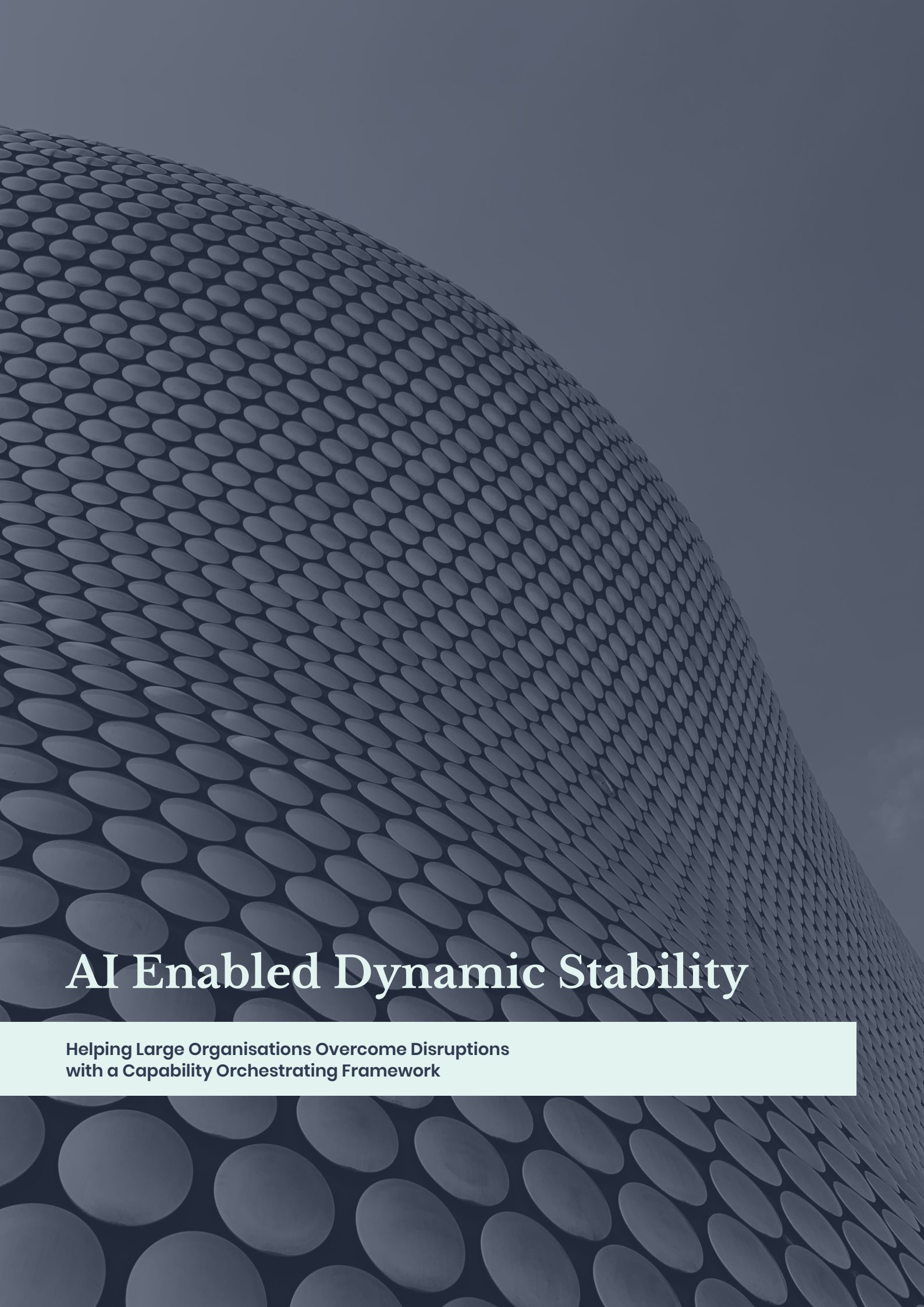

AI Enabled Dynamic Stability

Helping Large Organisations Overcome Disruptions
with a Capability Orchestrating Framework

AI Enabled Dynamic Stability

Helping Large Organisations Overcome Disruptions

Capability Orchestration Framework

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Master Thesis

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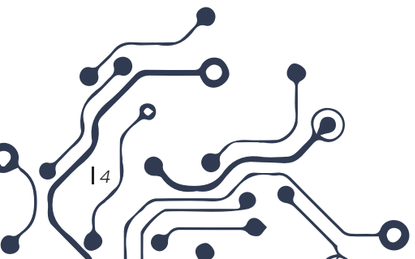
Abstract and Keywords

Due to globalisation and technological advancements, the world is becoming increasingly complex. Volatile, uncertain, complex and ambiguous (VUCA) environments have called for organisations to become more agile in order to survive and compete in such changing environments. Large organisations are at particular risk for becoming stagnant due to operational inertia. In order to combat this and achieve agility, dynamic capabilities are developed.
These capabilities allow an organisation to more effectively and efficiently change to incoming threats or opportunities. Such changes create uncertainty and insecurity amongst employees which translates into higher employee turnover and decreased performance. Stability therefore needs to be provided for individuals, while achieving dynamacy for organisations. This paradox of dynamic stability drives research into understanding relationships and effects caused by disruptions. Covid-19 is used as an extreme use case in order to create these understandings. After primary and secondary research conclusions were developed, a conceptual framework was developed in order to orchestrate capabilities. This aims to help speed up the time taken for opportunities/threats to be translated into outcomes. This also aims to help improve the depth, diversity and accuracy of these outcomes.

Complexity, organisational culture, dynamic capabilities, change management, artificial intelligence, dynamic stability



Terms and Acronyms

VUCA: environments which are: volatile, uncertain, complex and ambiguous.

PsyCap: refers to the "psychological capital" of people. It refers to one's confidence, optimism and overall positive attitude (Youssef-Morgan, Siewert, & Luthans. 2018).

Large Organisations: within the context of this report, large organisations refer to organisations with significant complexity. They comprise more than 250 employees and have multiple internal and external factors to consider.

