in the scope of knowledge transfer networks. It does mention that SOT's might resolve issues where teams have a diverse set of responsibilities, but it does not go into detail.

The ING paper provides the most commentary, but simply notes that the approach in ING was modelled on a visit that their leadership team paid to Spotify. It describes the structure as squads of nine team members that are multidisciplinary and cross functional, "*... with the full autonomy to self-organize*." (Paasivaara. et al., 2018).

2.7.3 Role of Leadership in the agile transformation

Three common themes emerge in the three papers:

2.7.3.1 Environment for experimentation

Sommer (2019) notes that leadership in the Lego group fostered an environment that supported testing and learning. Calnan and Rozen (2019) describe a similar approach in ING as experimentation. In their case, the CIO initiated a program to launch a mobile application. Teams

were given autonomy to decide how to do the work, but importantly, they were shielded from interference by the rest of the organization. Paasivaara. et al. (2018) identify a similar environment of experimentation "*...the experimental approach meant that the organization open-mindedly tried solutions to see if they would work in their setting. If something did not work, it was quickly changed.*" In the spirit of experimentation both Lego (Sommers, 2019) and Ericsson (Paasivaara. et al., 2018) also used pilot programs before the formal transformation began, so that they could discover the challenges at a small scale and provide low risk validation for the transformation itself.

2.7.3.2 Avoidance of a top down approach

The second theme to emerge is the avoidance of a top-down approach; All three papers noted that the leadership teams provided support and allowed agile to emerge, rather than to prescribe and enforce plans and structures. This is not to say that leadership did nothing. At Lego, they provided funding to hire Product Owners, altered the organizational structures to enable cross functional teams and changed the funding and remuneration. At ING they altered their corporate structure and even invested in new facilities so that teams were co-located. Ericsson experience was somewhat different. Paasivaara. et al. (2018) note that Ericsson recognized early on that not all of its leadership team were supportive of the transformation and created roadblocks to it. Ericsson restructured its leadership team to involve more people with the appropriate experience. Ericsson also accommodated the transition by hiring up to 200 staff to support the transformation, including product owners, coaches and agile architects.

2.7.3.3 Education

A third theme is the provision of education and coaches. All three companies ensured that Agile coaches were made available to the teams, and in all cases the departments being transformed were given training on the Agile mindset and frameworks, not as one off or unidirectional engagements, but rather ongoing and inclusive.

2.8 Conclusion

2.8.1 Introduction

The literature review looked at a number of topics relevant to Agile transformation, in particular the agile mindset and reasons that motivate companies to change, the importance of self-organizing teams to the successful implementation of Agile and the role of leadership in supporting transformations. It explored research by Plowman et al. (2007) which discussed leadership where the transformation is emergent, and drive from the bottom up, and how these behaviors were self-organizing. It is particularly important as it did not apply to software development, or even a commercial enterprise; rather it focused on the transformation of a church and its raison d'etre. The author also focused on three case studies of Agile transformations at large organizations (Sommers, 2019; Calnan and Rozen, 2019; Paasivaara. et al., 2018) and how they were applied outside the area of software development.

Research on Agile has grown in recent years, fueled initially by its success in software development, but more recently in how it can apply to other areas. (Denning, 2018; Denning 2019; Dikert, K. et al., 2016; Sweetman and Conboy, 2018)

2.8.2 Critique

The author found it difficult to find a wide range of literature on the transformation of single departments, which limited the opportunity to learn from a diverse set of experiences. The author considered excluding the article on Ericsson by Paasivaara. et al. (2018) as it applied to the broader organization, however he felt that elements were applicable, and the limited selection of alternatives necessitated its inclusion as a proxy. The author suspects that a contributing factor to the limited research is the necessity for openness on the part of organizations; many may be reluctant to share what they see as commercially sensitive information

The three studies (Sommers, 2019; Calnan and Rozen, 2019; Paasivaara. et al., 2018) were also focused on a single company. The author could not find research that explored more than one company at a time. This leads to an absence of quantitative analysis via broad surveys which makes generalizations impossible.

The literature on self-organizing teams is relatively well developed (Plowman et al., 2007; Takeuchi and Nonaka, 1986; Hodgson and Briand, 2013; Beck et al., 2001; Hoda, Noble, and Marshall, 2010; Hodgson and Briand, 2013; Moe et al. 2008) so it was a surprise that the three case studies made such limited reference to it. The Agile Manifesto considers it a central plank of its approach, as does the research by Takeuchi and Nonaka, (1986), which is often considered to have laid the groundwork for the SCRUM methodology. It's possible that this element was of limited interest to the authors or that research was not able to uncover any material.

The author notes that there was a high degree of agreement across the various papers, around the benefits of an Agile mindset, and the approaches for transformations, as well as the supportive, non-directive role played by leadership. While this may reflect the general experience of practitioners, contrarian views often introduce necessary friction that challenges the thinking. One possibility is linked to the earlier observation that organizations may be reluctant to share information; They may be less eager still to share their experiences where an Agile transformation was unsuccessful because of associated stigma. As a whole, the literature might suffer from survivorship bias: No one wants to admit failure, which itself represents a philosophical dissonance with the Agile mindset.

Research Questions

3.1 Introduction

The purpose of this chapter is to state the research questions and provide some background as to why they are being asked.

The author was drawn to this area of research as his recent career had involved working on waterfall style operations teams but collaborating with software development organizations that were agile. He was interested in how Agile methods could be applied to non-software development teams, and through exposure to leadership and organizational development material during the MBA, he wanted to see what an organization would need to do to encourage such a transformation.

3.2 RQ1: What is the role of leadership in the Agile transformation of a non-software development department?

The author viewed this as the primary research question. Traditionally transformations are perceived as top-down - Leadership decide to restructure, to expand or contract divisions or functions and to exit a business based on a macro view of the organization and its environment. A transformation is a conscious decision to disrupt the current ways of working, and requires resources to be allocated or removed, all of which have a financial impact that requires someone senior to approve. This translates into both hard and soft activities. The hard activities are more visible and include (but are not limited to) hiring and firing, engaging external trainers and coaches, new technologies to support the ways of working and even adding new facilities or moving teams. The soft activities are no less important as they motivate and guide employees, communicate progress to all stakeholders and bring everyone on the journey together.
All of these activities manifest the commitment of the leadership team to a transformation, which both empower and encourage teams to change. The author wanted to understand what role leadership plays in the agile transformation of a non-software development department so that any insights could be shared with organizations considering such a transformation.

3.3 RQ2: What are the drivers for Agile adoption vs the traditional approach?

The author considers this an important question as the reasons to adopt Agile must contribute heavily to the decision to execute the transformation. It may also shape the attitudes and appetite for leadership to support the initiative and to persist when challenges are met. The surveys, Version 1 (Digital.ai, 2021) and KPMG (Simonnet, 2022) provide guidance from industry at a macro level, but the author is interested in how individual departments are motivated. The author hopes to validate the drivers found in the literature and surveys, and possibly discover novel ones that may be generalizable to departmental levels.

3.4 RQ3: What support does leadership offer the transition to self-organizing teams?

Self-organizing teams are a central part of Agile (Hodan and Marshall, 2010; Beck, et al. 2001; Moe et al., 2008; Takeuchi and Nonaka, 1986), but represent a departure from the top down, led approach of traditional management. It would seem important then that their implementation is successful in the transformation. It is an area for potential friction as some managers may need to step back from their previous roles of telling people what to do, and likewise, team members need to step up and become confident and capable in deciding what needs to be done, when how and by whom.

Given the importance of self-organizing teams, the author is curious if this also applies to non-software development functions, and if so, how the leadership team manifests support.

3.5 Conclusion

In this chapter the author stated the research questions and explained the motivation behind each one, as well as what he hopes to learn from them. In the next chapter he will outline the research methodology.

Research Methodology

4.1 Introduction

The chapter that follows details the research methodology that will be used to execute this research. The chapter will outline the author's research designs and philosophies, as well as classifications and research approaches.
After this the author will explain the available research strategies. The chosen research method will be outlined, along with data collection options. This section will be concluded with a discussion of validity and reliability.

The chapter will conclude with a justification of the chosen research methodology and any limitations. The author will provide background on the target organization of the study though certain information will be redacted in compliance with the non-disclosure agreement signed by the author.

4.2 The Research Plan

The research design is a blueprint for the study process. The design serves as a link between the study objectives and the methods employed to achieve those objectives (Domegan and Fleming, 2007)

4.3 The Research Philosophy

The research philosophy represents the author's understanding of how knowledge is generated (Saunders et al., 2019). Positivism, Interpretivism, and Realism will be examined by the author.

Positivists believe that reality is given objectively and can be represented by quantifiable features that are independent of the observer, and that changes in independent variables induce changes in dependent variables. Positivist research applies natural science approaches to the study of social reality and tends towards generalizations, beliefs that are valid until proven otherwise. One of the main goals of this philosophy is to generate law-like generalizations that can be duplicated in other circumstances. (Saunders et al., 2019; Bryman and Bell, 2015).

