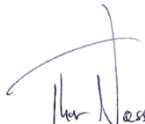


Declaration/Statements page

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed  (candidate)

Date 8 April 2022.....

STATEMENT 1

This work is the result of my own investigations, except where otherwise stated.

Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

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I hereby give consent for my work, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

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A holistic view of agile organizations

A systemic analysis of
Amazon and Hurtigruten

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Abstract

Organizational agility (OA) has become the leading managerial concept in business, judging by the foremost strategy journals and management consultancies. This paper aims to increase the understanding of OA among researchers and practitioners by investigating Amazon and Hurligruen using a systemic perspective. It attempts to satisfy the requests from academia and practitioners to examine the dynamic characteristics of OA. The paper uses a qualitative and empirical research methodology, collecting data from interviews, observations, and documentation. The analysis draws on General systems theory (GST) to identify and describe the findings. Using the holistic lens of GST, the findings reveal a view of the organization as an emerging organism in an evolutionary ecosystem. They support the argument that OA is a system made up of sub-systems containing people, processes, and technologies. Managers at Amazon and Hurligruen stress the importance of using a bird's eye view to consider all these properties. The results from the two case studies validate many of the GST principles, most fundamentally that the development of OA resembles that of a living organism. These original findings on OA properties have distinct implications for theory and practice, particularly in the field of strategic management but also for other streams. A significant implication for theory is that scholars can use GST with confidence to holistically approach OA in research. The main implication for business managers is that applying a holistic perspective to agile transitions and practices is critical to the success of OA.

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Introduction

What's dangerous is not to evolve.

-Jeff Bezos

In an interview discussing why Amazon had changed so significantly from an online bookstore to a global digital business empire, Jeff Bezos stated that “What’s dangerous is not to evolve” (Shick, 2010). He argued that invention comes from staying ahead of changing customer demands and problems and from new internal capacities that create opportunities. Amazon is viewed as the prime example of an agile organization. It has created innovative business models with tremendous returns for three decades, arguably succeeding by using small and flexible teams that can face increasing complexity in the business environment. These teams are viewed as central to increasing the quantity, quality, and speed-to-market so as to compete with hierarchy firms. This team dynamic, with organizational agility (OA) as the overarching policy, is credited as the most important source of success for Amazon (Rigby, et al., 2018). Similar successes with OA at several companies, such as Spotify, ING, and Netflix, have increasingly caught the attention of academia and practice.

OA is defined in various ways, but this paper chooses one definition that is coherent with the analysis presented: “Organizational agility is a learned, permanently-available dynamic capability that can be performed to a necessary degree in a quick and efficient fashion, and whenever needed in order to increase business performance in a volatile market environment” (Walter, 2021, p. 379). The increasingly volatile socio-political context combined with exponential advances in technology have triggered managers to seek insights and tools from academia to succeed in the new business environment. It is neither easy nor cheap to transition to OA, and many organizations have failed catastrophically in the effort

(Rigby, et al., 2018). It is evident that managers would benefit from more research to support their practices.

This paper's literature review on OA shows that there are significant gaps in the research. Scholars have called for more holistic research on OA. This paper uses General systems theory (GST), which considers organizations holistically as living systems within a dynamic ecosystem. The business literature rarely applies conceptual frameworks. The literature review also reveals that there is a lack of empirical case studies that examine OA in organizations in different industries. This essay answers the call from academia for more empirical research by studying OA at Amazon and HURTIGRUTEN. It takes a case study approach comparing the two companies. Amazon has already become an agile organization, while HURTIGRUTEN has only recently started this transition. The paper used primary and secondary sources to form an honest and complete picture of the companies. It collected data through in-depth interviews, qualitative analysis of documentation, and observation. Practitioners are requesting more information on the topic, as illustrated by the fact that OA is currently the field in highest demand from Harvard Business Review and other journals and management magazines that bridge the gap between theory and practice. Furthermore, McKinsey & Company has a consulting line of enterprise agility that is witnessing huge global traction, and other consulting firms are experiencing similar pull from the market. This paper has especially examined papers from Harvard Business Review and McKinsey & Co to generate practical implications.

This paper aims to increase the understanding of the nature of OA. It aims to identify, define, and describe its systemic characteristics. The purpose is to provide findings on how holistic thinking can aid in transforming and executing OA, which will have distinct implications for

both practitioners and academics. The paper's scope is OA within the larger management strategy field. This scope has been defined due to word count limitations. Academic subjects such as information systems, manufacturing, production, operation, and human resource management can also draw on the findings from this empirical research.

The remaining paper is structured as follows. The next section discusses the research questions and outlines the objectives. The subsequent chapter provides a literature review to summarise the academic history of OA and identify scholars' requests for further research. Then, Chapter 3 describes the methodology and conceptual frameworks, outlining the underlying tools and approach used in the research. Next, the findings chapter presents the data from the two case studies before analysing and discussing the data using GST vocabulary. The last chapter provides concluding remarks and recommendations to academics and practitioners.

Research questions and objectives

The primary research question of this study is the following:

How can holistic thinking aid in agile transformations and practices?
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The paper addresses the following business-related problems to answer the research question: Why should firms change from being hierarchically organized to agile organizations? How can firms strategically benefit from agile practices? What are the most appropriate tools and processes for changing to agile working methods? How can an increased understanding

of agile concepts improve strategic management? How can a holistic approach help the firm become more successful in the agile shift?

The two objectives of answering the research question are to contribute to strategic management research and enhance understanding amongst practitioners. Many researchers have called for more empirical research on OA that treats the phenomenon holistically (Vazquez-Bustelo, et al., 2007). By answering the research question, this paper provides original findings for the strategic management field, but several other academic streams can also draw on the lessons from this paper. Since GST is a multidisciplinary framework, scholarly areas as far apart as information systems and psychology can interpret the paper's observations and apply them to their field. Validating GST in its entirety is too large a scope for this essay. Only a few concepts will be explored to determine if they are applicable to this paper's two OA cases. The primary research this paper conducts on Amazon and Hurltgruten meets the request for more case studies and leads to new insights. These insights also benefit various practitioner groups, predominantly people on the executive management level. They outline strategies and policies for OA and provide an increased understanding and ability to view the entirety of the decisions made by firms implementing OA, increasing the likelihood of successful execution. Harvard Business School's focus on OA makes evident the practitioner segment's need for more analysis on the topic. OA has been the Harvard Business Review's leading topic for the last couple of years, with material dedicated to executive managers in their "Must Reads" collection and "Insights You Need" compilation. The objective of this paper is not to provide a recipe or a prescriptive how-to for managers. Rather, the research question concerns a way of thinking and a mindset.

This paper views OA through the lens of GST. OA is a system that lives within a larger ecosystem, separated by a boundary. The system is also comprised of several sub-systems. It is necessary to view the firm as a social system with a boundary that sets it apart from its environment to properly answer the research question (Brandenburger & Nalebuff, 1995). GST allows for OA to be understood fundamentally as a holistic system (Yourdon, 1989). This paper discusses the interpretivist approach, which supports GST, and the fundamentalist tradition, which contrasts it. By combining the analytic and synthetic approaches, using case data and the GST, the paper offers a meaningful comprehension of OA as a phenomenon (Angell & Smithson, 1991). This paper uses interpretivism's philosophical stance and GST's conceptual principles to answer the research question.

Literature review

It is necessary to have a literature review to synthesize a number of papers on OA. The review is an effective instrument to analyse primary studies in management research (Cooper, et al., 2009). A literature analysis shows the fundamentals of a specific academic field and forms the basis for further research. In this study, the review helps identify research gaps and shape the research question. This review critically discusses existing text materials to formulate arguments which have previously not been stated. Prior scholars have come to different observations and conclusions, and the literature review integrates these mixed findings. It considers conflicting research results and draws connections between the different contributions.

Recent literature has most commonly used the properties of capacity and capability to define OA (Hazen, et al., 2017). Considering capacity, Teece et al. (2016) define OA as “the capacity

of an organization to efficiently and effectively redeploy/redirect its resources to value creating and value protecting (and capturing) higher-yield activities as internal and external circumstances warrant” (p. 17). Lee et al. (2015) use capability to define OA as a “higher order dynamic capability to configure and reconfigure organizational resources in response to the environment or emerging competitive realities” (p. 400). Dynamic capabilities include organizational processes, working methods, employee knowledge, and management strengths, which is appropriate for studying OA: “The holistic character of dynamic capabilities fits well with OA’s integrative approach” (Walter, 2021, p. 373). Walter’s most recent definition, which is coherent with this paper’s view, draws on all prior research to propose the following (Walter, 2021, p. 379):

Organizational agility is a learned, permanently-available dynamic capability that can be performed to a necessary degree in a quick and efficient fashion, and whenever needed in order to increase business performance in a volatile market environment.

Brown and Agnew (1982) first defined agility in the business field as “the capacity to react quickly to rapidly changing circumstances” (p. 29), but the concept of agility in an enterprise setting is widely considered to have started with the 1991 Lehigh Report of the Iacocca Institute. The report found that the main cause of industry stagnation in the US was the lack of agility of manufacturing firms. The findings suggested that firms use OA to increase competitiveness in the volatile environment (Industry Team and Facilitators, 1991). Even though the concept has existed in practice and academia for some time, there is a lack of conceptual clarity around it: “The missing clarity about the exact nature of an agile organization makes it difficult to appropriately compare, analyze, and discuss the phenomenon” (Greineder, et al., 2020, p. 2). The literature regards the concept with critical

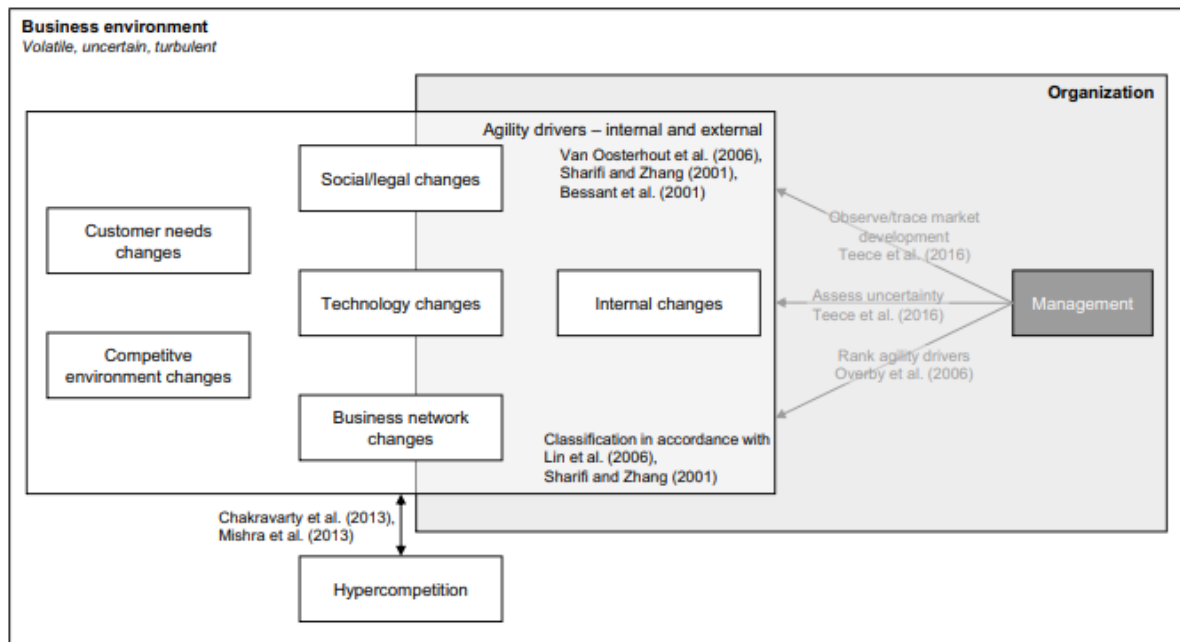
ambiguity because of its many definitions and the lack of common understanding (Van Oosterhout, et al., 2006). This ambiguity makes it difficult for researchers to compare results and develop the concept. The discrepancies also complicate the business implementation of OA. Some of the different and sometimes contrary views of OA include examining it as a capability (Bessant, et al., 2001), paradigm (Meade & Sarkis, 1999), and strategy (Zhang & Sharifi, 2007).

Earlier research discusses agility in the enterprise holistically (Gunasekaran, 1998; Zhang & Sharifi, 2000), while recent research has focused on specific norms (Morton, et al., 2018; Chen, 2019). OA is currently examined at a lower category level, viewing certain individual aspects such as agility drivers or providers. Vinodh (2010) surveyed prior research and argued for going back to previous interpretations and approaching the concept more comprehensively. Since research on the topic recently has been very detail-oriented and fragmented, findings have been viewed as limited because they do not consider complementary elements. Thus, in a recent literature review, Walter called for a holistic conceptualization of OA (2021, p. 346):

Research results focusing on specific aspects of OA can become very difficult to compile in order to form an overall picture. This makes it difficult to understand OA as a holistic concept.