Organisational Inertia: is the state whereby organisations or teams remain rigid in approaches and routines. Therefore, these organisations struggle to change (Criscuolo & Narula. 2007).

Ambidexterity: is the balance between exploring new ventures while exploiting preexisting factors such as an organisation's pre-existing capabilities and resources (Dover & Dierk. 2010).

Dynamic Stability: refers to the balance of providing stability and security for members of an organisation while being flexible in order to adapt to threats or seize opportunities more easily and timely (Teece. 2007).

Executive Summary

The world is becoming exponentially more complicated where volatile, uncertain, complex and ambiguous environments are a reality. While this was brought about by globalisation and technological advancements, it also poses threats to organisations who are unable to adapt and change. While this can be a threat to organisations in a state of operational inertia, it also acts as an opportunity for organisations to best utilise this constantly changing environment - providing constant opportunity for growth and diversifying one's portfolio. In order to achieve this agility, organisations should build dynamic capabilities which comprises the ability to: sense, seize and transform. While this allows an organisation to rapidly change, it can often leave employees feeling vulnerable and uncertain of their place within a constantly changing organisation. Therefore, it is important to seek dynamic capabilities from an organisational structure, while providing stability for employees. This stability can rely on factors identified within the fields of psychology and change management. People do not necessarily need exact routines to feel secure, but rather need clear communication, timely feedback and acknowledgement of individual and organisational prosperity. This allows employees to feel secure among times of change. The combination of these two seemingly paradoxical areas is coined dynamic stability.

In order to understand these areas, a literature review is conducted, where bridging insights are provided. This allowed for primary research goals to be developed. The primary research aimed to understand relationships and deeper meanings for behaviour caused by sudden changes to working environments and practices. In this research, Covid-19 is used as a use-case for examining how people and organisations react to sudden disruptions. While this helps to understand how the world has been forced to make radical transitions to digital platforms, it also helps to determine and understand deeper relationships. This is seen between an organisation's ability to effectively react to the pandemic. Furthermore, it helps to understand that an organisation is more agile and can sense opportunities and threats easier and more accurately when working more often in: multidisciplinary teams and having a flatter hierarchy and decision making structure.

These areas, among others, helped to formulate the concept of Orchestrator - a capability orchestration framework. The framework makes use of two main AI interfaces and an organisational restructure. It aims to improve the dynamic capabilities of an organisation while empowering and providing stability for the employees. Orchestrator is described as a general guideline to help guide organisations, however a possible business model for creating Orchestrator as a service is provided. This is broken down into three packages: Backend, Structure and Transform. This deals with the areas of sensing, seizing and transforming respectively. With Orchestrator, organisations are able to more effectively and efficiently react to opportunities and threats - allowing for increased competitive advantage.

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To my friends: thank you for allowing my time in Delft to be filled with unforgettable memories. I want to especially thank Juliane, Gabriele, Cristina, Jurriaan, Josephine and Pia. Thank you to Gabriele and Juliane, for the numerous dinner evenings filled with passionate talks about life and work. Thank you to Juliane, for being someone I can always count on for work and personal advice, with exciting chats about future endeavours. Thank you Jurriaan, for always offering help in every aspect of life, being the best project companion, and all the wine and braai days which always spark ideas. Thank you Cristina, for always being someone I can count on and providing much needed laughs and outings during times of lockdown. Thank you Josephine, for being a support system for such a large portion of my degree, and making the start of my journey in The Netherlands one I will never forget. Finally, thank you to Pia for making moving countries and seeking a career while completing my thesis, an adventure filled with excitement and positivity - thank you for your readiness to help in so many different areas, your support and of course, the accompanying sarcasm and laughs.

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Table of Contents

List of Figures

Chapter 01

Context & Approach

Background

The world is no stranger to the current crisis of Covid-19. Although the mortality rate is low compared to other health threats, it is the fast spread and lack of adequate knowledge and preparation which has led to worldwide panic. Societal and economic systems have gone through radical changes - changing even the way we do everyday tasks. Businesses have had to change operations and offerings, in order to accommodate the restrictions and implications placed on society. Despite trying to adapt, many businesses face bankruptcy. Whilst bankruptcy can traditionally be attributed to many factors such as market demand, placement etc. one such common trend is the lack of ability to adapt and provide goods and services which stay up to date with the changing demands of society (Kelly. 2020). A popular example of this is the downfall of Kodak. Kodak was complacent with their market lead in film photography. They therefore did not properly look towards the oncoming threat or relevant opportunity in digital photography. Whilst they did invest in seeking digital options, they hung onto the idea of film, rather than radically changing to emphasise the simplicity of digital. Remaining with traditional practices and not adapting to the change in technological advancements and desires of society, meant that Kodak went from being one of the world's leading companies, into filing for bankruptcy (Mui. 2012). This is just one example of the importance of being a dynamic company able to adapt with an ever changing business environment. While these business strategy changes are minimal compared to the immediate need to change due to a global pandemic, the reason to create a dynamic company is relevant in times of emergency and times of normality. Creating dynamic capabilities is something which is not easy. It is mainly seen within small companies which can more easily shift variables around, compared to large organisations which often suffer from operational inertia (Sull. 1999). This is because it is very difficult to let go of using all the resources (both human and physical assets), or change the way in which people behave (Soltwisch. 2015). Large organisations become rigid in operations. As such, they lack the flexibility needed to adapt and change to such sudden changes in the business ecosystem. However, it is these big companies that have the ability to provide more resources in times of emergencies. This therefore brings into question how bigger organisations can improve their dynamic capabilities.