Interpretivism differs significantly from that of the natural sciences. According to interpretivists, the world of commerce and leadership is too complex to be simplified to a collection of law-like

absolutes (Bryman and Bell, 2015). They suggest that understanding the subjective meaning of social actions requires a technique that acknowledges the differences between people and natural science objects. People who place varied meanings on the situations in which they find themselves are generally aligned with interpretivism. These various perceptions have an impact on their conduct and social interactions with others.

The viewpoint on replication differs significantly between Interpretivism and Positivism. While Positivists employ replication to support their theories, Interpretivists recognize that due to the dynamic nature of the business world and the heterogeneous character of organizations, they may not be able to reproduce their studies in other contexts (Saunders et al., 2019).

Realism is founded on the assumption that there is a reality that exists independently of human thoughts and opinions. From the standpoint of business and management, this implies that there are large-scale processes and social forces that can affect people unconsciously. The external objective nature of some macro elements of human behavior is shared by this viewpoint and positivism.
While realism has some philosophical overlap with positivism (in terms of the external objective ness of some macro features of society), it does not regard humans as objects that can be investigated using natural science approaches (Saunders et al., 2019).

4.4 The Research Approach

The research approach relates to the order in which the research is performed. The author can choose one of two ways. Deduction entails formulating a theory and then collecting facts to see if that theory is correct. Induction entails collecting data and developing a theory based on the data analysis.
Deduction is a type of inference that is intended to be conclusive (Cooper and Schindler, 2008). In this scenario, the author will make a hypothesis concerning the relationship between two variables. They will then collect data and apply empirical analysis to either accept or reject the hypothesis. Acceptance and rejection criteria are typically based on logical premises. If one or more of the premises are false, or the form of the argument is faulty, the hypothesis is rejected (Saunders et al., 2019).

The above method is reversed in the inductive approach. Data is gathered and analyzed. The findings of this study are then applied to the development of a theory to explain the variables. The ability to accept alternate explanations for observed events is a significant asset of the inductive approach. While the deductive technique allows for alternative explanations, it does so in the context of the barriers imposed by a highly structured research design.

4.5 Research Design Classifications

The literature distinguishes three types of research designs. These are determined by the inquiry's terms as well as the research strategy employed (Cooper and Schindler, 2008; Saunders et al., 2019; Domegan and Fleming, 2007).

The purpose of exploratory research is to discover "*what is going on; to seek fresh ideas; to raise questions; and to evaluate phenomena in a new light*" (Robson, 2002) There are three approaches to exploratory research:

- A review of the literature
- Consultation with subject specialists
- Focus group interviews

(Saunders et al., 2019)

The goal of descriptive research is to "*provide an accurate profile of people, events, or situations*" (Robson, 2002). Descriptive research can be performed before conducting exploratory research. This may be required to obtain a clear image of the topic that the author desires to investigate (Saunders et al., 2019).

Explanatory research identifies causal connections between variables. The priority here is to investigate a situation or problem in order to identify the correlations between variables (Saunders et al., 2019).

4.6 Research Strategies

There are several research strategies that can be used. The author will provide a brief explanation of ones that were considered appropriate follows.

4.6.1 Survey

The author's initial option was to conduct a survey. Surveys are commonly used in business and management research and are related with the deductive method. They enable the author to collect a big amount of data in a cost-effective manner (Saunders et al., 2019). Questionnaires and structured interviews are the primary approaches for conducting a survey.

4.6.2 Case Study

The author's next option was to do a case study. A case study is defined as "a research technique that incorporates an empirical assessment of a particular current event within its real-life setting using different sources of information" (Robson, 2002). The case study is particularly applicable if the author intends to obtain a thorough comprehension of the research topic. Questionnaires, interviews, observation, and documentary analysis are common data collection approaches (Saunders et al., 2019; Bryman and Bell, 2015).

4.6.3 Grounded Theory

Grounded theory was the final strategy. This method enables the author to construct hypotheses by combining induction and deduction. Without the construction of an initial theoretical framework, data collecting begins (induction). The data leads to the formulation of hypotheses, which are then tested using additional observations to determine whether the predictions are validated (deduction) (Saunders et al., 2019; Cooper and Schindler, 2008).

4.7 Time Horizon

It is critical for the author to determine the time frame in which they desire to pursue their research. Longitudinal studies are often conducted over long periods of time. This method enables the author to investigate change and development. The amount of data that must be collected and analyzed can stymie such a project (Saunders et al., 2019).

Cross-sectional studies look at a single point in time, i.e. how things are right now. While this time span may be more appropriate for academic research 55 projects, it may jeopardize the generalizability of the findings (Saunders et al., 2019).

4.8 The selected research approach

The study's goal is to understand the role played by leadership in the transformation of a non-software development to Agile. The author identified a suitable, supportive organization and selected the case study as the research strategy. The case study was suitable in contrast to the other two strategies because:

- It was difficult to secure a broad number of target companies on which to run a survey, as this type of transformation is not common, and is often considered commercially sensitive. (Survey)
- The author did not believe that the opportunity existed to test hypotheses, given the time horizon available, as well as the need for cooperation from the target workforce (Grounded theory).

It is anticipated that securing several interviews across different organizational levels will help the author to analyze and contrast in order to discover consensus, as well as areas of divergence where they exist. If there are sufficient commonalities, the author may be able to extract areas for leadership to focus on, or for future research to be conducted.

The firm was identified through a request for assistance on the authors LinkedIn network. The interviewees were provided by an advocate at the target organization. The semi-structured interview was chosen as the most suitable research method. It allows flexibility on the part of the author to probe the interviewee and allow them to talk about what is important to them. It also provides the interviewer with a framework to prepare a suitable line of questioning (Saunders et al., 2019, Keats, 2000). The author will provide an overview of the organization and a limited profile of each interviewee, in compliance with the organizations non-disclosure agreement.

4.8.1 Research Methods

The author chose the interview as the research method. There were 3 options were available: structured, semi-structured and unstructured interviews

4.8.1.1 Structured Interviews

The structured interview is an organized interview method that adheres to a predetermined script in order to minimize variation in the scope of responses and maximize the research's reliability and validity (Bryman and Bell, 2015). It is frequently used in quantitative research. An interviewer will prepare a series of questions in a logical progression (Keats, 2000).

4.8.1.2 Unstructured Interviews

Unstructured interviews are commonly used in qualitative research. The format is casual, and the interviewee is free to discuss experiences, behaviors, and views (Saunders et al., 2019, Bryman and Bell, 2015). As a result, there is no predetermined script, and the interviewer just keeps a list of subjects to cover (Saunders et al., 2019; Bryman and Bell, 2015).

4.8.1.3 Semi-Structured Interviews

The semi-structured interview falls somewhere in the middle. The Interviewer will have a set of and questions to ask; however, the order may change from interview to interview. This style of interview gives the author the freedom to investigate ideas that may emerge from the interview that he had not previously considered.

4.8.2 Data Collection Methods

Several methods are available to collect data. Considering the popularity of the interview in the literature reviewed the author selected the semi-structured interview.

4.8.2.1 Description of Chosen Research Approach

The target company was based in another country, so the author conducted the interviews using their preferred communication tool, Microsoft Teams. Some of the interviews were conducted with the video on, others without. The author did not enforce either mode so as to be respectful of the interviewee’s preferences. Saunders et al., (2019) describe this as “synchronous electronic interviews”. As such, this approach was almost identical to telephone interviews. Telephone

interviews can be less expensive and easier to conduct in situations when potential respondents are difficult to find time with (Keats, 2000). Telephone interviews can be hampered by the need to keep the interview brief (Domegan and Fleming, 2007).

4.8.2.2 Reliability and Validity

A challenge for the author is whether the evidence will support the conclusions and findings. Saunders et al, (2019) note that the purpose of reliability and validity is to mitigate the risk that the evidence won't be supportive.

4.8.2.3 Reliability

Reliability is concerned with the consistency of a concept's measurement (Saunders et al., 2019). They summarize this by offering three questions:

1. Will the measures provide the same results on subsequent observations?
2. Will additional observers make similar observations?
3. Is there transparency in how the raw data was interpreted?

4.8.2.4 Validity

The validity of a metric is concerned with whether it genuinely measures the idea that it was supposed to measure (Saunders et al., 2019). Saunders et al., (2019) offer headings to assess validity:

4.8.2.5 History

Recent events may be more evident in respondents' perceptions and induce bias, for example, employees may have an unfavorable image of a corporation if they do not receive a bonus.

4.8.2.6 Testing

The Hawthorne effect is a phenomenon that can occur. Respondents do not behave normally when they are aware that they are being observed. In the context of this research, interviewees may provide true or unbiased feedback for their own agenda.

4.8.2.7 Instrumentation

Instrumentation mistakes can occur when there is a change in the measuring method before and after the observation time.

4.8.2.8 Mortality

This can happen if respondents drop out of the study throughout the research procedure.

4.8.2.9 Maturation

The passage of time causes maturation. As time passes, changes in the respondent or the location can jeopardize the validity of research (Domegan and Fleming, 2007).

4.8.2.10 Uncertainty about causal direction

This might occur when the nature of the cause-and-effect relationship between variables is unclear.