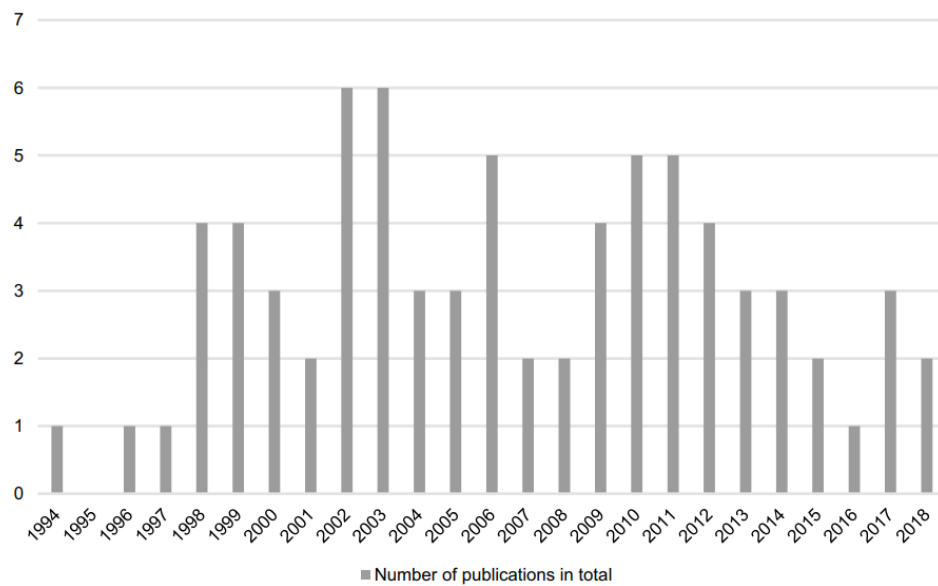
The OA research states that there is an urgent need to conceptualize the OA construct. OA should be treated as a holistic concept, considering all individual components simultaneously to better understand it (Vazquez-Bustelo, et al., 2007). A holistic conceptual map of OA would increase understanding of the concept and improve its comprehensibility (Walter, 2021, p. 373). Walter illustrated OA holistically by using a drawing, which is a typical exercise in GST.

Figure 1: Illustration of OA (Walter, 2021, p. 375)



Walter’s literature review of OA stands out as the most comprehensive and ambitious analysis of scholarly work in the field. She identifies “crucial conceptual gaps” (p. 379) in the research. Most notably, she argues that “overall, only a few authors have dealt with the holistic conceptualization of agility at the organizational level” (p. 379). In her 2021 literature review, she used the Academic Search Complete, Business Source Complete, and EconLit databases and identified 578 papers. She then whittled down this figure to 75 relevant papers by limiting the results to journals ranked from A+ to C. The below figure shows the years all 75 papers were published.

Figure 2: Search results of OA papers (Walter, 2021, p. 372)



Only 6 of the 75 papers had multiple case studies, and only 3 were qualitative studies. Most of the papers appeared in the journal *Strategy & Leadership*. Thus, Walter concluded that more multiple case studies using qualitative methods were needed because “qualitative methodologies generally adopt an exploratory character that is best suited to discovering the behaviour of companies in a volatile environment” (p. 372).

OA can be placed in the larger field of management theory (Overby, et al., 2006), specifically strategic management (Teece, et al., 2016). Walter (2021) says that “in current management literature, the reader comes across agility conspicuously often” (p. 379). However, she defends the widespread use of the term in academia and practice, “considering the agile organization as a major task of strategic management” (p. 373). The environment is changing significantly faster than before (Ahlbäck, et al., 2017). A firm’s context is increasingly complex and uncertain (Vinodh, et al., 2010). Researchers have suggested that OA is an appropriate strategy for these rapidly changing dynamics (Meinhardt, et al., 2018). It enables the firm not only to quickly respond but also to exploit the market changes as business opportunities (Hatzijordanou, et al., 2019). Effective management at the strategic level is key to agile

transformations (De Smet, et al., 2018). Researchers have proven that if not executed appropriately, strategic management is the main challenge for agile realization. Unclear top-level vision and lack of general leadership are the major obstacles to implementing the agile cultural transformation (Ahlbäck, et al., 2017). Corporate management must be heavily involved in designing the strategy and implementing the plan to avoid failure in transitioning to OA (Potdar, et al., 2017). Walter's literature review proposed further studies on management in OA: "A closer look at the role of management in an agile organization in the context of this conceptualization is supposed to help overcome these challenges. This outlines another research question: 'What is management's role in an agile organization?'" (2021, p. 347). There has been a change in the appropriate and effective strategies that managers can pursue because there is increasing uncertainty and complexity in society. Recent research has found that firms transitioning to OA can thrive in these uncertain contexts (Kotter, et al., 2021). For example, a study conducted on Fortune 500 companies from 2000 to 2009 showed that listed companies only had a 63% chance of survival, and the primary reasons for failure were a lack of agile business models and lack of innovation (George, 2016).

A literature review on OA studies conducted by Greineder et al. (2020, p. 10) found that "we do not know much about the process of transforming companies into agile practices and how it can be mastered." They propose that future research in the academic business field should prioritize research on how companies can implement and run agile practices. Most business practitioners view OA as critical to succeeding in an ever-changing environment (De Smet & Aghina, 2015). OA is often a deliberate management choice. It can sometimes randomly emergence, but it may also result from a conscious management strategy (Vinodh & Aravindraj, 2012). A range of methods and techniques constitute a toolkit which managers must choose from to respond to changes. The business characteristics and environmental

conditions will determine what is appropriate. The firm should establish a repertoire of capabilities and implement the tools that are most effective for the job (Lin, et al., 2006). The management must have a strategy to continuously determine which set of agile approaches match the agile drivers (Overby, et al., 2006). The literature has identified management, strategy, workforce, technology, and processes as some of the agility dimensions (Monplaisir, 2002; Bessant, et al., 2001). OA is a multidimensional concept (Vazquez-Bustelo, et al., 2007), which means that firms must be agile in several dimensions to achieve a high level of OA.

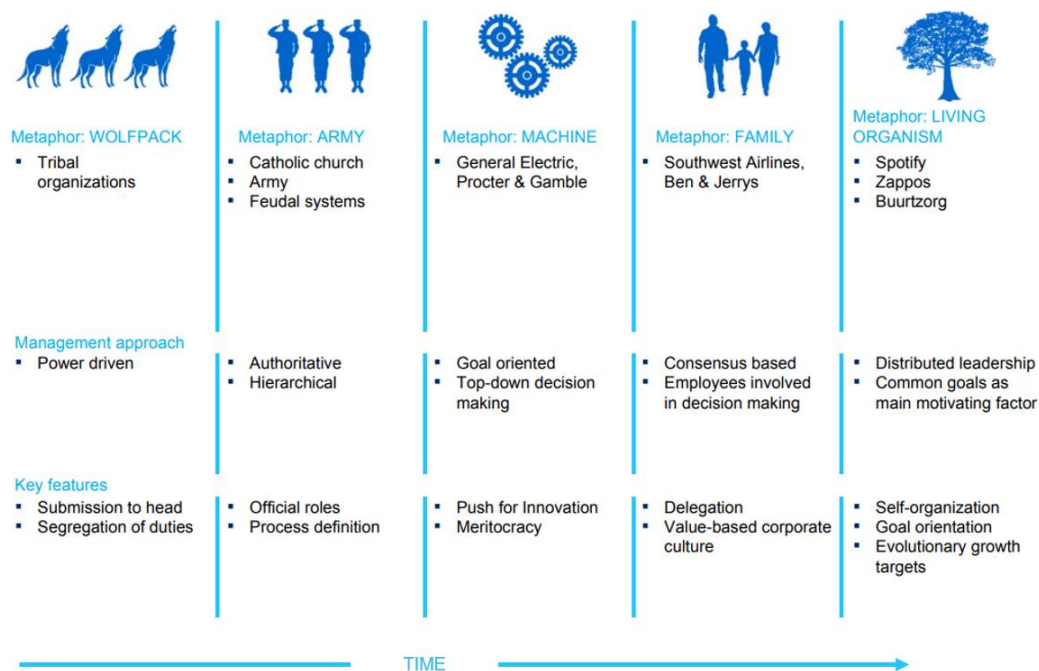
In a survey by Ahlbäck et al. (2017), the majority of business leaders stated that OA was one of their top strategic priorities. The survey showed that 81% of participants reported increased business performance after introducing agile ways of working. Similar studies on firm practices have found evidence supporting this claim (Inman, et al., 2011; Vickery, et al., 2010). There is no defined way to implement OA, and firms will have to understand how best to introduce the strategy in their business model. If they are successful, they will have a significant competitive advantage (Lee, et al., 2015). The main objective of OA is to increase competitiveness (Vazquez-Bustelo, et al., 2007; Gunasekaran, et al., 2018). Other goals of OA can be to increase customer satisfaction (Cao & Dowlatshahi, 2005), speed of product-to-market (Sharifi & Zhang, 2001), profitability (Chakravarty, et al., 2014), and market share (Mishra, et al., 2014). Firms with agile practices create revenues 37% faster and generate profits 30% higher than non-agile organizations (Glenn, 2009; Wang, et al., 2014). An external driver of OA is the volatile and uncertain competitive environment. OA also has internal drivers, such as cost leadership and differentiation (Hallgren & Olhager, 2009). The more turbulent the business environment, the greater the effect of OA (Tallon & Pinsonneault, 2011). Conversely, OA is economically harmful in environments that do not change

dynamically and unpredictably (Teece, et al., 2016) because implementing agility is expensive to firms (Walter, 2021).

The improved firm results of implementing OA are most often explained in the literature using the hierarchy versus teams comparison. A traditional organization is a structured hierarchy. It is designed primarily for stability, and the goals and strategies flow top-down in the pyramid. Planning is linear, and operations are sequential. Over the last couple of decades, academics and practitioners have argued that the functional firm creates too many walls and silos, making it slow-moving in an increasingly unstable external environment. In contrast, OA is designed for dynamism. When an organization implements OA, it introduces a network of small teams. These teams should be as autonomous as possible to enable fast decision cycles. This structure enables strategies, people, processes, and technologies to be reconfigured swiftly. Thus, OA can be a source of competitive advantage as it allows firms to reconfigure more efficiently than competitors. The Ford Motor Company is often depicted as the traditional hierarchical organization (Aghina, et al., 2017). It grew from being a small automobile manufacturer in 1910 to have a 60% global market share a decade later. The firm followed the Taylorist (Taylor, 1911) view of the world and organizations. Using scientific management and assembly line methods to optimize labour productivity, Ford achieved an unprecedented competitive advantage in effectiveness. The company assumed the market would be stable and have limited dynamism. Taylor's "machine paradigm" would dominate organizational management for the next one hundred years until 2011. The machine paradigm stands in contrast to the paradigm of viewing organizations as living organisms: "Agile organizations, viewed as living systems, have evolved to thrive in an unpredictable, rapidly changing environment" (Ebrahim, et al., 2018, p. 42). Agile organizations and living organisms are similar in that they are nimble and able to react quickly to their ecosystems. The

development of organizational concepts from the machine view to the living organism view is illustrated in the below figure.

Figure 3: The development of organizational concepts (Laloux, 2014)

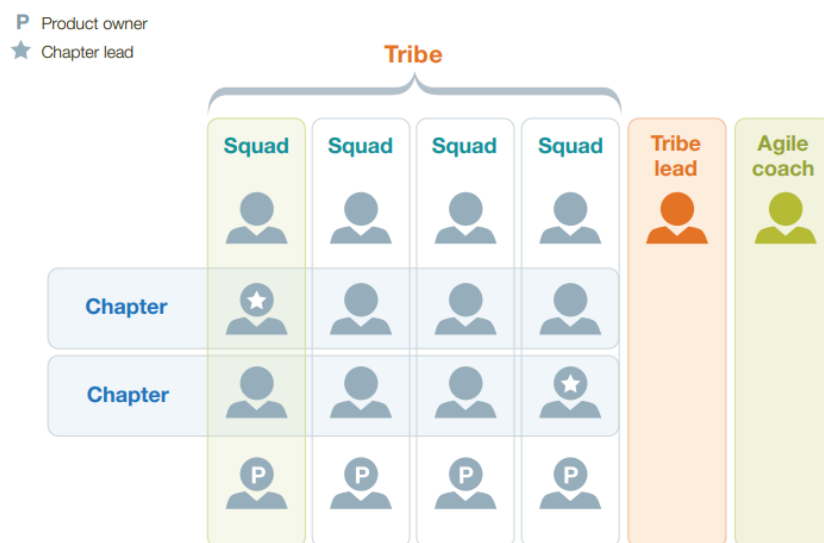


Fewer than 10% of the non-financial S&P companies in 1983 were still on the list in 2013, and a study by McKinsey & Co argues that the main reason is that machine organizations fail to engage with the new environment (Aronowitz, et al., 2015). Management must understand and expose the firm to the environment appropriately to “attract a wide range of partners into a powerful ecosystem” (Ebrahim, et al., 2018, p. 45). A survey of 2,500 companies by McKinsey & Co (Ahlbäck, et al., 2017) showed that 40% of the respondents had begun implementing OA. Of the remaining 60%, half of the companies said that they were planning to become agile, and 75% replied that OA was a top-three priority.

Studies on ING, Spotify, Amazon, and other successful companies with agile ways of working have presented a de-facto organizational structure that companies have implemented widely

across industries. Firstly, people are divided into teams, called squads. A squad should contain a maximum of nine people who each have different functions. A group of squads working on the same product should be gathered in a tribe of around 100 to 150 people. Squads and tribes are the minimum recommended organizational structures. Squads are created and dismantled flexibly to always work most efficiently towards the company's goal. Each squad is headed by a product owner, and each tribe by a tribe lead. The product owner is not a leader per se but is responsible for coordinating the activities and priorities. The tribe lead allocates budgets to the teams and ensures that learning is shared across teams. A group of agile coaches usually assists in the transition to OA and the operation of the teams. Furthermore, employees with the same functional competencies may belong to chapters. The chapters resemble the traditional functional hierarchy, and chapter leads are responsible for staffing and the personal development and performance management of members. Lastly, employees who share the same interest may meet in guilds (Ebrahim, et al., 2018). All roles can be mapped out in a matrix, shown below.