One such example of a big organisation is an airport. Airports have only offered marginal changes since their creation (Lakritz. 2018). They offer facilities and resources which amount to billions of euros. It is therefore no wonder that airports are not recognised as an example of a dynamic market. However, in times of a pandemic this is brought into question. An airport aids in spreading a virus by allowing thousands of people to travel on a daily basis. It therefore brings into question if there is a moral obligation to be better prepared for these times of crisis. Besides aiding in restricting the spread of a virus, an airport has many facilities which could become useful during times of healthcare crises. Currently, it is seen that airports have an extreme decrease in foot traffic (Schiphol. 2020). This means that many terminals which have open floor space and helpful access to equipment and electricity outputs, remain unused. This highlights thoughts if this could be transformed to better aid in the healthcare systems' need to cope with a surplus of patients in existing healthcare facilities. Further questions arise as to whether airports could make use of their access to travel patterns, and many demographics of people, in order to predict such pandemics and form preventative measures rather than being left to act in critical mode to survive. Using this mentality as a starting point, helps to identify how being more dynamic as a large organisation can not only benefit ones' business strategy, but can also allow more swift action in helping in emergency scenarios - benefitting the greater societal ecosystem. Therefore, looking into how these large organisations can proactively develop and sustain these capabilities while utilising modern analytical and technological means is of focus for this research.

While developing these capabilities which allow for change and flexibility, it is seen that there is a lot of apprehension and resistance regarding change within these organisations. Therefore, understanding the psychological challenges behind change management is a key topic in understanding how to best evoke successful change mentalities and operations.

Statement

For any organisation to survive, it needs to build dynamic capabilities into the long term strategy in order to react or adapt to situations that operate outside of daily expectations. Large organisations often struggle with dynamic capabilities. These capabilities are especially relevant in times of emergencies such as the current Covid-19 pandemic. This is due to delayed response time and having to change many variables while shifting distinct job roles into other functions. However, these large organisations are the ones that have the necessary resources in order to aid in such times of crises. By not being able to adequately adapt in such times, means that large organisations do not meet the potential for giving assistance. Furthermore, lacking these dynamic capabilities means that large organisations often cannot react effectively and timeously towards changes in their business ecosystem. This means that organisations often are placed in jeopardy with incoming threats, or do not seize relevant opportunities to grasp new value creation for competitive advantage. While business practices can often remain rigid and traditional, where ambiguous environments pose a threat; design practices embrace ambiguity and novel approaches to problems. Therefore, despite there being room for intervention from the lens of a business manager, a design lens can help aid in embracing ambiguity and flexibility in the workplace. Tools and frameworks that combine design and business practices that help organisations to build and sustain dynamic capabilities is therefore a very relevant topic for intervention. This is further developed through understanding how people in an organisation react to this change and flexibility in operations in order that passion and commitment be evoked as opposed to the current apprehensive response.

Research Gap and Approach

Much research has been done in identifying the challenges faced in large organisations and identifying relevant capabilities. However, there is little research which provides an overarching understanding of the relationships between these differing factors. Due to the field of strategic design being able to balance the needs of different disciplines for a unified outcome, a broad research approach is taken. Furthermore, as organisations struggle with siloed operations, a system redesign is needed in order to redefine how organisations may adapt their strategy (Allen. 2019). Existing literature can therefore fill in the details of the specific areas, while this research aims to better understand the relationship. This is due to many topics being covered from a discipline specific direction. Moreover, the research aims to create an impact by providing actionable outcomes which organisations can directly apply. This is due to research focussing on identifying the challenges and characteristics of dynamic capabilities, where actionable strategies are lacking. Alongside actionable strategies, research lacks providing outcomes for how new analytical and technogical developments can be utilised to enhance dynamic capabilities (Conboy et al,. 2019). This integration of using data analytics with business management and psychology, therefore has potential for creating influence. Understanding how organisations may utilise this technology during turbulent times is especially lacking. This therefore allows room for using the reaction to Covid-19 as an extreme use-case.

The exact research gap is therefore identified as creating an overarching understanding of the relationships between identified topics, while developing an actionable strategy which combines dynamic capabilities, employee stability and relevant developments in data analytics.