4.9 Justification of Research Strategy

The author examined the methodologies used by the case studies in the literature review as a means of determining the best research method. The three case study articles, (Sommers, 2019; Calnan and Rozen, 2019; Paasivaara. et al., 2018) all use semi-structured interviews as a means of collecting data. They also used observations and internal company documents, as two of the articles (Lego & Ericsson) had an author that worked in the company itself. Internal documentation and observation were not available as methods to the author as an outsider.
The author considered the aims of his research and opted to conduct it from an interpretivist perspective. The objectives would be difficult to quantify because they were primarily concerned with the role of leadership in implementing a new organizational and work approach, and the motivating factors for this. Thus, a natural sciences approach would be problematic.

Since there are no hypotheses behind the research objectives, the author used an inductive technique in conjunction with an exploratory design. The goal was not to verify a theory, but rather to understand what motivated departments to transform to Agile, and what role leadership played where the department was not a traditional software development one. Ideally the author

would pursue a descriptive design, but this would necessitate extensive access, which the author did not believe he could obtain.

Ideally the author would pursue surveys and interviews across a number of companies to discover common themes. Case studies and Surveys were both valid strategies in the context of the research objective. Both strategies are appropriate for an explorative approach that is interpretivist and inductive. Interviews are also a common form of data collecting in both.
The author ultimately decided to apply a case study method. He felt that the survey approach would depends on a larger sample of data; and interviews are more structured in order to support generalizations. The case study enables the author to construct a picture of the company at a specific point in time and to investigate respondents through semi-structured interviews.

4.9.1 Description of the research methodology used

The author hopes to carry out interviews with a number of employees at various levels in the department so that multiple views of the transformation can be assessed and interpreted.

4.9.1.1 Preliminary questions to be covered by the interviews

The author has situated the specific questions posed in the interviews in the findings section in tabular form, along with an explanation of the purpose behind the question, as he believes this provides a better flow of understanding for the reader. The interview structure may vary slightly depending on the flow of conversation with the interviewee. The author will probe the interviewee further if they mention something novel that was not previously considered

4.9.1.2 Data Gathering

The author will arrange 30-to-45-minute interviews with the available employees on the Microsoft Teams communication. The author has decided not to record the interviews for two reasons:

1. While the non-disclosure agreement is not restrictive, the author would prefer to err on the side of caution as recording would have to be done on the interviewees side and shared, which might introduce confidentiality risks

2. The author wishes to ensure frank feedback from the interviewees and believes that recording conversations might hinder this.

The author will make notes during the interview and transcribe interesting comments. The author will declare the notetaking at the start of the interview in the interests of transparency.

4.9.1.3 Analysis

The goal of the interviews is to understand the experiences of the interviewees. As such the data from each interview will be collated to identify similar themes or experiences on behalf of the firm.

4.9.2 Limitations

The research had several limitations:

4.9.2.1 Lack of audio recording

The decision not to record limits the authors ability to undertake a comprehensive thematic analysis, as coding keywords and phrases cannot be reproduced in a comprehensive manner after the interview. It may also limit the ability to provide quotes in some areas.

4.9.2.2 Geographical distance

The target company is located in Central Europe which precludes the author from on-site and in-person interviews which might have made communication easier.

4.9.2.3 Availability of interviewees

The interviewees availability is limited to a once-off interview due to work commitments. There is the possibility of sending follow up questions by email, but response depends on their availability which is a risk.

4.9.2.4 Single case study

This research is limited to a single company. Surveys and interviews across multiple companies and diverse departments would eliminate the risk that the findings of this research were specific to this company alone.

4.9.3 Commercial sensitivity and non-disclosure agreement

The author has signed a non-disclosure agreement with the legal department of the target company. In compliance with that the Author will not provide the name of the company or names of any of interviewees. The author will submit the dissertation for approval to his contact at the target company before submission to the examination board at the National College of Ireland.

4.10 Background on target company

As per the non-disclosure agreement, the author can share limited details of the target company. The company is located in Central Europe and is primarily in the jewelry business. It is present in over 170 countries. The company was identified as suitable for the research as none of its main businesses are software development, and the department under research is not part of the main IT function.

4.10.1 Company contact

The author secured contact with the Head of Data Delivery Management who has been instrumental in the transformation. He has communicated the objectives of the research and helped arranged interviews with relevant people.

4.10.2 Target Department and function

The author is researching the DATA function, which is part of the Digital division of the target company. The DATA department is the result of the merger of several disparate functions that previously provided data services to different parts of the business. The adoption of Agile had already started in some of the teams prior to the merger.

The research also includes interviews with the head of the performance management solutions, a team that provides data services and is transforming to Agile, but currently sits under the Finance department.

4.10.3 Interviewees

The author is unable to share details of the interviewees but has illustrated the relevant information in the table below as well as in the organizational chart on the next page.
To assist with identification, they will be designated A through I along with their department and title. The author has also recorded their level in the organizational chart, with 0 as the most senior role.

Identifier	**Department / Sub-department**	**Role**	**Relative Organizational Level**
A	Digital	Head of Digital Office	0
B	Data	Head of Data	1
C	Business Intelligence	Head of Business Intelligence	2
D	Data Delivery	Head of Data Delivery	2
E	Business Finance	Head of Performance Management Solutions	1
F	Business Intelligence	Business Intelligence Manager	3
G	Data Delivery	Agile Scrum Master	3
H	Business Intelligence	Business Intelligence Manager	3
I	Data Lake	Data Engineer	4

Table 4.1 - Interviewee Identifiers, roles and organizational levels

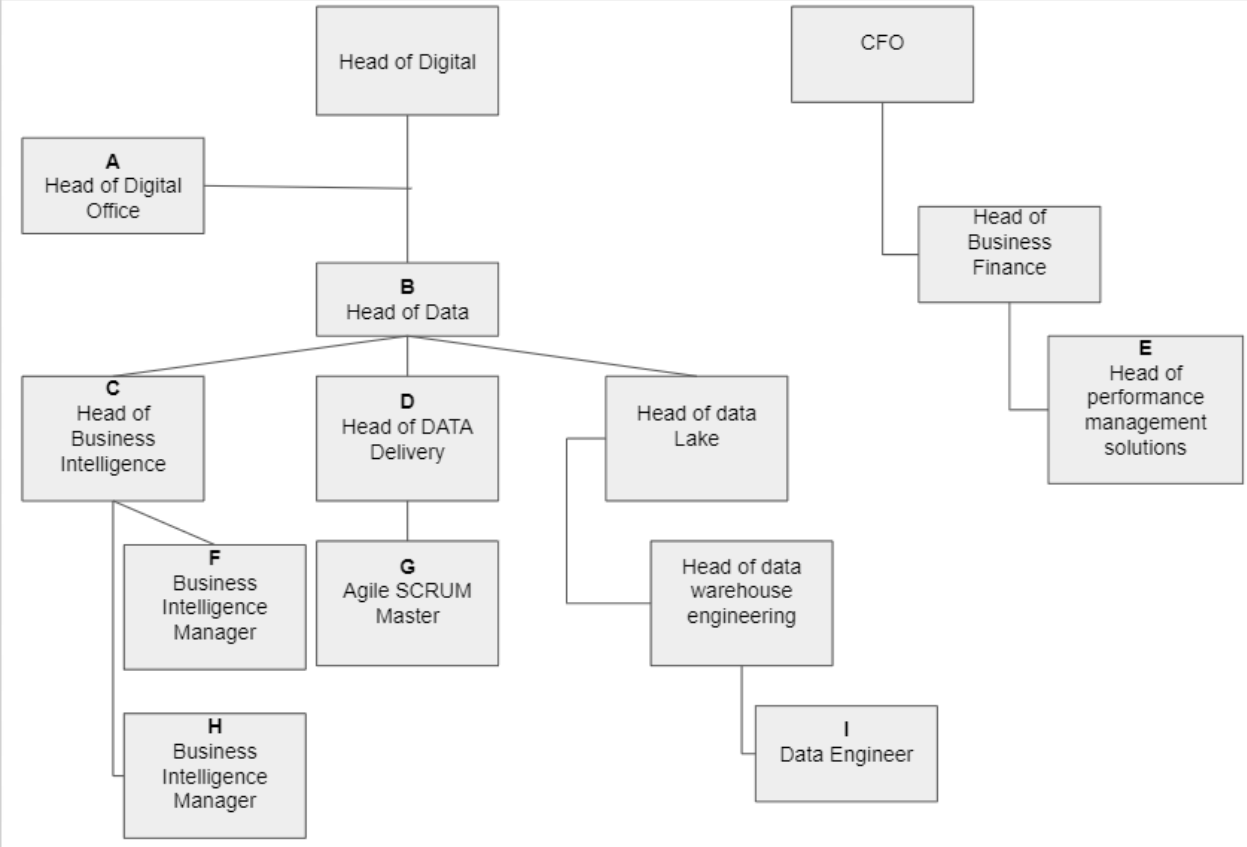


Fig 4.1 - Organizational Chart

4.11 Conclusion

The author opted for a qualitative approach, with an interpretivist perspective, given that the objective was not to test hypotheses. The author selected a semi-structured interview approach so that opportunities to uncover new insights were not excluded. The author is confident that given the limitations, the research methodology selected is suitable. In the next chapter the author will deliver the findings of the research.