Figure 4: Organizing for agility at ING (Mahadevan, et al., January 2017)



The most frequently discussed dimension in the literature on OA is team structure (Foschiani, et al., 2021). The following four most-discussed dimensions are information exchange, decentralised decision-making, culture, and leadership style. The interdisciplinary and autonomous teams are worth the attention because they represent a notable shift in organizational management. Managers must let go of centralized authority and enable self-organizing teams and networks to operate in a larger ecosystem (Davidson & Klemme, 2016). The dimension of information exchange relates to how organisational structures foster communication. New information technology can support communication to a certain degree, but managers have to coordinate and effectively manage knowledge. The literature also often stresses de-centralized decision-making. There should be fewer restrictions and less supervision but stronger coordination. Lower formalization and more flexible routines allow the firm to be more adaptable: “A de-centralized governance structure is likely to promote agility and be especially advantageous during periods of rapid environmental change” (Lehn, 2018, p. 67). It takes time to achieve self-responsibility and understanding of the agile principles. It is essential that firms transition to a new culture of trust to effectively implement OA. Decentralization and empowering employees to make decisions at the low level require supportive corporate management. Studies repeatedly stress that an adaptive leadership style is vital to the success of OA. Management must have flexible plans and designs to adapt to changing circumstances, nurture small organic teams, and manage people with a light touch (Augustine, et al., 2005).

The business literature is also divided between the strategic dimension and the operational dimension. The operational dimension covers how firms can optimally use existing systems and products to respond to a changing environment. OA aims to make existing services better, faster, and cheaper. Thus, in this case, agility affects the teams and product delivery

(Greineder, et al., 2020). Strategic agility, in contrast, is about improving business performance in changing environments by deviating from high-level strategic plans (Wade, et al., 2021). For example, Nokia pursued OA in improving their existing mobile phones, while Apple executed strategic agility by developing its new smartphone. However, OA is not worse than strategic agility: Both can lead to success. Google's search engine is often mentioned as an example of successful OA achieved by focussing on the operational dimension.

The decentralization of decision-making to make teams more autonomous is core to OA (Augustine, et al., 2005). Having complete, accurate, and timely information when making decisions is a prerequisite for autonomy in teams (McAvoy & Butler, 2009; Vidgen & Xiaofeng, 2009). C-level management must empower the teams to be independent. They should structure the organization into teams, provide the customer strategy, and give the teams a budget up-front. Middle-level managers should act as stewards for the teams and focus on enabling opportunities by coaching staff rather than supervising them. The emphasis on allocating a budget up-front and allowing the team to prioritize tasks and make decisions is a significant shift in mindset from the traditional management processes. Senior executives should endow teams with the authority and resources, within a reasonable scope, to carry out activities and initiatives without having to seek approval. These activities may include operation and innovation of building products, hiring new talent, securing contractors or consultants, and purchasing tools. By eliminating the formal budget request and subsequent waiting for a committee to evaluate and decide on the request, the firm reduces a product's time to market. A McKinsey case study of a large European bank found that such a practice gave the bank a competitive advantage. The customer-facing teams were allowed to make quick day-to-day decisions, reducing time-to-market and increasing customer conversion rates (Bossert, et al., 2018).

Several companies use OA, such as Amazon, Tesla, and Netflix. In addition to practitioners in these firms, there are many practitioners of OA in consultancies. McKinsey & Company is arguably the leading consulting firm on OA, having spearheaded global advisory and technology services on agility. It has also produced a large body of literature for practitioners based on its experience. A McKinsey study has described a firm's transformation to OA as a holistic change: "We take a holistic view of a company's operating model across people, process, structure, strategy, and technology —looking for both the stable and dynamic elements that must be in place to create agility" (Aghina, et al., 2017, p. 18). Through research and practical experience, the McKinsey study found that there are five characteristics of OA that must work together for a firm to be truly agile. These trademarks form the organic system that enables OA: (1) Having a North Star embodied across the organization, (2) building a network of empowered teams, (3) ensuring rapid decision-making and learning styles, (4) instilling a dynamic people model that ignites passion, and (5) introducing next-generation technology. The North Star is a shared purpose and vision. It serves as a reference for both employees and customers to make them emotionally invested in the firm. In a distributed organization, the North Star shines brightly to ensure that all employees are aligned. With decentralized decision-making, employees can sense and seize opportunities when changes in the environment call for it. The network of empowered teams is an ecosystem that leads to collaboration and coordination: "Like the cells in an organism, the basic building blocks of agile organizations are small fit-for-purpose performance cells" (Aghina, et al., 2017, p. 11). Waiting for manager approval is one of the biggest "waste" items in a firm. Having clear and accountable roles empowers the team to focus on completing tasks instead. Transparency enables communication and collaboration across the organization. Rapid decisions require a framework that allows for experimenting, failing, and learning. Even at the top corporate

management level, the traditional annual financial reporting should be replaced or complemented by shorter and more dynamic management systems. Tools that can be used from the corporate management level to the team level are objectives and key results, quarterly cycles, and rolling budgets. The underlying premise in the literature is that the environment changes so frequently and rapidly that it is impossible to cover all risks and foresee all opportunities if using a long-term horizon. Leadership in OA aims to empower and develop employees rather than direct and control them. Leaders act as catalysts to motivate people using trust and positive role model behaviours. The firm has a culture of supporting employees who are motivated by an intrinsic passion for their work. Lastly, new models and processes require evolving technology and tools. Teams must implement next-generation technology that enables new practices. The technology must be integrated into every aspect of the organization, irrespective of industry, to enable quick action and unlock value.

The material from McKinsey and other practitioners focuses on the potential advantages of OA. Only academic papers and some news articles reveal the challenges and downsides of the practice. A study of 134 companies identified 31 challenges of OA (Edison, et al., 2021). The top three categories of challenges are inter-team collaboration, organizational structures, and customer collaboration. Coordination and synchronisation between teams, often working on the same product, prove to be as difficult in OA firms as in hierarchical ones. There are prerequisites and dependencies between teams. It is necessary for all teams, even self-organising ones, to transfer tasks and update each other. OA's organisational structure of tribes and squads, discussed above, is challenging to manage when teams share the same resources. For example, multiple teams may end up competing for the same employees. Furthermore, agile methods require constant interaction with the customer to keep changing and adapting to new requirements. Depending on the product or service, it can be challenging

to acquire customer feedback. It is even challenging for the agile team to retain contact with internal customers over time. The academic literature shows that some businesses, and maybe even most businesses, should not consider OA. It is costly for a firm to transition to it and implement it, and it is very expensive if it fails. OA is only appropriate if there are strong and relevant drivers for it. Professional magazines and other commercial media can portray OA as a panacea for success, but academic literature does not support this. Scholarly researchers have a much more balanced view of OA. The gap can be explained by a lack of conceptual clarity in the academic literature, resulting in a lack of understanding among practitioners. Thus, inconsistent definitions of terms and concepts lead to a lack of consensus in this field.

To conclude the literature review, academic business journals and practitioner materials are increasingly calling for firms to implement agile methods to change managerial processes in the increasingly changing macro environment. However, there is a lack of consensus surrounding what it means to be an agile firm. There is no unified definition or uniform agreement on core agile methods. Notwithstanding this unclear description of OA as a phenomenon, this literature review consolidates and abstracts common findings. It shows that OA is an answer to the dysfunctionality of hierarchical companies in this new volatile context. There are convincing arguments for why OA is currently more suitable than hierarchies, although it is impossible to scientifically and fully validate this claim. Agile methods have become so varied that there is no fixed framework or set toolbox of mechanisms that can provide a prescriptive system for managers. It is more critical for executives to focus on the company mindset and culture. Furthermore, it is not expected that OA will be considered a hype or fad. Journal publications have been regularly discussing OA in the last two decades, and there is an increased focus among practitioners on OA at the

moment. The underlying principles of OA will remain relevant because the business environment is projected to become even more volatile. As Foschiani et al. (2021) state, “The widespread popularity of agile methods in business practice is therefore clearly no inexplicable fad in management” (p. 43). Researchers have called for future research to contest the current fragmented understanding of OA and bring back a holistic examination of OA. Walter (2021) claims that such research will be of significant value to academia: “The conceptualization of OA from a holistic perspective counteracts the current fragmentation of the research field.” She argues that business managers will also benefit from an overall perspective: “Practicing managers could also develop a more comprehensive view of the various attributes of agility, which promises a more aware and targeted implementation of OA” (p. 346).

Methodology

Research method and data collection

This paper uses qualitative case studies of Amazon and Hurligruen as a research method. Several researchers have called for further case studies to generate empirical findings on OA (Vazquez-Bustelo, et al., 2007). This paper chose the case study approach as it is the most appropriate methodology for answering the research questions and meeting the research objectives. Qualitative case studies have proven to offer the most insight when evaluating the efficiency of a conceptual framework and improving its understanding (Yin, 2009). This paper aims to explore OA as a theoretical academic concept. Thus, it uses case studies as the overall research methodology. The study has an exploratory and qualitative perspective. Case study research has been proven to be appropriate when assessing the effectiveness of theoretical

concepts (Eisenhardt, 1989). The research design specifically attempts to answer Walter's (2021) requests in her recent literature review on OA. She argues that academics have been too theoretical in answering OA research questions: "Exploratory case-study research, which has been neglected so far, could help to answer these questions [...] Further qualitative research has the potential to uncover valuable in-depth insights and interesting relationships" (Walter, 2021, p. 384). The case study approach is also particularly useful for practitioners: "Case study research could be aimed at a best practice scenario for the learning of agility capabilities" (Walter, 2021, p. 384). This paper deliberately chose to analyse Amazon and Hurtigruten to ensure the research fully heeds Walter's request. Amazon is widely acknowledged as a leader in OA, while Hurtigruten has just begun transitioning to this model. Furthermore, Amazon and Hurtigruten operate in vastly different sectors. These different environments help compare and contrast practices: "A comparative case study in the service and production industries would likely reveal critical differences" (Walter, 2021, p. 385). The interview subjects were picked based on their insight and experience with OA, as well as their physical locations. The four interview subjects live and work out of the following places: Austin, Texas; Luxembourg/London; Oslo; and Melbourne/Shanghai. This variety bears in mind Walter's advice that "An examination of the influence of different regions could produce exciting insights" (Walter, 2021, p. 385).

The study draws on a combination of primary and secondary sources, which improves the validity and quality of the research (Neergaard & Ullhøi, 2007). There is a large body of journal papers on how OA operates at Amazon. Furthermore, there are books and articles that critically assess Amazon. There is less publicly available information about OA at Hurtigruten. Thus, this study observed the inside workings of the transition to OA at Hurtigruten to make up for the lack of academic journal articles on the company. This paper collected data via

documentation, observations, and interviews, leading to a triangulation that enhances the reliability of the findings (Yin, 2009).

Table 1: Data collection

Method	Date	Source
Interview	2 Feb. 2022	Mr. “AB”, Amazon
Interview	4 Feb. 2022	Mr. “KR”, Amazon
Interview	10 Feb. 2022	Mr. “DP”, Hurtigruten
Interview	1 Mar. 2022	Mr. “OM”, Hurtigruten
Observation	1 Oct. 2021 – 1 Apr. 2022	Hurtigruten
Documentation	1 Oct. 2021 – 1 Apr. 2022	Open sources

The interviews form the primary data source for this study. Interviewees were all heavily involved in agile working methods. They had considerable experience leading teams in rapidly changing environments, and they provided essential managerial perspectives on the topic. The interviews were carried out in a semi-structured manner. The interview questions were sent out to the interview subjects in advance to ensure they could prepare and feel more comfortable in the interviews. While the questions formed the basis of the interview, the interview took a more conversational manner than a formal interview. This structure allowed the interviewee to talk more freely and provide information that they may not have disclosed otherwise. The interview questions were based on this paper’s primary research questions and associated key questions. The wording used in the questions followed the systems thinking terminology without appearing overly theoretical. The same questions were given to Amazon and Hurtigruten employees, even though the firm characteristics stand in stark contrast. This was done to identify whether elements such as size, industry, and location affect the thinking on OA in any way. The conversations began by discussing the interviewee’s definition of OA and the origin of OA in their company. Then, they moved on to discussing OA and placing the company in a wider ecosystem, examining the benefits and limitations of the

concept. The interviews ended by asking interviewees to visualize how OA might develop in the future. The respondents spent different amounts of time on each topic, but all addressed each question thoroughly. This supports Patton's (1980) argument that "to understand the holistic world view of a group of people it is not necessary to collect the same information from each person" (p. 110). The interview subjects were encouraged to apply a holistic view in their answers to assess if systems thinking helped them in the company transformation. The interviewer ensured not to impose theoretical constructs on the interviewees, which could lead to misrepresentation. This paper does not attempt to provide a detailed and lengthy description of each organization as it aims to focus on specific properties and highlight them by comparing the firms. As with most other qualitative research with relatively small samples, the objective is to study the appropriateness of the conceptual frameworks and improve understanding.

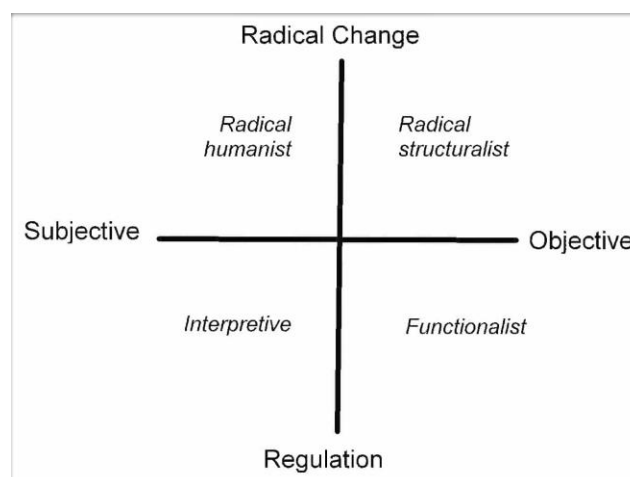
The second research technique used was an analysis of publicly available documentation on Amazon and Hurtigruten. This method complements the interviews because it can reveal information not shared by the interviewees (Lacity & Hirschheim, 1993). Respondents may protect the firm, managers, partners, or themselves in their interviews. Additional information from documentation helps paint a fuller picture, but this paper does not intend to identify any significant scandals. The respondents were treated with respect even while their answers were critically assessed in light of public information. Similarly, the paper critically analysed public information when comparing it to the interview answers. In doing so, it considered the agenda of media, professional magazines, and academic journals.