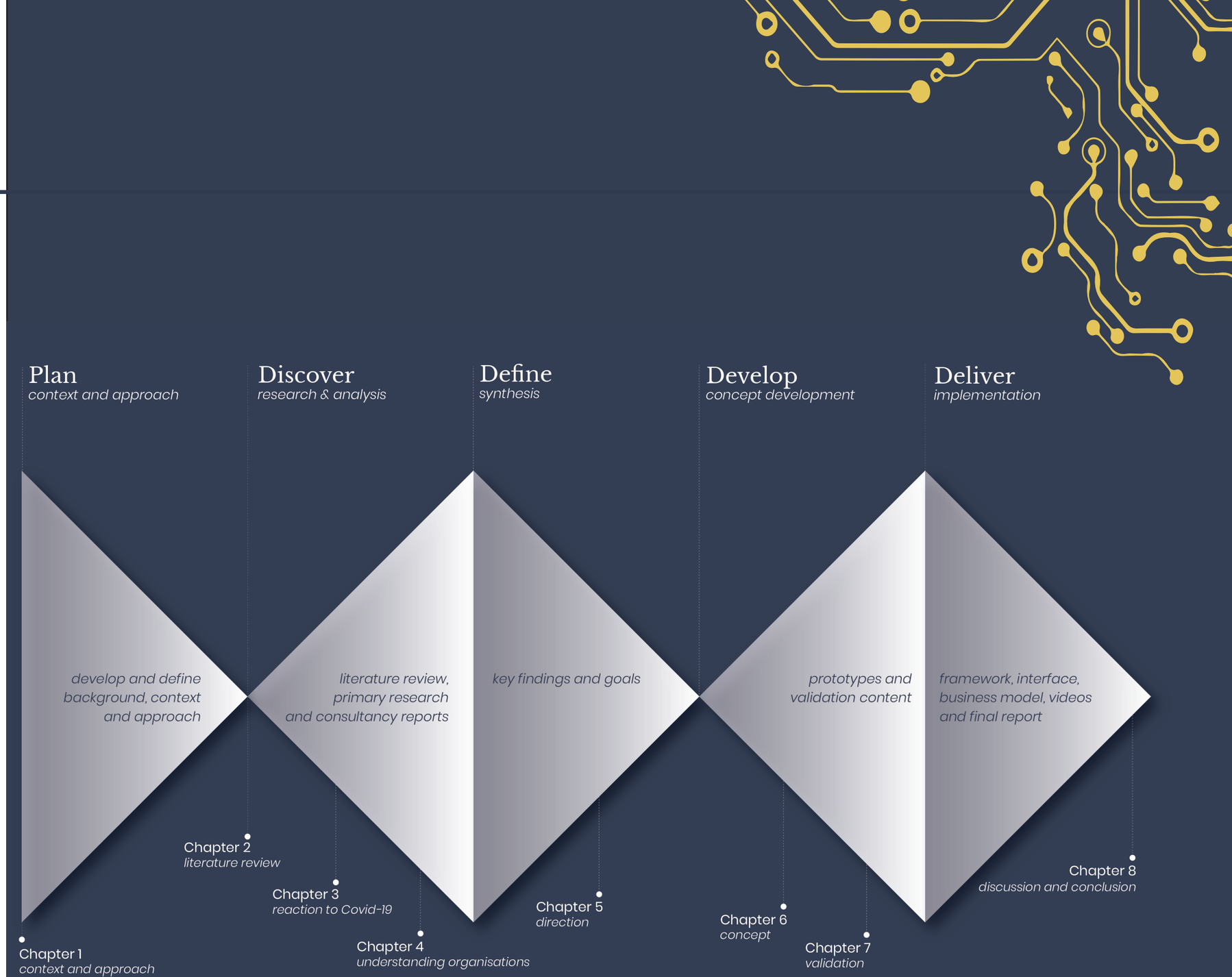


Figure 1: Reseaech Approach and Chapter Progression

Research Questions and Context

Main Question

How can large organisations build and sustain dynamic stability strategies in order to cope with disruptions?

Sub Questions

- *Why do large organisations struggle with balancing agility with stability?*
- *What are dynamic capabilities, and how does an organisation utilise them?*
- *Which factors are important for ensuring stability?*
- *How do big disruptions like Covid-19 affect an organisation?*

Research Areas

Although the identified research areas will be further detailed throughout the research, a brief understanding into the necessity for these topics is provided:

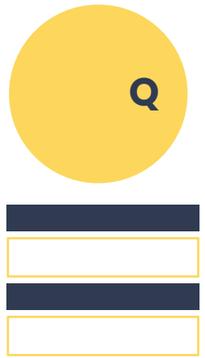
VUCA Environments: VUCA environments are increasing each day as the world becomes more interwoven. This means that understanding the complexity in the business ecosystem is needed in order to best design strategies for dealing successfully with such complexity. Furthermore, an understanding of how such volatile, uncertain and ambiguous situations may affect employees is crucial for designing systems that will be effectively used by members that make up an organisation.

Dynamic Capabilities: One identified and acclaimed approach for thriving in VUCA environments is through the constant development of dynamic capabilities. Understanding why the capabilities are needed, how they are developed and how to best utilise them for value creation is therefore of immense value to any organisation. These capabilities are comprised of sensing, seizing and transforming capabilities.

Change Management: As VUCA environments provide a change in threats and opportunities which an organisation may face on a daily basis, understanding how to best achieve flexibility is needed. This flexibility relies on the people within the organisation. Therefore understanding how to best provide stability and support amid change is necessary.

Data Analytics: The use of data is described as allowing an organisation to "make sounder, more evidence-based business decisions" (Seddon & Currie. 2017). This aids in the accuracy of an organisation to sense, seize and transform according to incoming threats or opportunities. Data is becoming more and more important. Therefore, successfully incorporating the correct data analytic strategies is critical for business success. Successful data analytic strategies helps organisations to better process information. Information is constantly changing. This means that outcomes of an organisation need to focus on a constantly moving target. Data analytical tools and software help to keep track of these moving targets. The possibilities within data analytics is increasing everyday with the development of AI technologies and incorporation in relevant strategies. This allows a lot of the processing to be done automatically where accuracy can be constantly improved through the development of machine learning algorithms (Davenport & Ronanki. 2019).

Reading Guide



The refereced sub question is answered here

Information is summarised here

The study begins with general secondary research into: complexity, dynamic capabilities and change management with regards to large organisations. The study then scopes to understand how these themes are highlighted during the extreme change caused by the global pandemic of Covid-19. This therefore makes use of primary research conducted in large organisations in order to develop core understandings and to determine any underlying relationships between factors. Goals for an ideal organisational structure is developed, followed by the concept. The concept is a framework which relooks at the system of an organisation - providing an overview containing more feedback loops and synchronicity between individual and organisational needs. Furthermore, the concept provides options for the inclusion of relevant data. The research is then concluded with recommendations for further research and an analysis of the contributions to research and practice alike.

Research Methods

Mixed Methods

A mixed methods approach combines the collection and analysis of both qualitative and quantitative research. This is beneficial for identifying significant relationships through quantitative data, whilst having a deeper understanding of these relationships through qualitative data (Timans, Wouters, & Heilbron. 2019). A mixed methods approach is used as it is identified within existing literature as a successful means when researching dynamic capabilities. Furthermore, a mixed method approach is useful within operations research in order to understand both the people and logistics side of operations. This is most beneficial in designing a system (Conboy et al,. 2019). Qualitative research can help better understand how people may operate within the system and the underlying cause of behaviour. Quantitative research helps to better determine relationships and importance of various factors to focus on. Qualitative approaches will use content analysis, while quantitative methods will make use of statistics - namely using IBM SPSS.

Content Analysis

Content analysis is a qualitative methodology that condenses large amounts of ideas presented through text into fewer categories. This helps create summarised data which can better convey rich information connections and patterns. Content analysis helps to assess commonalities, differences and contradictions in the data being analysed (Columbia. 2020). This methodology is used as many of the themes have a lot of access to online information - many articles on dynamic capabilities and new publications of business and economic stances and theories on the Covid-19 pandemic have been written. Although there is research done into these areas, little actionable outcomes have been developed to help organisations achieve these dynamic capabilities. Therefore, these patterns will be compared. A concept is created whereby design techniques are used to analyse and articulate relationships. As a result, a new framework is developed.