Findings / Results

5.1 Introduction

The following chapter reports the findings of 9 interviews conducted with employees at the target firm. The identifiers and organizational levels of the interviewees can be found in table 4.1 of chapter 4.

The goal of the interviews was to encourage the participants to share their experiences and insights based on the original research questions. The primary research question is:

"What is the role of leadership in the Agile transformation of a non-software development department?"

The sub-objectives are:

- What are the drivers for Agile adoption vs the traditional approach?
- What support does leadership offer the transition to self-organizing teams?

The author will examine the sub-objectives first as they frame the analysis for the primary research objective. The author will endeavor to analyze the results in the context of the supporting literature from chapter 2 and provide conclusions for each theme.

5.2 What are the drivers for Agile adoption vs the traditional approach?

The author posed open questions to the interviewees to determine what the perception of the previous approach was and what the expected benefits of adopting Agile would be. The author also asked what benefits had been experienced since the adoption. This was done for two reasons: to clearly differentiate between expectations that prompted the organization to change, as well as realized benefits that may not have been expected but that were valuable, nonetheless. The questions were:

Questions	Purpose behind question
What was the pre-adoption method of management?	Determine what method was in use beforehand to frame the drivers to explore Agile
Why is the department being transformed to Agile?	A direct question to understand the expectations benefits of Agile adoption
What benefits do you expect?	Asked to differentiate between expected and realized benefits

Table 5.1 - Questions asked for “drivers of adoption”

In the interviews, the responses of the drivers for adoption were generally similar. The author noted that interviewees at higher levels in the organization demonstrated a more strategic view versus those at lower levels. This is to be expected given the scope and responsibilities of their roles.

All of the interviewees described or explicitly stated that management approach before adoption as the waterfall approach.

Five themes emerged as a result of these questions:

1. Ability to adopt to the speed of change in the environment
2. The transparency of the backlog and prioritization of work to be done
3. The ability to manage expectations with stakeholders
4. The alignment with IT strategy
5. The development of one analytics department.

5.2.1 Ability to adopt to the speed of change in the environment

The speed of change in the environment reflects the ability of an Agile approach to allow for changes to be made in the priority of what is to be worked on. Five of the nine interviewees cited being able to respond to the pace of change in the environment. Respondent B explicitly noted that under the previous system (waterfall) “*...we weren't able to change or adapt our plans to the new coming requirements, to keep the pace, to be flexible enough to fill those requirements.*"

There was a noticeable difference in the organizational level of those that cited speed of change.

It was more commonly cited at higher levels of management, possibly indicating a greater attachment to the strategic vision of the adoption itself.
This finding is not surprising and aligns with the material by Sweetman and Conboy (2018) as well as the surveys by Version 1 (Digital.ai, 2021) and KPMG (Simonnet, 2022). Being able to respond to the speed of change in the environment was also a consistent driver identified across the three organizational case studies (Calnan & Rozen, 2019; Sommers, 2019; Paasivaara. et al., 2018).

5.2.2 The transparency of the backlog and prioritization of work to be done

The transparency of the backlog and the prioritization of the work to be done was identified as a challenge of the previous waterfall approach; It was not clear what teams were working on, and why they were working on tasks, rather than other possibly more important activities. All interviewees mentioned transparency as both a driver of and benefit from Agile adoption. Interviewee F felt that some teams / team members would prefer their own "favorite" projects over more valuable ones under the old method. Interviewee A noted:
"*We hope that the satisfaction of our internal customers or partners increases because they have transparency on the progress and they can also bring in their priorities quite transparently, and they get involved in this progress as well.*" while interviewee G stated "*We are trying to be more transparent in our daily works and planning for product and for the upcoming weeks, and we would like to make sure that everyone is aware of what other teams are also doing."*
This transparency is supported by an issue tracking and project management technology called JIRA, which allows teams to create tasks and plan their execution in sprints. It also allows progress to be visualized.
Three interviewees also noted that the role of the product owner required stories (things to be built) to be properly investigated and refined, so that their purpose and importance was clear to all. Additionally, the monthly replenishment meetings bring all of the teams together to see what is being worked on, so that any dependencies or additional information can be surfaced.
This finding was not evident in the literature. The most similar equivalent was described in the Version 1 survey (Digital.ai, 2021) as "improve project visibility". Paasivaara. et al., (2018) noted that backlog transparency was an objective of Ericsson's transformation, but did not

explicitly identify it as a driver, rather the absence of transparency was identified as one of the challenges early in the transformation.

The author believes that transparency as a driver for adoption is significant. It speaks to a practical motivation for and benefit of Agile adoption at the team level, as distinct to higher level organizational drivers. Allowing all teams to see what is being worked on, and what is being considered for future assignment provides clarity on the priorities of the departments and how it aligns with strategy. This should be considered as distinct from transparency for stakeholders, which is discussed below under a theme of expectation management.

5.2.3 The ability to manage expectations with stakeholders

The ability to manage the expectations of stakeholders arises as a consequence of transparency as a distinct driver. Interviewee A and G noted that Peers or Stakeholders "*...wanted everything done immediately*". Previously it was hard to explain what was being worked on across disparate teams, and why projects or tasks could not be quickly prioritized. The transparency enables this clarity, and since people can no longer work on their "favorite" projects, a modicum of faith in the system makes the expectations that are set more credible.
This finding was separate from but related to that of transparency in that stakeholders could see everything that was being worked on, so that there was no confusion about the priorities or where projects were in the plan. As above, it maps somewhat to "improve project visibility" in the Version 1 survey (Digital.ai, 2021) but it is not explicitly called out elsewhere in the literature.

The author thinks that this is an overlooked driver, as it supports inter-functional discipline. If external stakeholders have visibility to the backlog and the prioritization and ownership is evident, it can set clear expectations for stakeholders.

5.2.4 The alignment with IT strategy

The alignment with IT strategy was another theme that came up across two of the interviewees. Interviewee C noted that it was part of the longer-term corporate strategy to be able to respond more quickly to the changing environment. Interviewee D commented that IT teams had been

moving to Agile, so the Digital division had "*hopped on*". Interviewee G observed that while the departments aligned with the IT strategy of transformation to Agile, the Digital department was given the flexibility to implement its own Agile framework, ScrumBan,
"*...I had opportunity to shape the set up by my own, because people and managers put trust in me.*".
The closest reference to the alignment with IT strategy in the literature was the fifth driver for Agile in the KPMG survey (Simonnet, 2022). This was termed "Needed for digital Agenda" but no detail beyond this was given.

The author considers this an interesting but peripheral finding. Where larger departments decide to transform and those departments have relationships with a given function, it is not surprising that the functions will align in order to work effectively with that department.

5.2.5 The development of one analytics department

Interviewee H explicitly stated the need to develop a single Data department. "*The main reason is to bring one [redacted] to get one [redacted]... sometimes it was difficult for the company to get common decisions.*" As stated earlier, previously there were separate analytics functions with similar capabilities attached to different business departments. Interviewee H noted that this made development complicated, as projects might have dependencies on work being done by other functions. Interviewee E also recognized this challenge and added that previously, understaffing would leave projects unstarted, or built at too slow a pace for the business.
Interviewee B observed that before the restructuring of functions to the Digital department and the subsequent transformation to Agile, the siloed nature of capacity meant that projects could not be fast tracked by adjusting capacity, whereas now they could.
The author considers this a peripheral finding. This type of driver did not come up in the literature and would seem specific to the company itself. It also appears to have been part of a re-structuring exercise, and as such may simply have overlapped with the Agile transformation process.

5.3 What support does leadership offer the transition to self-organizing teams?

As discussed in the literature review section, self-organizing teams are considered an integral part of Agile. The author accidentally omitted questions from the first four interviewees and sought to gather feedback by emailing questions to those interviewees. As the other interviewees provided limited feedback, the author extended the email questionnaire to all interviewees. The volume of responses was lower than expected, though some common views emerged.

The author posed the following questions to the interviewees, of which six provided feedback. Interviewee F didn't feel qualified enough to provide detailed feedback.

Posed	Questions	Purpose behind question
Interview	Do you have self-organizing teams?	Establish if self-organizing teams are implemented for the department
Interview	If so, how are they implemented?	An open question to understand how self-organizing teams are run
Email	Do you think that self-organizing teams are in place for your team, and why/why not?	Establish if self-organizing teams are implemented for the department
	If they are not implemented:	
Email	How do you think the absence of self-organizing teams impacts the implementation of Agile and the performance of the team?	Does the interviewee think that their absence causes an issue?
Email	What structure is in place in their absence?	Understand what structure is in place as an alternative
Email	What are leaders doing to aid their implementation?	Understand if leaders are trying to get SOT implemented and if so, how?
Email	What is the role of the manager in the scrum team?	If SOT isn't implemented, then decision making must come from somewhere, is it the Manager?