Furthermore, it was necessary to conduct field work at Hurtigruten to compensate for the small body of publicly available documentation on the firm. The author gained a

comprehensive understanding of the firm's transition to OA by observing the firm's inner workings for six months. This informal technique helped gather substantial information. However, the study did not consider unofficial or off-the-record material as valid data. Furthermore, no single individual was examined as the field research was only interested in the team and company levels.

The philosophical assumptions in this study are based on interpretivist thought. Some other paradigms of social theory are outlined in Burrell and Morgan's (1979) 2x2 matrix:

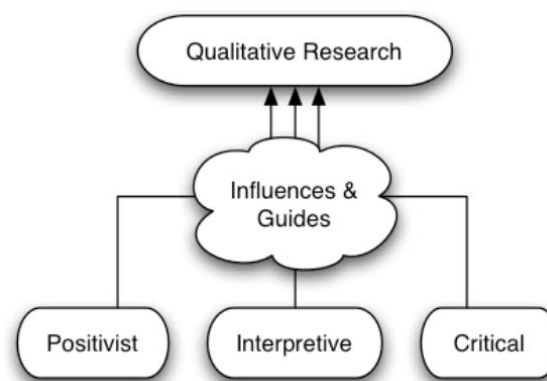
Figure 5: Four paradigms for the analysis of social theory (Burrell and Morgan 1979, p23)



Interpretivism views the world as an emerging social process created by individuals. The radical humanist view puts more weight on societal and organisational change processes that, they argue, oppress individuals. Functionalists are realists who argue that certain static and objective mechanisms regulate the world. Radical structuralists also support the objective view but believe the world to be in constant conflict (Burrell & Morgan, 1979). The rigorous and scientific methods in the functionalist toolkit are appropriate for engineering and physics but would not have proved useful for the aims of this paper. The functionalist approach may be useful in strategic management research that treats the firm as a machine and uses

organisational rationalism as first proposed by Weber and Taylor (1911). However, this paper treats the firm as a living organism, which calls for a more subjective view. Thus, this study's qualitative research method is interpretivist epistemology. The subjective view rejects the scientific assumptions in positivist sociology. Interpretive theory shares some principles with critical theory, but this paper aims to understand people and organizations, not to evaluate societies.

Figure 6: Underlying philosophical assumptions (Myer, 1997)



Conceptual framework

GST provides the framework to describe and discuss this study's research findings. Systems thinking in its current form can be traced back to the 1920s. Skyttner (1996) described the movement as an expansionist view that reacted to a failure in reductionist approaches. Scholars were searching for a framework that better-described emergent behaviours. Exactly what defines a system has varied and will continue to vary according to the observer and their intention (Angell & Demetis, 2005). Some academic fields established stronger strands of systems thinking following the 1920s, such as operational research and cybernetics (Ackoff & Maurice, 1968). Bertalanffy, a biologist, compiled a substantial body of systems thinking in the 1930s and pioneered work in the 1950s that drew from several academic fields to design GST

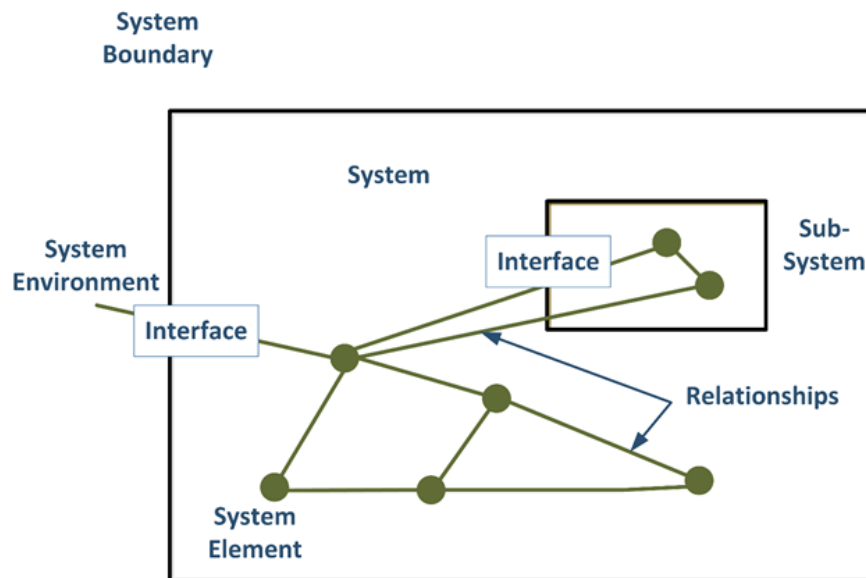
as a universal conceptual framework (Bertalanffy, 1951). Making the terminology and language independent from its field of origin made it much more accessible to other scholars. With several co-contributors, such as Boulding (1956), who created a universal conceptual basis of thought, GST spread to successfully become an interdisciplinary science. Skyttner followed Bertalanffy as the foremost scholar on core GST, and the theory has proven to be especially useful in management research (Rosi & Mulej, 2006). Two notable examples of models preceding OA that build on systems thinking in the strategic management literature are value constellation (Norman & Ramirez, 1993) and value net (Brandenburger & Nalebuff, 1995). Other academic fields that significantly use GST are psychology (Thelen & Smith, 1996), economics (Bailey, 1994), and information systems (Lerner, 2004).

GST is a lens for viewing the world that informs the reader or audience about the author's mindset. It is a set of ideas and a collection of principles that intends to explain a phenomenon; in this paper's case, it is used to explain OA. The theory helps explain why actors conduct certain activities and why these activities have certain consequences. The terminology is useful for labelling the findings and organizing them into concepts. Since GST has been applied to many different academic fields over several decades, this paper offers a transdisciplinary examination to expand the boundaries of traditional management research. Organizing new observations according to existing knowledge helps to understand the findings more effectively. In turn, it gives value as it can provide recommendations to advance the field of OA. GST, as concluded in this paper's literature review of leading scholars on OA, is an especially appropriate theoretical approach for observing emergent behaviour in OA as a holistic system.

Nerur et al. (2010) refer to Bertalanffy (1950) and GST when discussing the basis for OA. They claim that GST is OA's intellectual foundation. Acknowledging this is important for understanding the underlying premises of OA. The agile approach significantly increased in popularity in 2001 with the Agile Manifesto, which was written by 17 system developers at a lodge in Utah. The developers, who called themselves the Agile Alliance, were fed up with existing bureaucracy and unresponsive processes. The manifesto consists of four key values and twelve principles that the authors state guide their work. Agility in system development grew and quickly developed into agility in the entire business, known as OA. Jon Kern, a co-author of the Agile Manifesto, stresses the importance of applying a system view and holistic mindset when practicing the principles of the Agile Manifesto (Kern, 2018). As he states, "Fail to do a good job at taking the systems view, and your project will likely not go as well as it could. It might even fail." He goes on, "The agile approach is not an improvement method in the true sense, but rather a holistic management philosophy." This holistic mindset is described by many GST scholars.

GST visualizes a system by drawing on some of the theory's concepts, for example, the environment, boundaries, interfaces, the system, sub-systems, elements, and relationships. The interview objects were asked to present a holistic drawing of OA as a system at their respective companies. Alternatively, they could refer to an existing illustration that represented their view of the system. One example of such a drawing is Matook and Brown's (2008), shown below, which provides a simple illustration that enables an understanding of GST.

Figure 7: GST illustration (Matook & Brown, 2008, p. 4)



A system is separated from its environment by a boundary. Teleology argues that all systems intrinsically have an objective or purpose in their environment (Bertalanffy, 1976). The feedback loop with the environment happens through an interface at the boundary (Savageau, 1976). The feedback loop occurs through two-way communication between the environment and the system. The environment always affects the system, and often the system influences the environment. The boundary between the two can change as some systems evolve more uncontrollably than others. The system must understand and make sense of the information from the environment to act appropriately, which requires it to reconfigure constantly to survive. The environmental triggers most often have non-linear consequences for the system, so their outcome cannot be predicted. An apparently simple change in the environment can lead to chaos in the system, popularly referred to as the butterfly effect. The system is self-referential in the environment, and its identity remains recognisable even after changes. Homeostasis describes this stability in a rapidly changing environment (Churchman, 1979). Different systems can achieve the same outcome even though they act differently, a phenomenon termed equifinality (Beven & Freer, 2001). The

system is made up of sub-systems, and a sub-system can, in turn, be a system in itself made up of another level of sub-systems, and so on (Miller, 1978). The system may also contain separate elements. The sub-system is a separate entity within the system that is clearly delineated. An interface across boundaries connects the sub-system with other sub-systems or elements within the system. The system is more complex than the sub-systems due to a lack of requisite variety in the sub-systems. The sub-systems only partially process the information from the system to reduce complexity (Luhmann, 1995). The complexity of the system is an indicator of where it is located along its evolutionary path (Dawkins, 2006). The different sub-systems and elements are a part of the system via relationships with each other. Sub-systems fight even harder for survival than the system since new groups are formed, some are re-grouped, and some become extinct. Sub-groups that have weak relationships are especially threatened by extinction. These structural couplings between sub-systems and elements generate co-evolution between the sub-systems (Leyesdorff, 2006). The communication in the relationships determines the quality of the sub-systems' output (Luhmann, 1995). It is these relationships that enable synergies between sub-systems (Corning, 2003), and the synergies create outputs that are more than just the calculated total of each sub-system. These interactions support the notion that the whole is more than the sum of its parts (Makin, 2006). Similarly, the system's characteristics and properties may be different than the accumulation of its sub-systems. These properties may be structured hierarchically. Sub-systems can develop by design, but more often, they simply emerge (Skyttner, 2001). The concept of combining hierarchy and emergence is referred to as organismic provenance (Checkland, 1981). Due to the characteristics of the system in its environment and the sub-system within the system, it is necessary to apply a holistic view to ensure understanding (Laszlo, 1996). Jon Kern, one of the Agile Manifesto authors, argues that

system thinking in this manner is coherent with the principles of the manifesto (Kern, 2018):

“By the term ‘holistic’ I mean thinking about the many aspects that comprise your system, or that your system interacts with, and that ‘touch’ your system or make demands of your system (including users and the ‘business’).”

The main limitation of GST is that it is not a prescriptive model. Practitioners are naturally looking for recipes for success, and GST is arguably too ambiguous to be directly adopted in practice (Skyttner, 2006). People who request information on best practices and how-to models are looking for practical applications. This is especially true in the strategic management field, where practitioners require guidance in converting theory into practice. However, a central principle of GST is its position towards causality (Robbins & Olivia, 1982). It believes causality is not fixed nor permanent and cannot be applied to every situation. Advanced organisms are non-linear and unpredictable. For example, determining or predicting how a human being may behave requires a lot more than just examining one single causal factor. As mentioned, GST arose in the 1920s in opposition to reductionist thinking. Scholars in GST are interpretivists and base their work on subjective epistemology. In contrast, functionalists assume objectivist principles (Burrell & Morgan, 1979). However, GST does not reject science. Many of GST’s concepts acknowledge the precision of mathematical science. Even Bertalanffy (1955) claims that cause and effect can be direct while still arguing for multicausality and a holistic view of the phenomenon. GST’s view on causality can be connected to philosophical questions in biology dating all the way back to Aristotle in 384-322 BC. Aristotelian causes and the “responsible explanatory factors” have significantly impacted the limiting practical, prescriptive nature of management theories today (Mure, 1975).

GST is an interdisciplinary theory with a wide scope, so it is impossible to be aware of all developments across the myriad academic fields it is used in. It is impossible for a single paper to cover the large body of GST language, which includes over 1,000 concepts (Williams & Imam, 2007). However, even though it has over 1,000 concepts, GST has been accused of not being rich enough to describe complex changes in large organizations (Majchrzak & Borys, 2001). This study has evaluated most of GST's taxonomy but has included only a small scope of the terminology. To not "cherry pick" the most suitable concepts, the study has selected core GST as its primary stream. Bertalanffy, Skyttner, and related scholars who study biological systems are the main sources for analysis in this study. This stream particularly enables the study of emergent and evolutionary characteristics of organizations, such as those of living organisms. A prerequisite for executing efficient systems thinking is having a focussed scope and accepting GST's limitations (Angell, 1990).