Literature Review

A literature review is presented to better understand the topics of complexity, dynamic capabilities and change management. This is done to help create a deeper level of understanding of the context factors. Multiple, credible authors were cross referenced to provide a general understanding of the presented topics.

Surveys

Surveys were conducted and distributed through a link to an online Google form. The responses to the surveys were kept safe and confidential. Sixty (60) survey responses were collected and are further discussed in the findings section. IBM SPSS was used as a quantitative analysis method whereby one-way and two-way ANOVAs were used to identify and understand relationships. After analysing the sixty surveys, strong correlations were made. Collection of further surveys were therefore not seen to provide additional value. The goals of the surveys were to determine:

- If there is a relationship between working in multidisciplinary teams and ability to adapt with change.
- The relationship between job security and clarity of communication from the organisation.
- The relationship between decision making structure and ability to adapt.
- The relationship between extreme change and how people work.
- Understanding different methods/ approaches organisations are using to sense/predict change and if they were successful.
- Gathering insights of what people predict to be important factors in adaptation.
- Gathering a general understanding of how people would like organisations to change given the chance.

These goals were created based on correlations and existing questions found in secondary research phases.

Business Publications

Recent publications found online are studied. These concern areas of how organisations have been coping with changes from the Covid-19 pandemic, and the hypothesised changes to operations and markets. Top tier consultancy firms are used as reference due to the depth and breadth of research already conducted and summarised. These consultancies conducted research worldwide across multiple sources and respondents and therefore is a strong and credible source of information. As these fields have not yet been proven (as Covid-19 is an ongoing challenge), these act as theories which could be better studied in the future for accuracy.

Chapter 02

Literature Review

Literature Review

Growing Complexity

The world is becoming exponentially more advanced and complex through developments in technology and resulting processes. This, along with globalisation and increased disruptive business models, creates uncertain and complex business landscapes (Burton. 2013). As a result, complex and interwoven business and societal ecosystems are developed (Colombo et al. 2017; Cumming et al. 2017). While these businesses have needs of their own in order to manage growth and profitability, they also have to meet the needs of their various stakeholders. These expectations of users are seen in the shift into desiring not just products or services, but to desiring tailored experiences (Kim et al,. 2018). However, it is not merely the individual needs of stakeholders that cause complexity, but rather the multitude of interconnected relationships between these stakeholders (Aaltonen & Kujala. 2016). These needs, along with technological advancements, can change on a daily basis. This complexity is commonly referred to as VUCA. Originally named by the United State Army, VUCA refers to an environment which is volatile, uncertain, complex and ambiguous. Although VUCA was originally used in crisis management scenarios, it is now a popular term used by business managers. This is because such complex environments are a part of daily reality, and businesses need to be able to operate successfully within them (Bennett & Lemoine. 2014; Kim et al,. 2018). In order to not only survive, but thrive amongst this fluctuating reality, organisations need to be flexible and dynamic. Murli Buluswar (2020), the chief science officer at AIG says, ***"A change from an expert mindset to a dynamic mindset which is more focussed on learning rather than being fixed, is fundamental to the health of a company.".*** But how does an organisation achieve this? In such complex and ambiguous times, scholars and practitioners are more eagerly searching for strategies to cope with the growing complexity (Chawla et al., 2012).

Complexity

Complexity is a term which scholars can agree involves many variables which need nonlinear approaches for problem solving. However, there is no specific definition or understanding which scholars fully agree on. This is seen due to having many different variables and needs in a given context (Kashiwagi. 2019). This is further complicated by the changes in perception of the viewer, and therefore the focus on complexity differs per industry, and often per individual. There are two identified branches of complexity: perceived and descriptive (Schlindwein & Ison. 2004). **Descriptive complexity** refers to a project itself, and the known variables such as difficulty of task, amount of stakeholders, amount of involved disciplines, amount of internal and external needs etc.. **Perceptive complexity** is however the perceived difficulty of a project. This can rely on different cognitive states which may perceive different levels of difficulty in both understanding and execution (Kashiwagi. 2019). Understanding that perceived complexity plays a large role in an organisations' ability to deal with complex environments and situations, shows the importance of understanding human behaviour. This will therefore be further analysed later in the literature review, in themes such as change management and psychological capital. Geraldi et al. (2011) provides a summary of complexity based upon the available literature from different scholars. This therefore acts as a strong foundational understanding of complexity, where the focus may waver in differing scenarios. Geraldi et al. (2011) derives 4 main categories of complexity: structural, uncertainty, socio-political and dynamic complexity.

Structural complexity is dependent on the size and independence of a project. It is also connected to the amount of interrelated parts, number of stakeholders, diversity of input variables, scale and scope of a project. Helping manage/cope with structural complexity requires an organisational structure which can help best manage the balance between these factors based on the type of industry and organisation. **Uncertain complexity** is the understanding of a market/environments current state and how factors may change or impose on future outcomes or factors. Uncertain complexity relates to the amount of ambiguity of the project/environment, the novelty of the project, and the experience of managing staff to deal with uncertain scenarios. Relevant tools which help in these areas can be an organisation's use of appropriate methods, technology and adaptable performance measurements able to capture ambiguity.

Socio-political complexity refers to the behavioural dynamics present internally and externally of a project. This could take the form in conflicting opinions, personality conflicts and differing project demands based on set performance measurements. In order to help manage/cope with socio-political complexity relies on an organisational strategy in delivering realistic: expectations, budget and timescale. It also relies on strong management presence which can create compromises and strong communication streams to achieve the intended goal of the project rather than individual gain.

Dynamic complexity relies on an organisation's ability to be flexible, adaptable and allow for alteration of procedures based on changing factors. This is needed when there are changes in factors such as: technological developments, stakeholder demands, market changes, policy changes etc.. Dealing with dynamic complexity can be better understood when looking at dynamic capabilities.