Table 5.2 - Questions asked for "Self-Organizing Teams"

5.3.1 Are Self-Organizing Teams implemented?

This question returned a diverse set of responses. Interviewees (3) at higher levels in the organization (0 to 2) were more positive about the degree to which Self-Organizing Teams had been implemented, Interviewee C: *"We implemented this kind of self-organizing team already before we implemented the agile framework. We implemented this kind of lateral leadership approach where of course on the one hand side we assign responsibilities across the team for some people which took over the functional area for their assigned area of responsibilities."*

Interviewees at lower levels (3 and 4) believed that they were only partially implemented (3). Interviewee F commented "*I think partially we work in this way. But as I mentioned, we are as well depended on other teams, I don't think is so straight forward to say yes or no*." Interviewee H commented *"In my opinion, the self-organizing teams work only partially"* There was a consensus that the teams are not fully self-organizing.
The literature reviews for the three organizational transformations (Calnan and Rozen, 2019; Sommers, 2019; Paasivaara. et al., 2018) do not discuss the degree of implementation in detail, with only Paasivaara. et al., (2018) stating that the teams were multi-disciplinary and had the full autonomy to self-organize.

The author is challenged to determine if this finding is central or peripheral. It exposes an interesting dissonance:

- SOT is considered central to Agile
- There is consensus that it is only partially implemented in the target organization.

It is a surprising finding in the scope of software development teams but perhaps this is a feature of Agile outside of software development.

5.3.2 How does partial implementation work

All interviewees acknowledged that the individual teams could plan the order of their work, how they would execute and who on the team would take different tasks. Interviewees A and B acknowledged that a cultural change was needed to go further; Interviewee B stated, "*Culturally many were relying on top down decisions, follow the rules / guidance*". Interviewee H described partial self-organization as being able to plan out how they would do things that had been decided, but that projects were defined from the top (leadership), so that the team could not decide new initiatives for the Digital products themselves, "*One part of tasks is directed and controlled from the top, another is self-organized*." The author feels that these responses are specific to the target organization and would not be expected to appear in the literature.

The author believes that the further explanation of partial implementation sheds some light. Teams are empowered to decide how they work and what order they work on but appear to receive some influence as to what they work on. This is a central finding as it speaks to

conflicting perceptions - Leadership believe that the culture is not ready yet to make broader decisions while the team managers see this gap in autonomy as a blocker to being truly self-organizing. This is supported in the literature by the findings of Gren and Lindman (2020) on team maturity. It also resonates with the three types of autonomy identified by Moe et al,. (2008); Internal and individual autonomy appear largely present but external autonomy is not.

5.3.3 What is the role of line-managers in this case

The author saw this as an important question to divine whether teams were truly organizing their own activities or if their execution was being directed by their manager - Logically a team cannot be self-organizing if its tasks are being organized in detail by a manager. Broadly speaking managers fell into one of two roles - They acted as the product owner as well as the functional manager in small teams, and in larger teams they provided capacity for the teams through HR, and secured resources where necessary. Interviewee D noted that originally most managers had been assigned the product owner role as well but overtime they had realized that there were too many responsibilities for one person if they wanted to successfully follow a SCRUM process. In both role scenarios, none of the interviewees inferred that managers directed execution. Interviewee H noted that managers "*Coordinate and provide resources, check employee statuses, delegate tasks*". Interviewee I corroborated this view "*To manage resources. Product owners decide on story priorities, while team managers provide resources*."

The author considered this a peripheral finding that was specific to the target organization and did not expect it to come up in the literature.

5.3.4 How does leadership support this transition

Both Interviewees B and C used the phrase "empowerment" as an effort towards self-organization. Interviewee C cited continuous engagement to this end. "*...really important in case you really want to empower the team, you don't let them just go and say let's meet again in half a year*." Interviewees A and D admitted that the Agile transformation itself was still a work in progress. Interviewee A was pragmatic, recognizing that previously team members could work in their own narrow areas, but now they had to think more broadly; Team members "*..need to appreciate they are not experts in a particular topic, they have to learn other things.*"

Interviewee B stated, "*Culturally many were relying on top down decisions, follow the rules and guidance*." He also pointed out that the teams were not previously trained to be autonomous and that there were challenges shifting the mindset from executing to owning. The author notes that the themes surfaced by Plowman et al. (2007), Sense making, disruption and novelty were not apparent here. The theme of creating a supportive environment but not directly instructing (Plowman et al., 2007; Dennning, 2019) was present and cited by Interviewee G as the freedom to develop an Agile framework that was different than the one used in IT.

The author considers this a central finding. It validates material from the literature review about creating a supportive environment as well as an effort to avoid a top-down approach. It is interesting in the observation that personnel were previously able to work in a very narrow way, and that making the transition to thinking more broadly and not having strict rules to follow was not a quick process and needed training and encouragement to develop.

5.4 What is the role of leadership in the Agile transformation of a non-software development department?

The role of leadership in the Agile transformation of a non-software development is the main research question of this dissertation. The author asked several questions to elicit responses wide-ranging responses from the interviewees on facets of leadership, rather than relying solely on a single direct question. He also used the semi-structured interview format to explore interviewees experiences that might not have been realized through a structured "question and answer" interaction.

Questions	Purpose
How did the leadership team support the initiative?	A direct question to discover any immediate views
What resources have been granted?	A question to discover any material resources such as tools / new hires / new facilities that were provided
Were you or your team brought to any off-site departments to introduce them to Agile?	To discover if any external training was offered
What challenges did you experience?	The purpose of this question was to identify what issue arose for the teams and enquire how leadership supported them?

Table 5.3 - Questions asked for “Role of Leadership”

The author identified five broad themes that returned in the responses. In contrast to the previous sections the author will discuss whether the findings are peripheral or central in the aggregate after the findings.

5.4.1 Communications

Six interviewees (A, B, C, E, D, G) mentioned regular communications from the Leadership team about the progress of adoption. Communications took the form of emails, and announcements at meetings of all of the employees of the department. They noted that this had two main benefits, ensuring that the transformation was transparent, and ensuring that people knew that there was a clear direction, rather than the transformation itself being perceived as a fad. Interestingly, communications were not explicitly mentioned in the three case studies, though it is a finding of the systematic literature review of Dikert et al., (2016).

5.4.2 Support of Pilots

Two interviewees (A and D) discussed supporting pilots with single functions before the formal transformation program was launched. A pilot is a smaller version of the transformation applied to a function or even an individual project. Interviewee A noted: "*We supported pilots with smaller teams before the roll out to socialize with the organization*". This had a number of benefits, including the opportunity to experiment and learn, as well as socializing Agile for the organization as a whole, so that the language and concepts were familiar to all before the transformation was begun in earnest. Both Ericsson (Paasivaara. et al., 2018) and Lego (Sommer, 2019) used pilots before introducing an Agile transformation.

5.4.3 Restructuring and the allocation of dedicated resources

Four interviewees (A, C, D, G) noted the functions went through structural changes to support the transition. Previously disparate but related functions (finance, business intelligence, etc.) that supported data products were merged under the banner of Data. The roles of the managers of functions were redefined to support the adoption of Agile, along with the creation of the product owner, scrum master roles and the hiring of an Agile coach, none of which had previously existed. Plowman et al. (2007) described restructuring as disrupting the organization from something that was previously stable. Ericsson (Paasivaara. et al., 2018) and Lego (Sommer, 2019) similarly provided funding to hire suitable personnel and restructured to enable cross functional work, as well as ensuring that the leadership team were supportive of the mindset change.

5.4.4 Use of external and internal training

Interviewees A, C, D, G and I discussed several different training activities. From the variations in responses, it appears that different methods were applied to some teams as the organization learned from what was successful in the past.

Agile coaches were hired to ensure that training was not a once-off activity and that a resource was present to help on a sustaining basis.

Interviewee C also mentioned training from external resources, which Interviewee I identified as KPMG. At the start there was a 2-day training workshop delivered to the whole department, as well as continued availability of consultants over the period of the transformation.

Interviewee D mentioned a presentation from about ways of working and culture from Google Zurich recently, which included the majority of Data department. He noted that it was "*... a shift for some colleagues to see its possible to be more ope*n". All three case studies on Agile transformation (Paasivaara. et al., 2018; Sommer, 2019; Calnan and Rozen,2019) applied internal and external training sessions. ING had a workshop with Spotify, like this organizations visit to Google.

5.4.5 An environment for change and experimentation

The fifth theme is made of observations and comments across all interviewees and can be best summarized as an environment for change and experimentation.

Interviewees A, G and I illustrated through the initial implementation of retrospectives. These are sessions whereby a team looks back at the work that they have done on a project or sprint and discusses how it could have been executed better. Initially there were more frequent replenishment meetings, and the teams felt that they weren't getting much out of them as they tended to take a few hours to get through the backlog for everyone. While it was important in the spirit of transparency for everyone to see what was being worked on, people felt that the time could be better used. The leadership team listened to this feedback and adjusted the frequency, resulting in happier employees.