Data analysis

Findings case 1: Amazon

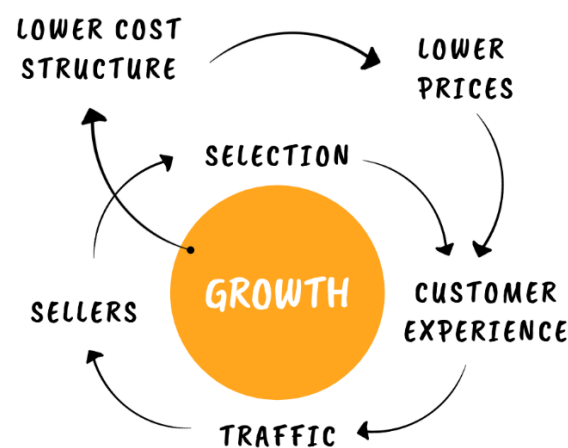
Amazon was founded in 1994 as an online bookstore. It has grown into one of the largest technology companies in the world, delivering services and products mainly in e-commerce, retail, streaming, and cloud platform services. It was founded by Jeff Bezos, one of the most influential business leaders of the last three decades. He stepped down as CEO in 2021 and was replaced by Andrew Jassy. Amazon has the highest brand valuation in the world. It has become a large global firm but has avoided the bureaucracy typically associated with large organizations. Instead, it has kept innovative by maintaining a culture of small working teams. Amazon is headquartered in Seattle, USA, and employs a staggering 1.3m people globally. In

2019, its top-line revenue was \$280bn. It is listed on the Nasdaq exchange. Its biggest owners are Jeff Bezos with 11%, Vanguard with 6%, and BlackRock with 5%. The Amazon representative used in this study, Mr. KR, has worked for Amazon for 6-and-a-half years at their London and Luxembourg offices. He is currently the Head of Sales in Europe for one of Amazon's products.

KR stated that the agile term and agile way of working had existed in Amazon long before he started working there. He stated that there is not one set definition of OA. OA does not have a written definition, and people interpret agility in subjective ways, defining it in terms of what they are trying to achieve with it. In an Amazon setting, agility means having a flexible mindset, working in small teams, having certain ceremonies and practices (stand-ups), and using certain tools (KANBAN). It involves systems, processes, and people. KR believes that the origin of agile in Amazon could be traced back to the foundation of the company in 1994. The principle of customer obsession was especially apparent in a famous letter written by Bezos to shareholders in 1997. The main reason the company was agile from the start was to meet the mission of being "Earth's most customer-centric company." A McKinsey study stated that the mission, or the North Star, is the most fundamental principle and prerequisite for being successful at OA (Aghina, et al., 2017). Bezos developed 16 leadership principles that support the North Star. Agility is not specifically mentioned in these principles, but several principles essentially cover the concept. For example, "Bias for action" is a principle that states that the company views speed and quick decision-making as acceptable calculated risks. KR said that "our leadership principles help us remain agile" and claimed that they are almost an ideology at Amazon. The agile organization framework emerged naturally within the firm, although certain guidelines were set, such as not having teams larger than six to eight people. There are no agile coaches or agile departments that are managing this internally. The framework

exists and develops without any need for specific monitoring and management. KR showed the Amazon Flywheel to illustrate Amazon's dynamic character and use of systems thinking. He had knowledge about systems thinking from studies and viewing the organization as a living organism in a wider ecosystem. He said that the concepts and terms from systems thinking were helpful for illustrating OA and beneficial in general for understanding OA. The Flywheel is a model that is well-known within Amazon. While it is not a traditional drawing of a GST organization, which would have elements inside and outside its boundaries, KR argued that it depicts how Amazon exists and develops.

Figure 8: Amazon Flywheel (Wang, 2021)



He explained that the Flywheel aims to create momentum and growth. It spins fast. It represents how to generate more traffic and a better customer experience on the Amazon platform by reacting to external changes and internal drivers. KR stated that "It shows the drivers of our agility. In order to continue to improve the customer experience, we need to efficiently manage changes in all of the elements shown in the Flywheel. This is what our agility is focusing on: Spin the wheel faster than we did yesterday."

KR said that agility is encouraged through a top-down style in which the executive management at Amazon promote leadership principles. The drivers for agility also come bottom-up from people working on the “floor.” Employees create or discover new tools or processes that make their work more efficient. Then, these new practices spread organically due to the transparency and culture of sharing across the organization. KR pointed to Covid testing as being such an example. Amazon employees noted that the public services for Covid testing were too slow, so they established testing infrastructure on the worksite. The logistics and processes were so efficient that they saw an opportunity to deliver testing to consumers. Before public services were able to set up new systems, Amazon developed a new business to deliver test equipment at home and have the consumer send the sample back to a lab for quick results.

A range of methods and tools support OA at Amazon. One unique mechanism is the Press Release and Frequently Asked Questions (PR-FAQ) document. The person or team with an original idea writes a descriptive document of six to ten pages, which can come across as being very strange at first glance. The proposal document explains the new activity as a narrative in the form of an imagined press release, focusing on the customer value. It also includes answers to expected frequently asked questions on the concept. In addition, it sets out the metrics on how to measure the activity’s customer value. The intention is to write down the idea clearly so it can be reviewed by a group of senior managers. Middle management is removed entirely. This speeds up the process and reduces unwanted company politics between business areas (Rossmann, 2019). KR said that the biggest benefit of the PR-FAQ is that it removes bias against the presenter. The author’s presentation skills, social skills, or position in the company are irrelevant. The best idea always wins.

Amazon is structured organizationally to enable agility. One of the ways they do this is to work in small teams. The teams at Amazon are described as “two-pizza teams,” a home-grown term to illustrate the small team size. Teams should have no more members than can be fed with two pizzas. In practice, the teams are made up of six to ten people (Mason, 2018). The teams are encouraged to work as autonomously and independently as possible. This is done by having multidisciplinary members who gain a sense of ownership. If the workload becomes too large, the team can get split into two teams to maintain agility. At Amazon, teams are dismantled and formed constantly. They typically have different members to cover marketing, sales, engineering, and finance. The intention is that every team covers every function needed so they can work as fast as possible. Amazon does not believe that they have reached a final and optimal organization design. They continuously evaluate the appropriateness of their organizational structure in terms of innovation and time-to-market. The Amazon devices unit, which is responsible for Alexa and Kindle, uses organizational network analysis (ONA) to monitor team structures. ONA specifically looks at dependencies, decision-making, and inter-team coordination to identify bottlenecks. ONA shows that the more connections the team has to other teams, the more issues people have as they have to attend more meetings, align team priorities, and gain approvals.

Amazon’s strategy is to pursue new businesses and innovate various areas to create new customer experiences and improve satisfaction, which can be labelled “strategic agility”. The OA framework of strategic agility describes how the firm’s management can respond to changes to implement sustainable business strategies. Strategic agility is typically an organization-wide change (Greineder, et al., 2020). For example, Amazon Web Services (AWS) was created based on the insight that customers wanted a quicker and better online experience. It has become one of Amazon’s largest ventures, but the strategy was never about

the product itself. Amazon did not aim to become a cloud technology company as such. Rather, its strategy was to offer a great online customer experience, and a scalable infrastructure was just a necessary product to support this strategy (Rossmann, 2019). AWS changed, like the rest of Amazon, from operating in large functional units to small multidisciplinary teams during the first years of the millennium.

The leadership principles are engrained in Amazon's culture, so KR did not think that it would be entirely replaced with another management concept. They have become institutionalized. The leadership principles are depicted as the DNA of the firm, as shown in the figure below, which demonstrates their importance.

Figure 9: Amazon leadership principles (Slater, 2022)



KR also provided opinions on the limitations of OA. He stated that people who prefer stability and working in the same function, on the same product, at the same location, and with the same people might be uncomfortable with the flexibility demanded by OA. Changing quickly to address new issues in the market or take advantage of new innovations in the firm means

that one's plans will be changed, and the company will not be able to foresee its business trajectory. There is no room for prestige or holding on to one's "babies" if the circumstances call for eliminating ongoing initiatives: "Good leaders change their mind and change their way of thinking when new data comes in. When it comes to road maps and prioritizations, we are agile. What was on top of the list one month may not even be on the list the following month." He predicts that tools and processes would certainly change but believes that the approach of having small teams is at the heart of Amazon. For the future, KR believes that Amazon will have to keep being quick on its toes. Concepts and terminologies will probably change names, but the underlying principles will prevail: "Sure, we can stop being agile when customers stop changing their minds."

Findings case 2: Hurtigruten

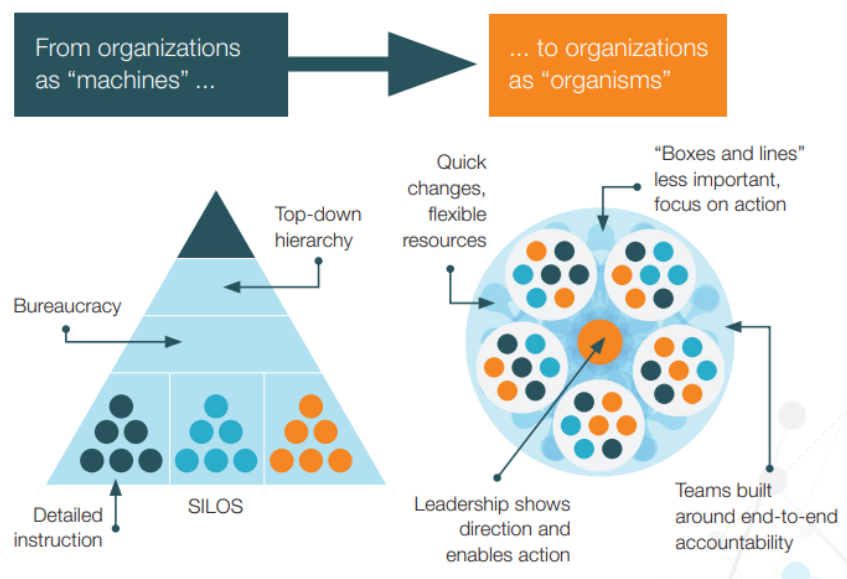
Hurtigruten is the world's largest adventure travel company. It was established in 1893 as a ferry operator in Norway. Currently, Hurtigruten offers sailing and land excursions globally. Daniel Skjeldam is its CEO. The company has 2,000 employees and had a top-line revenue of \$525m in 2019. It is headquartered in Oslo and has sales offices present in all geographical markets. It is a privately held company. Its majority owner is TDR Capital, a private equity firm based in London. Hurtigruten's strategy is to be the world leader in adventure tourism and revolutionize the travel sector's approach to sustainability. It aims to be proud of the impact it has on nature and communities. Hurtigruten's context is changing, especially in regard to new sustainability requirements from governments and clients. There are increasing local and international regulations covering CO2 emissions and other operational aspects. Just as importantly, cruise guests are demanding transparency and action on environmental issues.

Hurtigruten embraces these contextual changes and wants to utilize them to create a competitive advantage.

Mr. OM is the Senior Vice President and Chief Digital and People Officer at Hurtigruten, and has three-and-a-half years of experience in the executive management team. Before joining Hurtigruten, Mr. OM worked at McKinsey & Company for several years on enterprise agility. OM did not have a set definition of OA at Hurtigruten. He said that agility for him is essentially about executing good leadership: "It is about thinking holistically and delivering value to customers and employees. Good leadership is demonstrated by enabling strong and autonomous teams. In order to deliver holistically, i.e. to our entire value stream, teams typically need to possess cross-functional capabilities." He acknowledged that this description does not present a unified view of OA, and employees may significantly differ in their understanding of OA. Some people might consider it a hype and an empty phrase, but he hoped that changing the company's mindset and culture would produce great benefits. He explained during the start of the agile transition why the new mindset was important to the company: "There were several external factors, ranging from regulatory requirements to guest and market needs, that were influencing our business. We needed to respond to these changes even more rapidly than before to reach our company targets." Coming from McKinsey & Company and working for its advisory services on agility, he had seen first-hand how organizations could achieve great benefits from such transformations: "A key reason for doing this change was to reduce time from the drawing board to execution. We also aim to improve productivity and transparency, allow for more efficient decision-making processes, get a higher quality of deliverables, and increase the chance of reaching our objectives. And ultimately, the end goal is to deliver a better experience to our guests and our employees."

He believed he was able to view OA at Hurtigruten in its entirety from a management level. When discussing system theory elements, such as the environment, boundary, organism, and content, he said that these GST concepts helped him conceptualize OA holistically. When asked to visualize agility, he discussed the following illustration:

Figure 10: The organization as living organisms (Aghina, et al., 2017, p. 5)



He said that Hurtigruten combines the model on the left with the model on the right. It has a formal hierarchical functional organization, but the work is carried out as if the business were an organism. Hence, Hurtigruten is in a transition phase in which it aims to be intentionally organized in the matrix model that ING uses, which was shown earlier. He said that a hierarchy is needed for coordination and top-level decision-making and that agile teams are needed for speed. Furthermore, he acknowledged that such illustrations are simplistic because they typically focus only on one dimension. He discussed two more models, stating that the work at Hurtigruten could also be depicted through the customer journey or value streams. Different models slice and dice using different dimensions, but they all aim to create a better understanding of what Hurtigruten is trying to achieve.

Hurtigruten used to spend six months planning and producing the offering for each new season. The product guide for cruises is available from 3 months to 18 months ahead of time because people prefer to book and plan a long time ahead for expensive purchases. That means that the product guide for a cruise in 2022 was completed in 2020. Thus, for 24 months, Hurtigruten is unable to react to any changes in the environment. Research by McKinsey (Ebrahim, et al., 2018) found similar problems across industries. It found that 57% of firms were redesigning every 24 months, with the redesigning process itself taking 18 months. This meant that companies were only operating for six months before new massive organizational changes took place. OA emerged as a more appropriate model to implement in a complex and constantly evolving environment. After examining other firms and learning lessons from them, Hurtigruten began taking steps towards OA in 2020. Mr. OM began championing the transformation to OA. He currently has support from the CEO, and the executive management team is using OA concepts. A team of five agile coaches is responsible for executing the transition. They can work in a product team or squad over a long period as an integral part of the team to ensure agile practices, or they can aid teams in implementing agile structures, processes, and technologies. They have recorded videos of OA as it applies to Hurtigruten so that employees can view them at their own pace. They can work on teams as assigned by Mr. OM, although often teams request help. Mr. OM stated that it was critical that the agile coaches and all other employees had a holistic analytical mindset: "It is easy in a small start-up for everyone to know everything, but in a large firm, it is necessary to divide the organization one way or another. Then, holistic thinking becomes the most difficult thing."