Dynamic Capabilities is characterised as an organisations' ability to shape unknown futures, and comprises the capacity to: sense, seize and transform in reaction to opportunities and threats

Dynamic Capabilities

Allowing an organisation the ability to deal with uncertain and ambiguous scenarios, requires an adaptive mindset and business model. Having these more adaptive practices allows organisations to cope with the ever-changing nature of interwoven and complex business landscapes. The recognition of dynamic capabilities is not a recent construction. However, as the years progress and businesslandscapesbecomeincreasingly complex, the need to understand and develop these capabilities grows. Having dynamic capabilities is defined as ***"the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments"*** (Teece et al., 1997, p. 516). Dynamic capabilities can be further elaborated into the ability to successfully gain and release resources when contexts change. This is done in order to compete with, or even create market change. Dynamic Capabilities can therefore be said to achieve new resource configurations as markets change, emerge and die (Eisenhardt & Galunic. 2000). This is characterised as an organisations' ability to shape unknown futures, and comprises the capacity to: sense, seize and transform in reaction to opportunities and threats (Teece. 2007).

Sensing is the ability of a firm to detect changes in the direct and indirect environment. Having early detection of these changes allows for more time for a business to prepare and react towards these changes (Teece and Leih. 2016). An example of this could be seen in trend watching, where organisations keep track of developing technological, social, political, economic, ecological and demographic changes that may impact the organisation - be that directly or indirectly. **Seizing** is an organisations' ability to grasp relevant opportunities as they arise. Organisations often use agile and lean business models to help in seizing such opportunities. This ability to seize new opportunities is however very difficult; particularly for large organisations (Haarhaus & Liening. 2020). **Transforming** is the act of an organisation to change internally to manage and develop with the opportunity or threat that has been sensed, within the manner in which an organisation decides to seize. This relies on the ability for managers to successfully convey purpose and vision, while creating a constant environment for employee learning. This relies heavily on a change in organisational culture (Landau. 2019). An overview of these stages of Dynamic Capabilities is presented in the diagram on the following page. The diagram is based on the structure by Teece (2018), as seen in the Appendix. However, the figure is created by the author as a summary of compiled literature sources.

An identified downfall of dynamic capabilities is in the vagueness of communication and execution. Prematurely used, these are said to be nonoperational due to creating ***"routines to learn routines"*** (Priem & Butler. 2000; Williamson, 1999). Contrasting this, dynamic capabilities in maturer development states are specific and are a result of extensive empirical research (Collis & Anand. 2019). Similarities of dynamic capabilities are seen in the traditional resource based view (RBV). This is seen in some aspects of dynamic capabilities relying on combining and shifting resources of an organisation. In modern times, this is especially relevant in multidisciplinary teams, where experts from differing fields are able to combine their expertise into new value creation (Sawhney & Prandelli. 2000).