Interviewee G was given the responsibility to decide what Agile framework to implement. After investigating and trialing the framework used by corporate IT, she decided that SCRUM wasn't the best fit for the DATA department. Rather than enforcing a companywide framework, she was given the latitude to discover a better solution. In her own words, "*...I had opportunity to shape the set up by my own, because people and managers put trust in me.*".

Interviewee C discussed the value of providing support in response to pressure from stakeholders on priorities. This occurred in scenarios where external stakeholders had conflicting views of priorities in comparison to what had been agreed. Rather than bowing to pressure, the leadership team provided guidance on the priorities, dealing with the stakeholders directly and thereby providing validity to the Agile approach.

Interviewee D noted that while functional managers were initially assigned the role of product owner, some reported that they could not do that as well as their duties to manage the teams, so the leadership team allowed them to alter their role and assign a new product owner to replace

them. An appetite for experimentation is echoed across the three case studies (Paasivaara. et al., 2018; Sommer, 2019; Calnan and Rozen,2019) as well as in Denning (2019)

5.4.6 Peripheral or Central?

The author believes that individually, the findings above are peripheral. They largely conform to the material covered in the literature review. While the importance of communications is not explicit in the three case studies, it is called out in Dikert, K. et al., (2016). The use of pilots is mirrored in Ericsson (Paasivaara. et al., 2018) and Lego (Sommer, 2019) as is the importance of restructuring to implement the desired change. The use of internal and external trainers is echoed across the studies, and interestingly the use of presentations with non-competitors is also evident (Spotify, Google).

The environment for change and experimentation appears common in the literature; while the individual insights are interesting, they appear largely specific to the organization. One exception may be the importance of the leadership team providing support by not bowing to pressure to alter priorities, and rather let the process take its course. This wasn't called out in the literature, and it is possible to imagine this situation occurring where a transformation that is in progress results in dissatisfaction with stakeholders that are used to the previous approach.

On the whole the author feels that the findings support the research to date, but do not provide any novel insights that are generalizable. The author contends though, that the set of findings were not present in every case study, and so the collection of these themes in the situation of the Agile transformation of a non-software development department provide some guidance for other organizations that are thinking about this approach.

5.5 Conclusion

In this section the author presented the results of the interviews and structured them in the context of the research questions. He identified themes and mapped them to the content of the literature review where applicable. He discussed their relevance and identified them as central or peripheral to the research.

The author found that the transparency of what was being worked on and planned for the future, as well as the ability to set expectations were important drivers, and not well represented in the

literature. He found that there was a perception that not all factors of Self-Organizing teams had been implemented, and that changing the mindset of personnel to think independently was the biggest challenge; one which required continuous training and encouragement. Finally, the author found that the approaches surfaced in the literature by which leaders supported Agile transformations were evident in the target organization as well.

In the next section the author will discuss those findings and identify learnings that could be generalized.

Discussion

6.1 Introduction

The purpose of the discussion chapter is to explore and interpret the results of the research in the context of the research questions and the findings from the literature review. The author will structure the chapter by exploring each research question and interpret the findings for each.

6.2 What are the drivers for Agile adoption vs the traditional approach?

The drivers for Agile adoption represent the all-important "Why?" - why change the way a department functions? Why introduce disruption to processes and people? Why potentially slow performance down? The author will discuss the central findings in detail below.

6.2.1 Ability to adopt to the speed of change in the environment

There is plenty of agreement in the large surveys (Version 1, KPMG) that the ability to deal with changing customer requirements is the primary driver. This makes sense in contrast to the traditional waterfall approach - rejecting changes during development and not allowing the customer to experience the solution until the end introduces a risk that the final product will not be suitable and will either be a waste of effort or require re-work. Two of the biggest proponents of the waterfall approach (Royce,1987 and Bennington, 1983) note this as a risk of the waterfall approach.

The responses from the people that the author interviewed also recognize the ability to respond to change as an important driver. The author views this finding as central insofar that it confirms the major driver in the literature but questions its insightfulness in the context of his research. It confirms that it is also a driver for non-software development departments but does not add novelty.

6.2.2 Transparency and managing expectations

The author noted in the previous chapter that these two themes were inter-related and so will discuss them together here. The author sees them as related because the transparency of the backlog allows stakeholders to see what is planned to be worked on and when for themselves; and the replenishment meeting exposes any arguments for prioritization. It reduces the ability of teams to work on their own "favourite" projects and limits undue influence being exercised by

stakeholders. By using project tracking software, the progress of projects is visible to all stakeholders without having to rely on word-of-mouth updates.

Transparency and managing stakeholder expectations was not an area that had a lot of coverage in the literature that the author reviewed. The Version 1 survey (Digital.ai, 2021) made a vague mention of it, and the case study of Ericsson by Paasivaara. et al., (2018) identified it as an objective of the transformation but not a primary driver.
In contrast, all of the interviewees in this study cited transparency as the main driver. The author believes that it is a valuable new insight in the context of the transformation of a department that has no external customers, only internal stakeholders. Much of the literature focuses on external customers, but from the authors experience, there are many teams within an organization that do not have direct dealings with the outside world, and for them, concepts such as "responding to changing priorities / customer needs" may be difficult to map to their own day to day experience. What people and teams are working on, and the mechanisms by which the expectations of internal stakeholders are set and updated, are quite relevant to team members day to day work. To paraphrase the collective responses on this area, it should be clear what everyone is working on, and that everyone is working on the right thing.

The practical implication for the Agile transformation of a non-software development department is that the leadership team should ensure that the benefits of transparency are cited as part of the reasons before they initiate the transformation, and ideally any benefits accruing from transparency should be highlighted as part of ongoing communications.

6.3 What support does leadership offer the transition to self-organizing teams?

As noted, before, Self-organizing teams are considered central to Agile (Hodan and Marshall, 2010; Beck, et al. 2001; Moe et al., 2008; Takeuchi and Nonaka, 1986). It was interesting that for such an important element, the literature from the three case studies (Sommer, 2019; Calnan and Rozen, 2019; Paasivaara. et al., 2018) had surprisingly limited commentary on it. It is possible that they simply didn't consider it central to their research objectives.

The literature also highlights the importance of an environment for experimentation as well as leadership not prescribing every step to be taken (Plowman et al. 2007; Denning, 2019). The author found evidence of this in the interviewees, particularly with the SCRUM master who had been empowered to adopt a different framework than the global IT department. The author will discuss this section more in the final section as he believes that it is more appropriate there.

The overwhelming feedback from the interviewees was that self-organizing teams were only partially implemented in the DATA department. This is at odds with the importance of SOT expressed in the literature above. There were some differences of opinion as to the degree to which it had been implemented which is an interesting area of investigation. Most interviewees agreed that the team could choose "who" would work on tasks and "how" they would work on them. The leadership team had restructured teams to match the Scrumban framework and there were mechanisms to decide how work would be carried out, but that "what" they would work on was often defined for them by leaders. This circle is squared somewhat by observations from Interviewees A and B, that a cultural change was needed as many had relied on top-down decisions and were not ready to decide the "What" on their own yet.
The proposition that teams are inherently ready to be Self-Organizing is fundamentally an assumption. It also exposes a hesitancy from management as to when they are ready. This potentially creates a never-ending cycle of "you are not ready" and "We are not free to decide what we will do". The author believes that this is an important insight in the context of the research question - Have leaders been supportive? Yes. Are self-organizing teams fully implemented yet? No.

An alternative perspective may be that there is a limit to the degree that Agile can be implemented for non-software development function, or there may be circumstances that are unique to this organization that preclude the implementation of the "What". The author is doubtful of these alternative interpretations as so much progress has been made in other areas, and suspects that on balance, that the transformation is a work in progress, and that building a mindset and capability for "What" is simply the next step in a journey.
The author does believe that the findings on SOT suggest an opportunity for leadership to find better ways to set milestones that demonstrate when a team can be considered ready to decide the

"What". This might involve coaching from the current decision makers so that decision making process is clear to all. Collaborating with the teams can build trust on this topic, and a pilot might be a good way of allowing the team to experiment and figure out what works, without the fear of failure. Doing this in a clear and well communicated way aligns with the spirit of transparency that has been prevalent in the conversations with interviewees.

6.4 What is the role of leadership in the Agile transformation of a non-software development department?

In the findings chapter, the author stated that he believed that the individual findings were peripheral as they largely confirmed the material from multiple sources in the literature review.

Communications about the progress of the adoption featured in Dikert et al. (2016) systematic literature review as well as six of the interviewees. Communications as a topic was notably limited in the case studies, and again the author wonders whether they simply were not central to the research objective or perhaps taken for granted. The leadership team disrupted the status quo by altering the existing functional structures and re-defining the roles within teams by adding product owners, which aligns to the disruptive role outlined by Plowman et al. (2007) as well as the headcount changes mentioned by Ericsson (Paasivaara. et al., 2018) and Lego (Sommer, 2019). The interviewees confirmed the use of internal and external training which was evident in all of the case studies (Paasivaara. et al., 2018; Sommer, 2019; Calnan and Rozen, 2019). The support for pilots was common to the case studies and to the interviews and provided an opportunity to test the waters in a low risk, visible fashion for the leadership team. Finally, an environment for change was common in the case studies as well as (Paasivaara. et al., 2018; Sommer, 2019; Calnan and Rozen,2019) as well as in Denning (2019). Several interviewees noted support for trying out different ways of working to find something that worked well.