The transformation to OA is being implemented unit by unit at Hurtigruten. The IT department started organizing employees in tribes and squads two years ago, in early 2020, and has more or less completed the transition. The feedback from this unit is positive. Employees like the

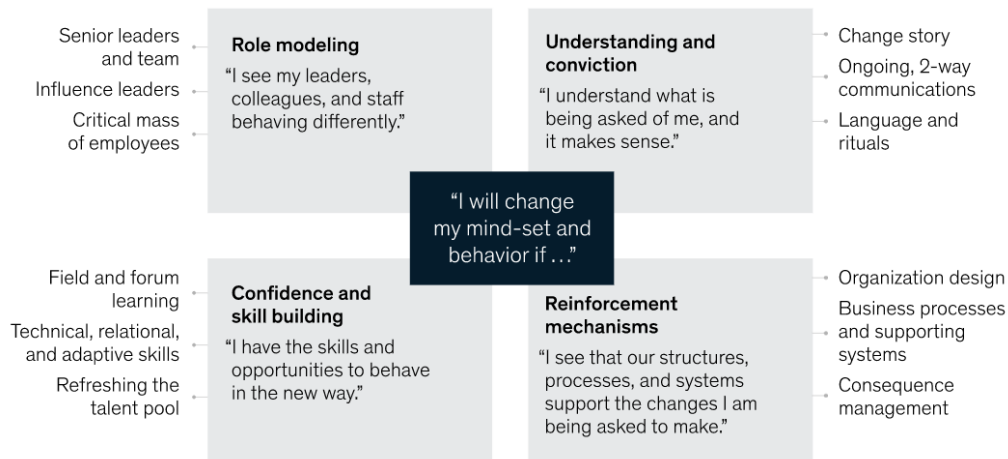
new structure, and managers are impressed with the efficiency gains. Mr. OM said that the IT department, renamed the Digital Tribe, has seen great results after transforming to OA: “The Digital Tribe has been able to be a lot quicker to market by making new releases much more rapidly. For one of our IT systems, we used to have four releases a year. Now, we have several releases per day. We can bring updated info on the website and to our customers in a significantly timelier manner than before.” The executive management team was next in line. They moved away from yearly budgets to the objectives and key results framework. It was important for these team members to change their mindsets and implement new agile working methods. It was also key that they set an example of the transition and champion it. The Asia Pacific market was the next unit in line, having been agile working for about a year. Other units, such as the sales and marketing team or product and design team, have just begun the transition. There are other large parts of the organization that have not yet started the OA process. The tribes and squads are designed with a flexible framework in mind. Mr. OM said that this is very important because there will be constant re-organizations and re-prioritization going forward. One significant change that has been planned is to establish international ship expeditions under a different company than Norwegian coastal ship expeditions. The new expedition company will cater to different waters and different customers. Consequently, the company expects to have a new constellation of tribes and teams.

Not all agile principles have been implemented in the teams at Hurtigruten. For example, the teams were not given a budget up-front, contrary to the recommendations for empowering independence (Bossert, et al., 2018). As a result, teams were not autonomous and had to wait for management’s approval for resource proposals. This reduces efficiency and time-to-market. It ties in with the general lack of decision-making authority given to teams. Even

though employees demonstrated that they could be trusted to exercise good judgement, they were actively restricted in making decisions on their own. One employee, who is a team leader with 20 years of experience in the company and possesses power of attorney in the company, was forced to escalate most decisions to his superior. Hurtigruten had functional silos in their former hierarchy organization. Even though it now has established cross-functional teams, it still experiences cross-functional silos. There is a lack of agility in the end-to-end flow. Certain value streams and teams are agile, but there are bottlenecks in maximizing efficiency due to the lack of complete end-to-end agility.

Another part of transforming to become an agile organization is to involve employees and let them design the new structures and processes as much as possible. During a workshop with the sales and marketing value stream, the team members created the new agile teams and assigned product owners. They reported that this activity and the interactive workshop, which lasted four days, involved them thoroughly and were useful. It increased support and buy-in. The big challenges of transitioning to OA, according to Mr. OM, aligned with the traditional issues in change management. At Hurtigruten, a lack of champions, role models, and support for the teams reduced the speed of the transition. Employees need a clear “why” when working, and he acknowledged that the need for the transition had not been communicated clearly enough. He referred to McKinsey & Company’s school of thought on change management and argued that change is a complex task. The first element in it is to change the mindset of everyone in the company, and only then will behavioural changes follow. The influence model on change, below, shows how the transition to OA is a large undertaking in change management.

Figure 11: The McKinsey & Company influence model on change (Keller & Schaninger, 2019)



Mr. OM hoped that OA would spread to all parts of Hurtigruten and provide visible results in the future. There are ways firms can benefit from OA by applying new mindsets, strategies, processes, and technologies. He did not know what OA would look like at the firm in a few years' time but could envision the direction: "We will stumble and fall many times, but we have momentum in the organization now to get up and keep moving forward. Hopefully, being agile will lead to a competitive advantage that everyone can see." When asked exactly how OA would evolve, he answered that he believed the old way of annual budgeting and reporting would never be reintroduced. Instead, the firm focuses on quarterly timelines and continuously re-prioritizing. He thought that the use of the term "agility" would probably decrease but that the underlying principles associated with good leadership would survive in other management concepts.

Discussion

The interviewees were unable to clearly define OA, and their definitions varied to an extent. The wordings they used did not provide a unified interpretation of the concept across the organization but were subjective formulations provided during the interview. It seemed to be

difficult to define OA visually from a holistic perspective. These findings on the issues with definitions are coherent with prior research, which presents great diversity in definitions. OM defined OA at Hurtigruten by listing the firm's ambitions and objectives, a notion described in systems theory as *teleology* (Bertalanffy, 1955). The interviewees' OA drawings showed clearly defined *boundaries* (Bertalanffy, 1969) but also differed significantly in content. None of the drawings included external partners, indicating a lack of *ecosystem* (Assche, et al., 2019) thinking. Furthermore, the specific context is important in OA. Hurtigruten is not transitioning to OA because Amazon uses OA. Trying to merely copy what another firm is doing is not an efficient way to make changes and achieve growth. Shead (2018) found that many companies are mimicking other firms when transitioning to OA. In a promotional video for his book, he argues that the company's circumstances must be considered more: "You should look at things holistically. [...] Many decisions that Amazon makes about how to build software are not going to be good decisions for your organization. [...] Your company, your situation, your circumstances" (Shead, 2019).

Explaining system theory concepts, such as viewing the firm as a *living organism* (Laszlo, 1996) interacting with its environment, helped the interviewees discuss the drawings more holistically. Hurtigruten and Amazon had relatively similar objectives with OA, predominantly to be quicker with the time to market and thus gain a competitive advantage. Amazon has evidently been successful with OA, and Hurtigruten has also started implementing OA by introducing the Digital Tribe, which was the first unit that transitioned. However, many sub-systems differed between the firms. For example, Hurtigruten had not considered implementing the PR-FAQ process, which is a mainstay at Amazon, and both organizations had not made use of many OA tools. *Equifinality* (Beven & Freer, 2001) occurs when both firms achieve the same objective using different means. Customer value was the objective or the

North Star at Amazon. Amazon collects data on customer responses for every product, and customer-driven metrics trump financial-driven metrics at Amazon. However, it is difficult to create customer metrics and tools that can measure and report in real-time. Even at Amazon, it can take weeks to plan for this (Rossmann, 2019). Having a customer-oriented focus, or “customer obsession,” as Rossman labels it, is key to OA in Amazon. Everyone from top-level management to system developers must focus on how to create value for the customer. A customer mindset requires that staff is exposed to and observes how customers interact with their products. Rossman argues that all functions in the firm must have this aim. KR described how customer behaviour is consistently monitored on the platform. He explained that changes to the website are tested and measured, customer reviews are read, and a range of technical mechanisms are in place to follow developments in customer experience. Thus, everything is done with the North Star in mind.

Both internal capabilities and external drivers influenced Amazon’s implementation of OA. For example, AWS was created due to the external requirement that customers wanted a quicker and better online experience. Amazon’s strategy had not previously contained anything about becoming a cloud technology company. By listening to the customers, Amazon thought about the bigger picture. It re-shaped its strategy to offer a great online customer experience, using scalable cloud infrastructure as a platform to support its strategy. By moving from a monolithic architecture to microservices and enabling *synergies* (Corning, 2003) between teams, AWS delivered exponential growth in the number of releases to the market and value to customers. One way Amazon has reduced the need for dependencies and workload between teams is by transitioning away from monolithic applications to microservices. While monolithic apps require cumbersome technological integration and significant cooperation between teams of connected apps, microservices are designed to function together using technology that

enables much simpler interactions (Amazon Web Services, 2019). KR explained that everyone at Amazon could easily utilize the microservices that a different team releases on their products. It is akin to playing with Lego, where teams are given new pieces to play with for free every day. This strategy also creates expectations because the team has to keep up with other teams that are making technological advances. If they do not, their team's product may no longer work. Over the years, AWS has evolved by listening to customers and iteratively experimenting with innovation using the aforementioned Amazon Flywheel. The innovation flywheel is based on structural coupling between teams internally in the organization and between the organization and the external world, leading to *co-evolution* (Leyesdorff, 2006). There is also a *feedback loop* (Savageau, 1976) that aims for continuous improvement and does not have a final outcome. There are also certain limitations to spinning the flywheel as fast as possible. With autonomy comes accountability, so teams are responsible for their profit and loss statements. Furthermore, teams do not make all decisions on their own. They are autonomous within their budget frame but need to seek funding for innovations and activities outside of the budget. They compete for resources at Amazon just like in any organization, and it is a competitive environment. Teams can reach out to any relevant senior manager to sponsor an innovative idea. At Hurtigruten, the main challenge so far has concerned waiting for other teams to respond. For example, all teams at Hurtigruten have a visualization of their work and processes using different methods and tools. One of the teams had a category labelled "Waiting for other teams" on their to-do dashboard. Thus, while each team works more efficiently and with more continuous improvement than before, the dependencies are the same – if not worse. As a result, Hurtigruten's performance as a whole is not improving, for example, in reducing time-to-market. This is a well-known issue in systems thinking, described by Ackoff (1992):

And therefore, the performance of the whole is never the sum of the performance of the parts taken separately, but it's the product of their interactions.

The emergence of *sub-systems* (Skyttner, 2001) was clearer at Amazon than at Hurtigruten because OA had existed there for much longer. Some of the characteristics of these emergent properties, or *organismic provenance* (Checkland, 1981), are unique to Amazon. For example, the exercise of writing a mock-up PR article that describes an innovation to the public originated from within the organization and not from the “Agile textbook”. KR said that, over the years, the Amazon culture has centred around agile ways of working, which have been institutionalized. Even as Amazon has grown massively and divested into different technologies and locations since its founding, the culture at that individual team level has remained the same. The culture is also self-reinforcing and has proven to be a key factor in helping scale the company. The transformation at Amazon has come so far to have reached a state of *homeostasis* (Dawkins, 2006). There are recognizable characteristics and established elements, such as the two-pizza teams. The teams at Amazon have more *requisite variety* (Ashby, 1956) than Hurtigruten, enabling them to tackle turbulent environments with complex problems. For example, teams at Hurtigruten do not possess sufficient financial skills to swiftly handle investment proposals. Hurtigruten does not, by design, have this competency in the teams but has elevated it to the tribe level instead. Hurtigruten will probably implement more processes and practices from the agile concept as the transformation matures, but in the short term, they aim to *reduce complexity* (Luhmann, 1995) by selectively choosing which items to pick from the agile toolbox. Product owners were also encouraged to throw away any processes that did not make sense. Making sense, a concept referred to as *sinn* by Luhmann (1995), is important for people to progress in social systems. OA emerged more naturally in Amazon than at Hurtigruten. Hurtigruten started the OA transformation by introducing the

concept of tribes and squads. Some OA schools propose that this concept be delayed until the potential benefits of such structural changes have been identified, and the concept could even be omitted entirely. Often, the benefits of tribes and squads become clear at a much later stage in the transformation, and it may be that reorganizing into tribes and squads has no significant effects at all. Typically, the IT system function benefits from the tribe and squad organization, but other more traditional functions may not see as clear results. Traditional functional teams can introduce agile practices such as cross-functional stand-up meetings or visualization boards to break down silo walls. It may only become appropriate to move groups into a new agile squad after seeing whether these new processes are effective and if employee groups work well together.

Mr. OM believed that it was necessary to have a holistic understanding of agility to know which components to remove while still being able to achieve the overall objective at Hurtigruten. In the future, Hurtigruten has large internal changes and external threats to consider. It will divide into two separate entities, one company for international expeditions and one company for Norwegian coastal sailings. Furthermore, the Covid pandemic will continue to restrict travel in ways that cannot be predicted. OM said that OA would be helpful in this regard as it will give the company a competitive advantage over other cruise companies with traditional hierarchy structures. Mr. KR also acknowledged that the external environment will keep on challenging Amazon. The ability to adapt to one's surroundings and even take advantage of them is consistent with the theory of *evolution* (Darwin, 1859).

Conclusions and recommendations

This paper examined OA at Amazon and Hurtigruten. Using a case study approach on two companies with different characteristics allowed it to compare and contrast OA across industries and geographies. Amazon is a large company in the digital sector, and Hurtigruten is a small company in the cruise industry. The interview subjects controlled U.S., European, Asia-Pacific, and global markets. The findings have credibility and are complete because they combine interviews, observations, and document materials. The primary research findings are original and unique. The interviewees provided new information and feedback on GST as a framework for OA. They found the holistic approach essential for understanding and executing OA and argued that the only way for employees to deliver on the company's overall objectives and values was to constantly apply a holistic mindset. Holistic thinking not only aids in agile transformation and practices, but it is an essential prerequisite for it – which answers the primary research question of this paper.