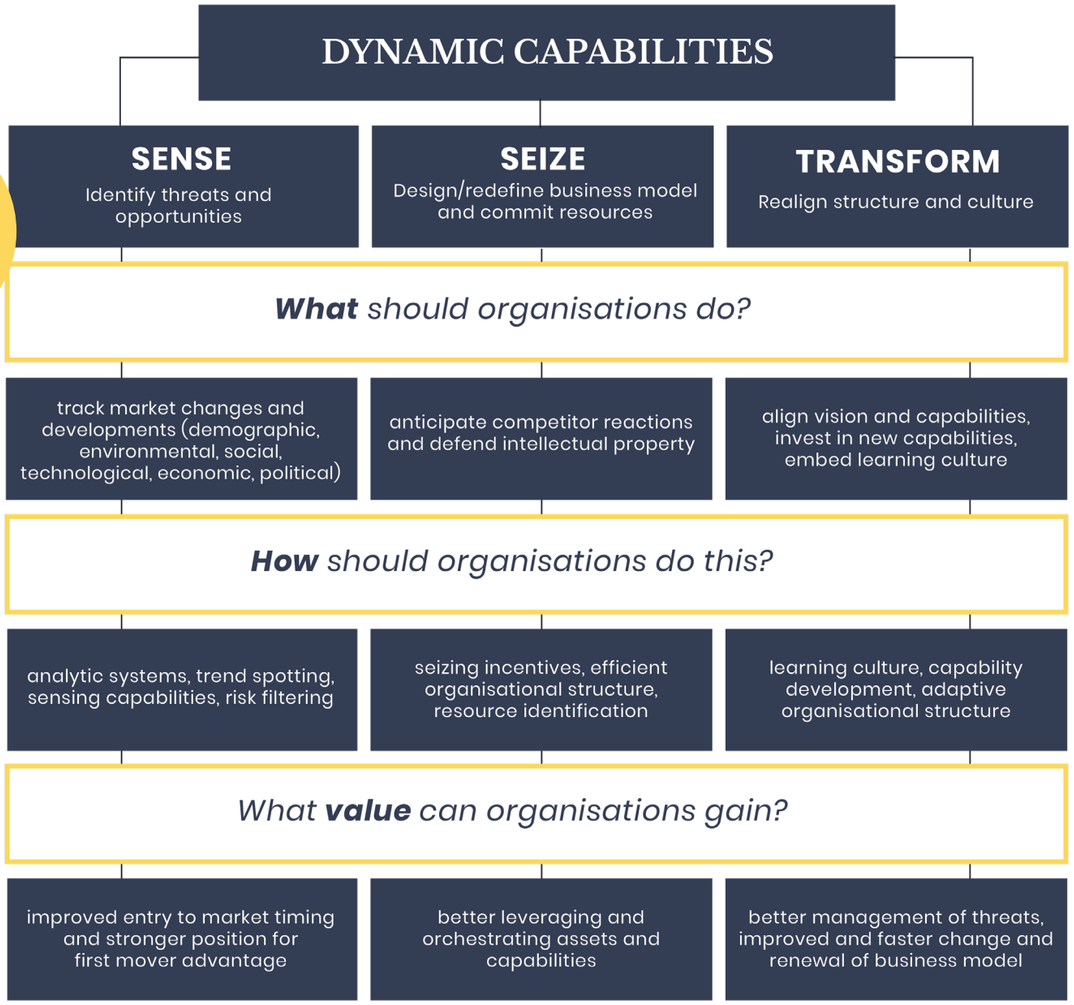


Figure 2: Dynamic Capability Summary

Dynamic Capabilities as a Framework

Due to dynamic capabilities being recognised as a fundamental part of dealing with VUCA environments and the long-term survival and growth of a business, means that attention has been focused on creating loose frameworks. These frameworks act as tools for guidance rather than exact execution (Eng & Okten. 2011). This is due to the nature of every organisations' core competencies and assets being different. These frameworks act to improve continuous innovative and learning cultures within the organisation. This relies on an entrepreneurial mindset which helps in the identification (sensing) and proactive initiation (seizing) of opportunities for the creation of new business opportunities. Furthermore, creating this culture of constant learning means that transforming the organisation internally is more easily achieved due to straying from rigid mindsets and systems (MacGrath & MacMillan. 2004). As this environment is based on cultural and knowledge changes within a business, these capabilities have to be developed rather than bought. This also shifts from an **owning asset mentality into an orchestrating asset mentality** (Sharma & Shanks. 2011). Due to large organisations traditionally having strategic advantage in their owning of large amounts of assets, means that they struggle more with dynamic capabilities than that of smaller organisations (Sawers et al,. 2008).

Large Organisations and Dynamic Capabilities

Large organisations often struggle from operational inertia where business practices remain rigid. This often means that resources are used as they were originally intended, instead of manipulated to best utilise the opportunities at hand. This is also seen in the social structure of the company struggling to change (Sull. 1999). Large organisations are comprised of departments in order to better manage the flow of information and compartmentalise projects. However, this often creates a hierarchical structure where departments become siloed operations. These silos then allow resources to be wasted as tasks are often duplicated, or incorrect communication is seen and therefore many projects get thrown by the wayside (Gleeson. 2013). Traditional business strategies often look at incremental changes and innovation. These sustainable approaches often launch new value-creating strategies which cannot be easily duplicated by competitors. This difficulty in duplication is often a result of lack of resources, be that: finance, partnerships, manufacturing capabilities or operational speed (Conner & Prahalad.1996; Porter. 1996). This strategy therefore allows organisations to look inwardly - identifying what capabilities and resources they can use to their advantage over their competitors. This approach is known as the resource based view (RBV), and relies on tangible and intangible resources as the core of sustaining and gaining competitive advantage. This has often proven to be the success factor of large organisations (Schilke et al., 2018; Eisenhardt & Martin. 2000). However, as society is constructed of VUCA environments, looking solely internally is not sufficient. Businesses need to be able to see threats and opportunities that may come from known competitors and potential new competitors (Bromiley & Rau. 2015). These potential new competitors' services often do not stand out as something that would impact the business. However, as markets change, so businesses shift their attention amongst market segments and new value creation streams. Furthermore, despite not being in direct relation, businesses can be tremendously affected by peripheral markets due to the complexity of present supply chains (Mikalef & Pateli. 2016).

A large organisations' quantity of resources (both tangible and intangible) can be both a positive and a negative. Positively used, these resources can bring in competitive advantage and operational stability. However, also having this many resources means that it is more difficult to be agile and shift operational structures. As there are so many people in such organisations, the whole behaviour of an organisation often has to change (Soltwisch. 2015). Behavioural change is however a very complex topic on its own, let alone when combining it with a need for business efficiency and growth. This internal behaviour change is made even more complex when needing to consider how an organisation relates to other stakeholders in the supply chain. However, if an organisation is too fluid, it often lacks stability - having many ramifications such as client trust and internal lack of alignment and overall purpose. A balance therefore needs to be achieved where an organisation is able to manage business practices of the present, while leaving room for agility to cope with threats and opportunities of the future (Binder & Clegg. 2007). The ability of creating this balance is called ambidexterity. Ambidextrous organisations require great commitment from both an organisational and individual level. This requires an overall strategy which allows optimal structures to be put into place, but it also requires commitment to change from each employee (Dover & Dierk. 2010). Change management is therefore a key topic