The fact that so many themes were present in both the literature and the interviews suggests that, in concert, they are important, and moreover they are common to the transformation of both non-software development and software development teams. This is a notable outcome as it indicates that learnings from the role of leadership in the transformation of software development functions and teams can be applied to non-software development ones. This does not preclude

the possibility that there are additional activities for leadership that might be more suitable to non-software development scenarios. The author notes that the interviews did not discover any novel activities in the role of leadership.

6.5 Conclusion

In this chapter the author discussed the findings of his research in the context of the research questions. The author noted that in some areas there was support in the literature for his findings, in particular the ability to adapt to change as a driver, as well as the role of leadership in the transformation of a non-software development department.

The most interesting results came not from the primary research question, rather the two sub-questions. Transparency and the management of expectations of shareholders were not commonly surfaced in the literature reviews, however they were the most named drivers by the interviewees. The implementation of self-organizing teams was considered important in the literature but barely mentioned in the three case studies. Its partial implementation appeared to be an area of possible friction between leadership and teams, but it also exposes an opportunity for leadership for both leadership and teams to define a path to full implementation, rather than the perception of teams not being ready.

In the next chapter the author will conclude the dissertation.

Conclusions and Recommendations

7.1 Introduction

In this dissertation the author explored the role of leadership in the Agile transformation of non-software development functions. The author will discuss the learnings from the individual chapters and then reflect on what was learned as well as what challenges or failures of design limited the research. Finally, the author will identify audiences for which this research might be useful, as well as future areas for research.

7.2 Literature review

The author reviewed the available literature on Agile transformations and found it rich and enthusiastic on the subject of Agile and the reasons for adopting it. He examined three case studies on multinational companies, whose primary business was not software development related, that were transforming their whole organization to Agile and found alignment between literature and the case studies. He explored Self-organizing teams, particularly in the non-software development environment and found a seminal piece by Plowman et al., (2007) that was unrelated to Agile, but provided an excellent contrast to the other available material. The author searched for literature on the transformation of a single department of a non-software development organization and found the literature lacking, which further supported the authors proposition that there might be useful learnings in his area of research

7.3 Research Questions and Methodology

The author outlined the research questions and provided explanations of why he thought these questions were interesting. The author then considered the methodologies available to investigate the research objectives. Surveys and case studies, as well as other research philosophies and methodologies, were explored. Because the research instrumentation would not generate raw data, it was chosen to conduct the study from an interpretivist perspective. Because there was no literature directly available on the subject, the author decided that an exploratory approach would be preferable.

Finally, it was decided to conduct semi-structured interviews on a single firm as a case study. This would provide respondents the freedom to discuss the topics that were most important to them, while also allowing the author to analyze the feedback later on.

7.4 Findings

In the findings chapter the author examined the interviewees responses in the context of each research question and contrasted with the observations derived from the literature review. The findings were broadly in line with the literature, though the author noted that some findings from his research were not as prevalent in the literature. These will be discussed in more detail in the "Discussion" section.

7.5 Discussion

The author segmented the findings into research questions and discussed them in that context.

7.5.1 What is the role of leadership in the Agile transformation of a non-software development department?

This was the primary research question. The author found that the experiences of other companies, both in the software development business and at a companywide level were broadly the same. They communicated the progress of the transformation. They disrupted the status quo to encourage the transformation by initiating restructuring programs and provided resources in terms of new roles and hires. They supported and environment for experimentation, first through pilots and then by allowing teams to test out structures and ways of working that suited them.

7.5.2 What are the drivers for Agile adoption vs the traditional approach?

The author validated the most popular driver in the literature, that the ability to adopt to changes was a primary motivator. The author uncovered two related drivers that were not apparent in the literature but have significant value in the motivation of an individual department. Transparency of what work was being done and why was noted as a driver for adoption by all interviewees. This transparency also has a knock-on effect for managing stakeholder expectations, since the work backlog management tools allowed them to see what was being done and what its progress was. There were also clear lines of communication about the prioritization, so pet projects would not get disproportionate attention. The author believes that transparency and managing expectations are under-advertised drivers for the adoption of Agile and should form an important part of the proposition for leaders with the internal teams that they want to transition. The author

has no knowledge as to whether this is helpful for software development companies as well, but it could be a future area of research.

7.5.3 What support does leadership offer the transition to self-organizing teams?

The findings to this question proved the most unexpected for the author. The three case studies were notably vague on the implementation of Self-Organizing teams. The author had assumed that they would be implemented given its importance in the Agile manifesto and other literature, but the feedback from interviewees was that it was only partially implemented at the target company. The degree of implementation was interesting as lower-level employees felt that they could choose who and how to work on things, but not what to work on. The interviewees from leadership roles felt that the teams needed to develop more before they could decide. The author proposes that exploring at what point teams could be considered ready might allow more clarity and satisfaction and allow a collaborative approach to define the means of supporting that goal.

7.6 Reflections on the research and outcomes

As previously stated, the application of Agile outside of software development environments attracted the author to this area of research. During the course of the MBA, the author studied modules on leadership and strategy, and these provided a lens on an otherwise broad endeavor - to understand the role that leadership teams can play in the transformation.

The role of leadership in the Agile transformation of a non-software department.
While no new insights were discovered for the primary research question, the findings of this dissertation validated those found in the literature review, which provides some confidence to practitioners that are looking to apply best practices to the transformation of individual departments or functions in the non-software development environment. Future research might focus on a single theme such as communications or resources and look to survey a broad range of companies to assess how important a factor it is.

7.6.1 Drivers for adoption

The importance of transparency and expectations management as drivers were interesting, and notably limited in the literature reviewed. Transparency resonated with all of the interviewees and may represent an important talking point for leadership when they are trying to convince employees and stakeholders of the benefits to be gained from the transformation. The author believes that there is an opportunity here to expand the research by developing models for transparency that could help companies assess their current transparency and measure their progress as Agile is implemented.

7.6.2 How leadership supports self-organizing teams

The findings invalidated an unconscious assumption - that self-organizing teams would be completely implemented. There was agreement that it wasn't fully implemented, and an understanding from leadership that there was still a way to go. The findings expose the invalidity of this assumption. The author believes that given the limited information in the literature, future research could focus on defining different states of self-organizing teams, and possibly prescriptive models that can assist teams moving to full self-organization. This would give leaders and teams a roadmap to work to when planning an Agile transformation.

7.7 Personal observations

7.7.2 Pleasant surprises

The importance of leadership not using their position as a pulpit and supporting experimentation was surprising to the author, as his previous experience of re-organizations was that they were driven from the top down. The importance of transparency was equally surprising in that it seems obvious but appears overlooked. The author suspects that these themes as well as the degree of self-organization might relate to employee's perception of equity and self-direction in the work place - The ability to survey the degree to which employees feel that they are part of a self-organizing team or that the processes and environment that they work in might also be a useful metric for employee satisfaction.

7.7.3 Shortcomings in the data

There are obvious opportunities for improvement in the data that are common to most dissertations - more companies, more interviewees, a quantitative approach. The author was limited by the number of companies that he could reach in his network, the number that were performing a transformation and most importantly the number that were willing to share. Commercial sensitivity often limits access but so too does willingness. The target company in question has been relatively successful in this transformation. This introduces a form of survivorship bias whereby successful behaviors are presented. Unsuccessful behaviors are equally valuable as they can show people what not to do. The author would like to have spoken to more employees at the lowest organizational level as it might have exposed more insights around the self-organization question, however access and time were understandably limited by the demands it put on teams. Finally, while the company and department were not primarily focused on software development, there was an element of that in the sample.

7.8 Future research

The author has already noted areas for future research on the specific findings but believes that there are still opportunities to explore how the Agile mindset emerges in non-software development environments. Areas such as manufacturing, business operations and finance would seem obvious, but activities that can rapidly respond to customer feedback and provide new experiences might be rich with insights. Businesses such as restaurants and craft brewing provide an environment whereby new tastes or experiences are tested and customer feedback is gathered, so that the business can iterate and find new desirable products and services.

Bibliography

De Smet, A., Lurie, M. and George, A.S. (2019) 'Leading Agile Transformation the New Capabilities Leaders Need to Build 21St-Century Organisations', Building Economist, pp. 27–36. Available at: https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,shib&db=bsu&AN=136958175&site=eds-live&scope=site (Accessed: 16 August 2022).

Doyle, D., 2007. The Adoption of Open Source Software Development in Irish SME's. Post-graduate. Galway: National University of Ireland.

References

Abrahamsson, P., Salo, O., Ronkainen, J. and Warsta, J., 2017. Agile software development methods: Review and analysis. arXiv preprint arXiv:1709.08439.

Ashkenas, R. (2015) 'We Still Don't Know the Difference Between Change and Transformation', Harvard Business Review Digital Articles, pp. 2–4. Available at: https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,shib&db=bsu&AN=118648184&site=eds-live&scope=site (Accessed: 11 July 2022).