This paper's theoretical implication is that it clarifies the nature of OA and how the agile method elements work together systemically, making it easier for academia to analyse and discuss the concept of OA. The field of strategic management can especially draw on this analysis. The findings argue that OA functions as a living system with sub-systems, boundaries, and feedback loops with its environment. The more mature a firm's system is, the more the firm will grow and evolve. Systems theory offers an appropriate framework for observing OA holistically and useful terminology for describing the dynamics and characteristics of OA. This research's new findings on the suitability of the vocabulary can enhance the understanding of OA among researchers. The original application of systems theory concepts in this study can aid in building on the theoretical frameworks for OA and the wider strategic management

field. It meets researchers' calls for holistically conceptualizing OA, which was identified as a crucial need in the literature review.

Understanding the holistic nature of OA and treating it as a living organism also has clear implications for practice. The practical implications of this paper's original findings are that managers can better design and implement strategies for successful agility. Viewing OA as a living organism with emergent and evolutionary characteristics can help managers make correct assumptions and decisions. They can make use of the insights in this paper by applying systems thinking to help organizations transform and support their OA initiative. For example, managers can visualize and gain an understanding of OA by using the holistic illustration in this paper that presents the theory's different components and relationships. Strengthening the capability of holistic considerations increases the success rate of complex systems (Mitev, 1994). If used appropriately, OA can ensure the company thrives in uncertain and complex environments.

This study has applied a much-requested research approach by using GST as an academic lens to observe and evaluate OA. GST proved to be a useful and convincing theoretical framework to define and describe OA at Amazon and Hurtigruten. Its main advantage is that it offers a holistic perspective of the environment, system, sub-systems, and elements of OA. It is appropriate for evaluating OA over time because it contains concepts on emergence, growth, and evolution. The selected GST concepts used herein to describe findings from Amazon and Hurtigruten refer to biology and other mechanisms familiar to most people, which makes it easier for scholars and managers to immediately understand certain OA properties. However, many of these comparisons are subjective and tenuous. Some metaphors from biology provide weak analogies for OA. More concepts from GST, and from other systems thinking

streams, should be explored to assess how they align with OA characteristics. Systems thinking is a relatively large academic field, so a substantial amount of empirical research would be needed to conclude on the validity of GST for OA. Similarly, there is a massive body of OA literature, especially if including professional magazines and news media. Despite the study's rigorous literature review, the review's scope is not exhaustive of every OA research stream. The journal papers were selected using subjective judgement. Furthermore, there are several limitations to OA as a concept. This study found that practitioners at Amazon and Hurtigruten pointed to contradictions and limitations in OA theory. OA has become an umbrella term for many academics, consultants, and practitioners contributing to the theory, so there is a lack of coherence. Lastly, systems theory should not be implemented as prescriptive "checklists" for managers (Avgerou, 2002) and is not instrumental for practitioners. Instead, the theory intends to provide insights into the underlying knowledge associated with holistic systems.

Appendices

Definitions of organizational agility

(Walter, 2021, pp. 350-353)

Author (year)	Definition of OA	Business environment	Goal of OA
Cho et al. (1996)	'[...]the capability of surviving and prospering in a competitive environment of continuous and unpredictable change by reacting quickly and effectively to changing markets, driven by customer-designed products and services.' (p. 323)	Unpredictable, turbulent	To maintain competitiveness
Feng and Zhang (1998)	'An agile enterprise could swiftly reconfigure operations, processes, and business relationships, thriving in an environment of continuous and unpredictable change.' (p. 893)	Continuously changing, unpredictable	To prosper
Gunasekaran (1998)	'[...] the capability to survive and prosper in a competitive environment of continuous and unpredictable change by reacting quickly and effectively to changing markets, driven by customer-designed products and services.' (p. 1223)	Competitive, unpredictable, continuously changing	To prosper and maintain competitiveness
Sharifi and Zhang (1999)	'[...] the ability to cope with unexpected changes, to survive unprecedented threats of business environment, and to take advantage of changes as opportunities.' (p. 9)	Unexpectedly changing, turbulent	To take advantage of environmental changes and prosper

Author (year)	Definition of OA	Business environment	Goal of OA
Gunasekaran and Yusuf (2002)	‘The capability of an organization, by proactively establishing virtual manufacturing with an efficient product development system, to (i) meet the changing market requirements, (ii) maximize customer service level and (iii) minimize the cost of goods, with an objective of being competitive in a global market and for an increased chance of long-term survival and profit potential.’ (p. 1362)	Global, continuously changing	To increase competitiveness
Lin et al. (2006)	‘[...] the ability of an enterprise to rapidly respond to change in market and customers’ demands’ (p. 355)	Turbulent, uncertain	To enrich and satisfy customers and employees
Van Oosterhout et al. (2006)	‘[...] the ability to swiftly and easily change businesses and business processes beyond the normal level of flexibility to effectively manage unpredictable external and internal changes.’ (p. 132), ‘[...] to be able to anticipate or respond to the changes in a timely manner and with ease’ (p. 134)	Highly dynamic, unpredictably changing	To cope with change

Author (year)	Definition of OA	Business environment	Goal of OA
Zhang and Sharifi (2007)	'[...] being able to compete and prosper within a state of dynamic change.' (p. 352), 'Agility is a manufacturing strategy that aims to provide manufacturing enterprises with competitive capabilities to prosper from dynamic and continuous changes in the business environment, reactively or proactively.' (p. 352)	Dynamic, continuously changing	To prosper
Lu and Ramamurthy (2011)	'Organizational agility is a firm-wide capability to deal with changes that often arise unexpectedly in business environments via rapid and innovative responses that exploit changes as opportunities to grow and prosper' (p. 933)	Rapidly and unexpectedly changing, uncertain, unpredictable	To prosper
Teece et al. (2016)	'[...] the capacity of an organization to efficiently and effectively redeploy/redirect its resources to value creating and value protecting (and capturing) higher-yield activities as internal and external circumstances warrant.' (p. 17)	Deeply uncertain, dynamic	To deal with uncertainty and to maintain competitiveness

Author (year)	Definition of OA	Business environment	Goal of OA
Sindhvani and Malhotra (2017)	'[...] the capability to of surviving and prospering in a competitive environment of continuous and unpredictable change by reacting quickly and efficiently in changing markets, driven by "customer-defined" products and services' (p. 467)	Continuously changing, unpredictable	To prosper and maintain competitiveness
Nejatian et al. (2018)	'[...] the ability of an enterprise to survive and prosper in a competitive and unpredictable environment by responding quickly and effectively to any kind of change—anticipated or unpredicted—in proper ways and due time' (p. 202)	Competitive, unpredictable	To prosper and maintain competitiveness

References

- Ackoff, R. & Deming, W. E., 1992. *Transcript from interviews with Dr Ackoff and Dr Deming*, Silver Spring: The Daisy Wheel.
- Ackoff, R. L. & Maurice, W., 1968. *Fundamentals of Operations Research*. New York: John Wiley & Sons Inc.
- Ahlbäck, K., Fahrbach, C., Murarka, M. & Salo, O., 2017. *How to create an agile organization*. [Online]
Available at: <https://www.mckinsey.com/business-functions/people-and-organizational-performance/our-insights/how-to-create-an-agile-organization>
[Accessed 17 November 2021].
- Amazon Web Services, 2019. *Modern application management*, Global: Amazon.com.
- Angell, I. O., 1990. Systems thinking about information systems and strategies. *Journal of Information Technology*, 5(4), pp. 168-174.
- Angell, I. O. & Demetis, D. S., 2005. Systems Thinking about Anti-Money Laundering. *Journal of Money Laundering Control*, 8(3), pp. 271-284.
- Angell, I. O. & Smithson, S., 1991. *Information Systems Management: Opportunities and Risks*. Basingstoke: Macmillan Press.
- Aronowitz, S., De Smet, A. & McGinty, D., 2015. *Getting reorganization redesign right*, Global: McKinsey Quarterly, June 2015.
- Ashby, W. R., 1956. *Introduction to Cybernetics*. 1st ed. London: Wiley.
- Assche, K. v., Verschraegen, G., Valentinov, V. & Gruezmacher, M., 2019. The social, the ecological, and the adaptive: Von Bertalanffy's general systems theory and the adaptive governance of social-ecological systems. *Systems Research and Behavioural Science*, 36(3), pp. 308-321.
- Augustine, S., Payne, B., Sencidiver, F. & Woodcock, S., 2005. Agile Project Management: Steering from the Edges. *Communications of the ACM*, 48(12), pp. 85-89.
- Avgerou, C., 2002. New Socio-Technical Perspectives of IS Innovation in Organizations. In: C. Avgerou & R. L. LaRovere, eds. *ICT Innovation: Economic and Organizational Perspectives*. Cheltenham: Edward Elgar, pp. 141-161.
- Bailey, K. D., 1994. *Sociology and the New Systems Theory: Toward a Theoretical Synthesis*. New York: State of New York Press.
- Bertalanffy, L. v., 1950. An Outline of General Systems Theory. *British Journal of the Philosophy of Science*, 1(2), pp. 134-165.
- Bertalanffy, L. v., 1951. General Systems Theory: A new approach to the unity of science. *Human Biology*, 23(4), pp. 302-312.

- Bertalanffy, L. v., 1955. General Systems Theory. *Main Currents in Modern Thought*, 11(4), pp. 75-83.
- Bertalanffy, L. v., 1969. *General Systems Theory*. 1st ed. New York: George Braziller.
- Bertalanffy, L. v., 1976. *General System Theory: Foundations, Development, Applications*. New York: George Braziller.
- Bessant, J. et al., 2001. Developing manufacturing agility in SMEs. *International Journal of Technology Management*, 22(1-3), pp. 28-54.
- Beven, K. & Freer, J., 2001. Equifinality, data assimilation, and uncertainty estimation in mechanistic modelling of complex environmental systems using the GLUE methodology. *Journal of Hydrology*, 249(1), pp. 11-29.
- Bossert, O., Kretzberg, A. & Laartz, J., 2018. *Unleashing the power of small, independent teams*, Global: McKinsey Quarterly, July 2018.
- Boulding, K. E., 1956. General Systems Theory: The skeleton of a science. *Management Science*, 1(3), pp. 197-208.
- Brandenburger, A. M. & Nalebuff, B. J., 1995. The Right Game: Use Game Theory to Shape Strategy. *Harvard Business Review*, 73(4), pp. 57-71.
- Brown, J. L. & Agnew, N. M., 1982. Corporate agility. *Business Horizons*, 25(2), pp. 29-33.
- Burrell, G. & Morgan, G., 1979. *Sociological Paradigms and Organizational Analysis*. London: Heinemann.
- Cao, Q. & Dowlathshahi, S., 2005. The impact of alignment between virtual enterprise and information technology on business performance in an agile manufacturing environment. *Journal of Operations Management*, 23(5), pp. 531-550.
- Chakravarty, A., Grewal, R. & Sambamurthy, V., 2014. Information technology competencies, organizational agility y, and firm performance: Enabling and facilitating roles. *Information Systems research*, 24(4), pp. 976-997.
- Checkland, P. B., 1981. *Systems Thinking, Systems Practice*. 1st ed. Chichester: Wiley.
- Chen, C. J., 2019. Developing a model for supply chain agility and innovativeness to enhance firms' competitive advantage. *Management Decision*, 57(7), pp. 1511-1534.
- Churchman, C. W., 1979. *The Systems Approach and its Enemies*. New York: Basic.
- Cooper, H., Hedges, L. V. & Valentine, J. C., 2009. *The Handbook of Research Synthesis and Meta-Analysis*. 2nd ed. New York: Russel Sage.
- Corning, P. A., 2003. *Nature's Magic: Synergy in Evolution and the Fate of Humankind*. 1st ed. Cambridge: Cambridge University Press.
- Darwin, C., 1859. *On the Origin of Species by Means of Natural Selection*. 1st ed. London: John Murray.

Davidson, A. & Klemme, L., 2016. Why a CEO Should Think Like a Scrum Master. *Strategy & Leadership*, 44(1), pp. 36-40.

Dawkins, R., 2006. *The God Delusion*. 1st ed. London: Bantam Press.

De Smet, A., Lurie, M. & St. George, A., 2018. *Leading agile transformation: The new capabilities leaders need to build 21st-century organizations*. [Online]
Available at: <https://www.mckinsey.com/business-functions/people-and-organizational-performance/our-insights/leading-agile-transformation-the-new-capabilities-leaders-need-to-build-21st-century-organizations>
[Accessed 13 November 2021].

De Smet, A. & Aghina, W., 2015. *The keys to organizational agility*, Global: McKinsey & Company.

Denning, S., 2019. *How Amazon became Agile*. [Online]
Available at: <https://www.forbes.com/sites/stevedenning/2019/06/02/how-amazon-became-agile/?sh=6412a72131aa>
[Accessed 27 October 2021].

Ebrahim, S., Krishnakanthan, K. & Thaker, S., 2018. *Agile Compendium*, Global: McKinsey & Company.

Edison, H., Wang, X. & Conboy, K., 2021. Comparing Methods for Large-Scale Agile Software Development. *IEEE Transactions on Software Engineering*, pp. 1-23.

Eisenhardt, K. M., 1989. Building theories from case study research. *Academy of Management Review*, 14(4), pp. 532-550.

Foschiani, F., Röber, B. & Oesterle, M. J., 2021. (Fr)Agile, Handle with Care! A Systematic Literature Review of the Nature and Limits of Agile Methods. *International Journal of Managerial Studies and Research*, 9(8), pp. 27-47.

George, P., 2016. The scary truth about corporate survival. *Harvard Business Review*, Volume December, pp. 24-25.

Glenn, M., 2009. *Organizational agility: How business can survive and thrive in turbulent times*, London: Economist Intelligence Unit Ltd.

Greineder, M., Leicht, N. & Blohm, I., 2020. *Conceptualizing the Agile Work Organization: A systematic literature review, framework and research agenda*. eConference, Bled conference.

Gunasekaran, A., 1998. Agile manufacturing: Enablers and an implementation framework. *International Journal of Production Research*, 36(5), pp. 1223-1247.

Gunasekaran, A., Yusuf, Y. Y., Adeleye, E. O. & Papadopoulos, T., 2018. Agile manufacturing practices: The role of big data and business analytics with multiple case studies. *International Journal of Production Research*, 56(1-2), pp. 385-397.

- Hallgren, M. & Olhager, J., 2009. Lean and agile manufacturing: External and internal drivers and performance outcomes. *International Journal of Operations & Production Management*, 29(10), pp. 976-999.
- Harris, M. L., Collins, R. & Hevner, A. R., 2009. Control of flexible software development under uncertainty. *Information Systems Research*, 20(3), pp. 400-419.
- Hatzijordanou, N., Bohn, N. & Terzidis, O., 2019. A systematic literature review on competitor analysis: Status quo and start-up specifics. *Management Review Quarterly*, 69(4), pp. 415-458.
- Hazen, B. T. et al., 2017. Enterprise architecture: a competence-based approach to achieving agility and firm performance. *International Journal of Production Economics*, 193(C), pp. 566-577.
- Industry Team and Facilitators, 1991. *21st Century manufacturing enterprise strategy. an industry-led view*, Bethlehem: Iacocca Institute, Lehigh University.
- Inman, R. A., Sale, R. S., Green, K. W. & Whitten, D., 2011. Agile manufacturing: relation to JIT, operational performance and firm performance. *Journal of Operational Management*, 29(4), pp. 343-355.
- Keller, S. & Schaninger, B., 2019. Getting personal about change. *McKinsey Quarterly*, Issue Q3, pp. 74-83.
- Kern, J., 2018. *Agile in the Context of a Holistic Approach*. [Online]
Available at: <https://www.infoq.com/articles/agile-holistic-approach/>
[Accessed 11 February 2022].
- Kotter, J. P., Akhtar, V. & Gupta, G., 2021. *Is Your Organization Surviving Change - or Thriving in It?*. [Online]
Available at: <https://hbr.org/2021/08/is-your-organization-surviving-change-or-thriving-in-it>
[Accessed 5 November 2021].
- Lacity, M. C. & Hirschheim, R., 1993. *Information Systems Outsourcing*. Chichester: Wiley.
- Laloux, F., 2014. *Reinventing organizations*. 1st ed. Brussels: Nelson Parker.
- Laszlo, E., 1996. *The Systems View of the World: A Holistic Vision for Our Time*. 2nd ed. New Jersey: Hampton Press.
- Lee, O. K., Sambamurthy, V., Lim, K. H. & Wei, K. K., 2015. How does it ambidexterity impact organizational agility?. *Information System Research*, 26(2), pp. 398-417.
- Lehn, K., 2018. Corporate Governance, Agility, and Survival. *International Journal of the Economics of Business*, 25(1), pp. 65-72.
- Lerner, V. S., 2004. Introduction to information systems theory: concepts, formalism and applications. *International Journal of Systems Science*, 35(7), pp. 405-424.

- Leyesdorff, L., 2006. The biological metaphor of a second-order observer and the sociological discourse. *Kybernetes*, 35(7), pp. 405-424.
- Lin, C. T., Chiu, H. & Tseng, Y. H., 2006. Agility evaluation using fuzzy logic. *International Journal of Production Economics*, 101(2), pp. 353-368.
- Luhmann, N., 1995. *Social Systems*. 1st ed. Stanford: Stanford University Press.
- Mahadevan, D., Jacobs, P. & Schlatmann, B., January 2017. *ING's agile transformation*, Global: McKinsey Quarterly.
- Majchrzak, A. & Borys, B., 2001. Generating testable socio-technical systems theory. *Journal of engineering and technology management*, 18(3), pp. 219-240.
- Makin, S., 2006. *Metaphysics Book Theta*. Oxford: Oxford University Press.
- Marin, V. H., 1997. General Systems Theory and the Ecosystem Concept. *Bulletin of the Ecological Society of America*, 78(1), pp. 102-104.
- Mason, L., 2018. *Amazon Culture: Staying Agile*. [Online]
Available at: https://www.youtube.com/watch?v=ESBJ_oxNC_Y
[Accessed 29 October 2021].
- Matook, S. & Brown, S. A., 2008. "Conceptualizing the IT Artifact for MIS Research. Paris, ICIS 2008 Proceedings.
- McAvoy, J. & Butler, T., 2009. The role of project management in ineffective decision making within Agile software development projects. *European Journal of Information Systems*, 18(4), pp. 373-383.
- McKinsey & Company, 2017. *The 5 trademarks of agile organizations*, Global: McKinsey & Company.
- Meade, L. M. & Sarkis, J., 1999. Analyzing organizational project alternatives for agile manufacturing processes: An analytical network approach. *International Journal of Production Research*, 37(2), pp. 241-261.
- Meinhardt, R., Junge, S. & Weiss, M., 2018. The organizational environment with its measures, antecedents, and consequences: A review and research agenda. *Management Review Quarterly*, 68(2), pp. 195-235.
- Miller, J. G., 1978. *Living Systems*. New York: McGraw-Hill.
- Mishra, S., Mahapatra, S. S. & Datta, S., 2014. Agility evaluation in fuzzy context: Influence of decision-makers' risk bearing attitude. *Benchmarking: An International Journal*, 21(6), pp. 1084-1119.
- Mitev, N., 1994. "The business failure of knowledge-based systems: Linking knowledge-based systems and information systems methodologies for strategic planning. *Journal of Information Technology*, 9(3), pp. 173-184.

- Monplaisir, L., 2002. Enhancing CSCW with Advanced Decision Making Tools for an Agile Manufacturing System Design Application. *Group Decision and Negotiation*, 11(1), pp. 45-63.
- Morton, J., Stacey, P. & Mohn, M., 2018. Building and maintaining strategic agility: An agenda and framework for executive IT leaders. *California Management Review*, 61(1), pp. 94-113.
- Mure, G. R., 1975. Cause and Because in Aristotle. *Philosophy*, 50(193), pp. 356-357.
- Neergaard, H. & Ullhøi, 2007. *Handbook of Qualitative Research Methods in Entrepreneurship*. Northampton: Edward Elgar Publishing.
- Nerur, S., Cannon, A., Balijepally, V. & Bond, P., 2010. Towards an Understanding of the Conceptual Underpinnings of Agile Development Methodologies. In: T. Dingsøyr, T. Dybå & N. Moe, eds. *Agile Software Development*. Berlin: Springer, pp. 15-29.
- Norman, J. & Ramirez, R., 1993. From Value Chain to Value Constellation: Designing Interactive Strategies. *Harvard Business Review*, 71(4), pp. 65-77.
- Overby, E., Bharadwaj, A. & Sambamurthy, V., 2006. Enterprise agility and the enabling role of information technology. *European Journal of Information Systems*, 15(2), pp. 120-131.
- Patton, M. Q., 1980. *Qualitative Education Methods*. Beverly Hills: Sage Publications.
- Potdar, P. K., Routroy, S. & Behera, A., 2017. Analyzing the agile manufacturing barriers using fuzzy DEMATEL. *Benchmark International*, 24(7), pp. 1912-1936.
- Rigby, D., Sutherland, J. & Noble, A., 2018. Agile at Scale. *Harvard Business Review*, 96(3), pp. 88-96.
- Robbins, S. S. & Olivia, T. A., 1982. The empirical identification of fifty-one core general systems theory vocabulary components. *Behavioral Science*, 27(4), pp. 377-386.
- Rosi, B. & Mulej, M., 2006. The dialectical network thinking - a new systems theory concerned with management. *Kybernetes*, 35(7), pp. 1165-1178.
- Rossmann, J., 2019. *Think like Amazon*. 1st ed. New York: McGraw Hill.
- Savageau, M. A., 1976. *Biochemical Systems Analysis: A Study of Function and Design in Molecular Biology*. 1st ed. Reading: Addison-Wesley.
- Sharifi, H. & Zhang, Z., 1999. A methodology for achieving agility in manufacturing organisations: An introduction. *International Journal of Production Economics*, 61(1-2), pp. 7-22.
- Sharifi, H. & Zhang, Z., 2001. Agile manufacturing in practice - application of a methodology. *International Journal of Operations & Production Management*, 21(5-6), pp. 772-794.
- Shed, M., 2018. *Starting agile: Finding your path*. 1st ed. Tulsa: Swift Word.

- Shed, M., 2019. *Because Amazon - Making Agile Decisions* (. [Online]
Available at: <https://www.youtube.com/watch?v=Tnj77iHNTHs>
[Accessed 28 October 2021].
- Shick, M., 2010. *FastCompany*. [Online]
Available at: <https://www.fastcompany.com/1569357/jeff-bezos-whats-dangerous-not-evolve>
[Accessed 9 February 2022].
- Skyttner, L., 1996. *General Systems Theory*. London: Macmillan Press.
- Skyttner, L., 2001. *General Systems Theory: Ideas & Applications*. 2nd ed. London: World Scientific.
- Skyttner, L., 2006. *General Systems Theory: Problems, Perspectives, Practice*. 2nd ed. Hackensack: World Scientific.
- Slater, D., 2022. *Leading and Innovating with Leadership Principles*. [Online]
Available at: <https://aws.amazon.com/executive-insights/content/leading-and-innovating-with-leadership-principles/>
[Accessed 29 January 2022].
- Tallon, P. P. & Pinsonneault, A., 2011. Competing perspectives on the link between strategic information technology alignment and organizational agility. *MIS Quarterly*, 35(2), pp. 463-484.
- Taylor, F., 1911. *The principles of scientific management*. London: Harper & Brothers.
- Teece, D. J., Peteraf, M. & Leih, S., 2016. Dynamic Capabilities and organizational agility: risk, uncertainty, and strategy in the innovation economy. *California Management Review*, 58(4), pp. 13-35.
- Thelen, E. & Smith, L. B., 1996. *A Dynamic Systems Approach to the Development of Cognition and Action*. Cambridge: MIT Press.
- Van Oosterhout, M., Waarts, E. & van Hillegersberg, J., 2006. Change factors requiring agility and implications for IT. *European Journal of Information Systems*, 15(2), pp. 132-145.
- Vazquez-Bustelo, D., Avella, L. & Fernandez, E., 2007. Agility drivers, enablers and outcomes: Empirical test of an integrated agile manufacturing model. *International Journal of Production Management*, 27(12), pp. 1303-1332.
- Vickery, S. K., Droge, C., Setia, P. & Sambamurthy, V., 2010. Supply chain information technologies and organisational initiatives: Complementary versus independent effects on agility and firm performance. *International Journal of Production Research*, 48(23), pp. 7025-7042.
- Vidgen, R. & Xiaofeng, W., 2009. Coevolving Systems and the Organization of Agile Software Development. *Information Systems Research*, 20(3), pp. 355-376.

- Vinodh, S., 2010. Improvement of agility and sustainability: a case study in an Indian rotary switches manufacturing organization. *Journal of Cleaner Production*, 18(10-11), pp. 1015-1020.
- Vinodh, S. & Aravindraj, S., 2012. Agility evaluation using the IF-THEN approach. *International Journal of Production Economics*, 50(24), pp. 7100-7109.
- Vinodh, S., Devadasan, S. R., Vasudeva, R. B. & Ravichand, K., 2010. Agility measure index measurement using multi-grade fuzzy approach integrated in a 20 criteria agile model. *International Journal of Production Research*, 48(23), pp. 7159-7176.
- Wade, M., Joshi, A. & Teracino, E. A., 2021. *6 Principles to Build Your Company's Strategic Agility*. [Online]
Available at: <https://hbr.org/2021/09/6-principles-to-build-your-companys-strategic-agility> [Accessed 20 January 2022].
- Walter, A. T., 2021. Organizational agility: Ill-defined and somewhat confusing? A systematic literature review and conceptualization. *Management Review Quarterly*, 71(2), pp. 343-391.
- Wang, B., 2021. *Amazon Customer Success Stories*. [Online]
Available at: <https://aws.amazon.com/blogs/aws-cloud-financial-management/customer-feedback-success-stories/> [Accessed 26 February 2022].
- Wang, Z., Pan, S. L., Ouyang, T. H. & Chou, T. C., 2014. Achieving IT-enabled enterprise agility in China: An IT organizational identity perspective. *IEEE Transactions on Engineering Management*, 61(1), pp. 182-195.
- Williams, B. & Imam, I., 2007. *Systems concepts in evaluation: An expert anthology*. Point Reyes: EdgePress.
- Yin, R. K., 2009. *Case study research: Design and methods*. Los Angeles: Sage Publications.
- Yourdon, E., 1989. *Modern Structured Analysis*. New Jersey: Prentice-Hall.
- Zhang, Z. & Sharifi, H., 2000. A methodology for achieving agility in manufacturing organisations. *International Journal of Operational Production Manufacturing*, 20(4), pp. 496-513.
- Zhang, Z. & Sharifi, H., 2007. Towards theory building in agile manufacturing strategy - a taxonomical approach. *IEEE Transactions on Engineering Management*, 54(2), pp. 351-370.