Beck, K., et al. (2001) The Agile Manifesto. Agile Alliance. http://agilemanifesto.org/

Benington, H.D. (1983) 'Production of Large Computer Programs', Annals of the History of Computing, Annals Hist. Comput, 5(4), pp. 350–361. doi:10.1109/MAHC.1983.10102.

Blank, S. (2019) HBR's 10 Must Reads on Business Model Innovation (with Featured Article 'Reinventing Your Business Model' by Mark W. Johnson, Clayton M. Christensen, and Henning Kagermann). Boston, Massachusetts: Harvard Business Review Press (HBR's 10 Must Reads Series). Available at: https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,shib&db=e076mww&AN=1855536&site=eds-live&scope=site (Accessed: 23 January 2022).

Bryman, A. and Bell, E. (2015) Business research methods. 4th edition. Oxford University Press. Available at: https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,shib&db=cat05743a&AN=nci.19558&site=eds-live&scope=site (Accessed: 12 August 2022).

Calnan, M. and Rozen, A., 2019. ING's Agile transformation—Teaching an elephant to race. Journal of Creating Value, 5(2), pp.190-209.

Cooper, D.R. and Schindler, P.S. (2008) Business research methods. 10th ed. McGraw-Hill Higher Education. Available at: https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,shib&db=cat05743a&AN=nci.16202&site=eds-live&scope=site (Accessed: 12 August 2022).

Denning, S. (2016) 'How to make the whole organization "Agile"', Strategy & Leadership, 44(4), pp. 10–17. doi:10.1108/SL-06-2016-0043.

Denning, S. (2018) 'The role of the C-suite in Agile transformation: the case of Amazon', Strategy & Leadership, 46(6), pp. 14–21. doi: 10.1108/SL-10-2018-0094.

Denning, S (2018) 'How major corporations are making sense of Agile', Strategy & Leadership, 46(1), pp. 3–9. doi:10.1108/SL-11-2017-0104.

Denning, S. (2019) 'Lessons learned from mapping successful and unsuccessful Agile transformation journeys', Strategy & Leadership, 47(4), pp. 3–11. doi: 10.1108/SL-04-2019-0052

Digital.ai, 2021. 15th Annual State of Agile report, Digital.ai Available At https://digital.ai/resource-center/analyst-reports/state-of-agile-report - [Accessed 29 June 2022].

Dikert, K., Paasivaara, M. and Lassenius, C. (2016) ‘Challenges and success factors for large-scale agile transformations: A systematic literature review’, The Journal of Systems & Software, 119, pp. 87–108. doi: 10.1016/j.jss.2016.06.013.

Domegan, C. and Fleming, D. (2007) Marketing research in Ireland : theory and practice. 3rd ed. Gill & Macmillan. Available at: https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,shib&db=cat05743a&AN=nci.17958&site=eds-live&scope=site (Accessed: 12 August 2022).

Elena MIRCEA (2019) ‘Project Management using Agile Frameworks’, Economy Informatics, 19(1), pp. 34–44. doi:10.12948/ei2019.01.04.

Eilers, K., Peters, C. and Leimeister, J.M. (2022) ‘Why the agile mindset matters’, Technological Forecasting & Social Change, 179. doi:10.1016/j.techfore.2022.121650.

Gioia, D.A. and Thomas, J.B., 1996. Identity, image, and issue interpretation: Sensemaking during strategic change in academia. Administrative science quarterly, pp.370-403.

Gouillart, F.J. and Kelly, J.N., 1995. Transforming the organisation', McGraw-Hill, New York.

Gren, L. and Lindman, M., 2020, June. What an agile leader does: The group dynamics perspective. In International conference on agile software development (pp. 178-194). Springer, Cham.

Hoda, R., Noble, J. and Marshall, S. (2010) ‘Organizing self-organizing teams’, 2010 ACM/IEEE 32nd International Conference on Software Engineering, Software Engineering, 2010 ACM/IEEE 32nd International Conference on, 1, pp. 285–294. doi:10.1145/1806799.1806843.

Hodgson, D. and Briand, L. (2013) 'Controlling the uncontrollable: 'Agile' teams and illusions of autonomy in creative work', Work, Employment and Society, 27(2), pp. 308–325. doi: 10.1177/0950017012460315.

KEATS, D. M. (2000) Interviewing: A practical guide for students and professionals, Philadelphia, Open University Press.

Leybourn, E (2018), 2018 "Business Agility Report", Business Agility Insitiute, Available at: https://businessagility.institute/learn/2018-business-agility-report/95 Accessed on 2022-07-17

McConnell, S., 1996. Rapid development: Taming wild software schedules, Redmon: Microsoft Press.

Moe, N.B., Dingsoyr, T. and Dyba, T. (2008) 'Understanding Self-Organizing Teams in Agile Software Development', 19th Australian Conference on Software Engineering (aswec 2008), Software Engineering, 2008. ASWEC 2008. 19th Australian Conference on, pp. 76–85. doi:10.1109/ASWEC.2008.4483195.

Paasivaara, M. et al. (2018) 'Large-scale agile transformation at Ericsson: a case study', Empirical Software Engineering, 23(5), p. 2550. doi: 10.1007/s10664-017-9555-8.

Parker, D. W., Holesgrove, M. and Pathak, R. (2015) 'Improving productivity with self-organised teams and agile leadership', International Journal of Productivity & Performance Management, 64(1), pp. 112–128. doi: 10.1108/IJPPM-10-2013-0178.

Plowman, D.A. et al. (2007) 'The role of leadership in emergent, self-organization', The Leadership Quarterly, 18(4), pp. 341–356. doi:10.1016/j.leaqua.2007.04.004.

Reddy, A., 2015. The Scrumban [r] evolution: getting the most out of Agile, Scrum, and lean Kanban. Addison-Wesley Professional.

Regine, Birute & Lewin, Roger. (2000). Leading at the Edge: How Leaders Influence Complex Systems. Emergence. 2. 5-23. 10.1207/S15327000EM0202_02.

Ries, E., 2009. Minimum viable product: a guide. Startup lessons learned, 3, p.1.

Royce, W.W. (1987) 'Managing the development of large software systems: concepts and techniques', Proceedings of the 9th international conference on Software Engineering, pp. 328–338. doi:10.5555/41765.41801.

Ruël, H.J., Bondarouk, T. and Smink, S., 2010. The waterfall approach and requirement uncertainty: An in-depth case study of an enterprise systems implementation at a major airline company. International Journal of Information Technology Project Management (IJITPM), 1(2), pp.43-60.

Saunders, M., Lewis, P. and Thornhill, A. (2019) Research methods for business students. [electronic book]. Eighth edition. Pearson. Available at: https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,shib&db=cat05743a&AN=nci.33365&site=eds-live&scope=site (Accessed: 11 August 2022).

Schwaber, K. and Sutherland, J., 2011. The scrum guide. Scrum Alliance, 21(19), p.1.

Simonnet, N., 2022. Agile transformation: the common challenges, misconceptions and drivers. [online] KPMG. Available at: <https://home.kpmg/be/en/home/insights/2021/06/ta-agile-transformation-the-common-challenges-misconceptions-and-drivers.html> [Accessed 29 June 2022].

Smircich, L. and Stubbart, C., 1985. Strategic management in an enacted world. Academy of management Review, 10(4), pp.724-736.

Sommer, A. F. (2019) ‘Agile Transformation at LEGO Group: Implementing Agile methods in multiple departments changed not only processes but also employees’ behavior and mindset’, Research Technology Management, 62(5), pp. 20–29. doi: 10.1080/08956308.2019.1638486

Spiegler, S.V., Heinecke, C. and Wagner, S., 2019, May. Leadership gap in agile teams: how teams and scrum masters mature. In International Conference on Agile Software Development (pp. 37-52). Springer, Cham.

Sugimori, Y., Kusunoki, K., Cho, F. and UCHIKAWA, S., 1977. Toyota production system and kanban system materialization of just-in-time and respect-for-human system. The international journal of production research, 15(6), pp.553-564.

Sweetman, R. and Conboy, K. (2018) ‘Portfolios of Agile Projects: A Complex Adaptive Systems’ Agent Perspective’, Project Management Journal, 49(6), pp. 18–38. doi:10.1177/8756972818802712.

Takeuchi, H. and Nonaka, I. (1986) ‘The new new product development game’, Harvard Business Review, 64(1), pp. 137–146. Available at: https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,shib&db=bsu&AN=3919091&site=eds-live&scope=site (Accessed: 1 July 2022).

Thesing, T., Feldmann, C. and Burchardt, M. (2021) ‘Agile versus Waterfall Project Management: Decision Model for Selecting the Appropriate Approach to a Project’, Procedia Computer Science, 181, pp. 746–756. doi:10.1016/j.procs.2021.01.227. - didnt read yet

Appendices

Appendix 1 - Agile Software development Principles, Beck, et al. (2001)

The Manifesto for Agile Software Development is based on twelve principles:

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

4. Business people and developers must work together daily throughout the project.

5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.

7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity--the art of maximizing the amount of work not done--is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.