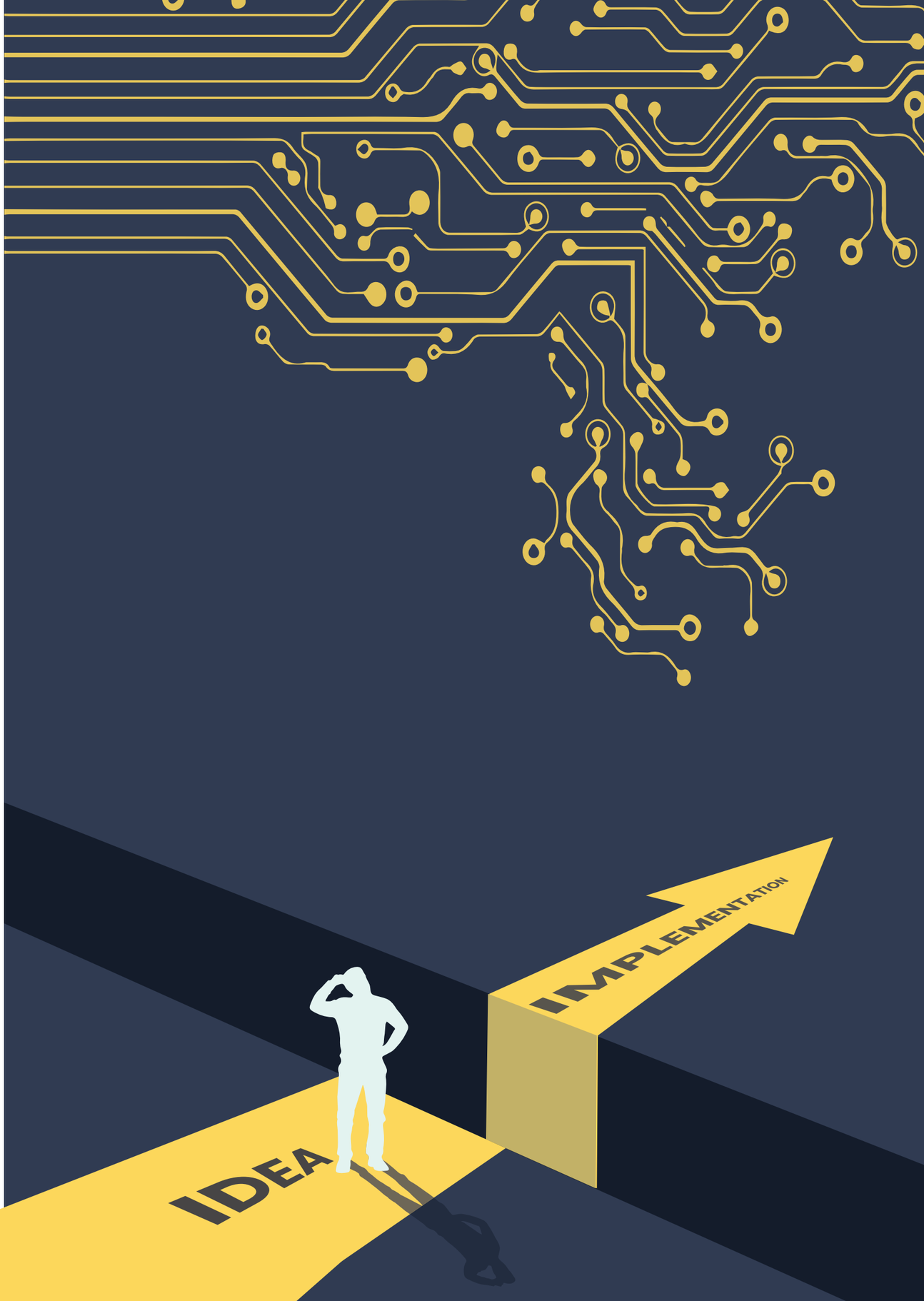
Q1

amongst understanding how to cope with complexity and develop an ambidextrous organisation.
This helps answer subquestion one: *Why do large organisations struggle with balancing agility with stability?* In summary it can be attributed to the rigid, hierarchical and siloed organisational structures, and the amount of employees of an organisation that need to change the way in which they behave that hinders agility. Therefore organisations focus more on stable and routine practices which allow for incremental changes, yet leave little room for disruptive or fast-paced changes.

Barriers to Implementation

Humans have always had creative thought which strives to create new ideas. This unscratched itch to have change is what has resulted in developments over the ages. While there are no shortages of ideas (if you ask the right people), there are barriers to translating these ideas into reality (Burkus. 2013; Tohidi & Jabbari. 2012). This translation from an idea into a product, service or experience that can be adequately repeated, is where organisations struggle the most (Blank & Newell. 2017). This gap between the creation of an idea and the roll-out on a production level is named “the valley of death”. This term is however based on a linear development process used within product design. However, when faced with complex systems, this linear approach is not as relevant. While it is not as relevant, practitioners often still accredit failure due to the problems associated with the valley of death. This means that practitioners often do not adequately anticipate all relevant actors involved (Klitsie, Price & Santema. 2020). The awareness of these multifaceted problems is being increasingly recognised, however there is still immense room for creating strategies to help cope with these complex problems (Grimes. 2018). This can be translated to the change from production where machinery and departmental level changes are made, into systems where behaviour and culture needs to change - creating many added layers of complexity (Klitsie et al., 2020).

Due to current problems being multifaceted and needing organisational and behavioural change able to deal with different layers of complexity, means that organisations should identify key strategies and how this relates to their current business model. This should thus also be used to establish weak points that need to be strengthened and assets/ strengths that need to be highlighted or better utilised. Klitsie et al., (2020) highlights 3 main focal areas which organisations tend to follow: optimisation logic, customer logic and digital logic. **Optimisation logic** focuses on lean methods which can allow systems and procedures to be optimised using the given variables. **Customer logic** focuses on always solving for and focussing on the needs of the customer. **Digital logic** is the focus on the creation and sustaining of digital strategies which may better aid organisations to compete/survive in a digitally driven society. It is seen that often organisations favor one of the mentioned logics. For example, the airline industry tends to focus on optimisation. This is seen in the faster turnaround time of aircrafts (both in maintenance and commercial flights) resulting in increased profits, and perception of efficiency and reliance. However, it is hypothesized by the researchers that a balance of the logics allow organisations to outperform their competitors. A more fluid approach to highlighting one of the logics over another in certain projects aids the argument on creating a dynamic organisation. However, as a whole, an organisation needs to maintain a balance on assessing and innovating around all three logics. This ability to be adaptable relies on the ability for individuals and teams/departments to be able to change with the change of incoming factors.



Change Management

Heraclitus, a Greek philosopher of the late 6th century said that "the only thing certain is change" (Mark. 2010). Change is a given, and even more common in times of exponential development, both technologically and socially. Every person has experienced some degree of change in his or her own life. This personal change often brings about an excitement and energy at the prospect of growth and something new. However, this is not the same for organisational change (Gao. 2015). When organisational transformation is brought about, many people become insecure in their jobs. This is due to the potential of being laid off or the instability of not knowing what their role might become in the organisation (Hemerling. 2016). This insecurity is further instilled when the leaders of an organisation leave change till the last moment. This often leads to an organisation operating in a state of chaos in order to survive. The crisis mode of operation leads to short-term goals being achieved. However, this means that relevant systems are not established for long-term prosperity (Hayes. 2018). The lack of these operations fitting into long-term visions, often leaves employees not being able to establish the purpose of his or her own tasks. The **lack of purpose** most often leads to reduced ambition, and work being done which may not be as efficient in achieving such goals. This change is even more difficult as it is most often imposed on each individual employee rather than it being a choice of their own (Cummings et al,. 2015).

Due to the complexity of the world, and the prevalence of VUCA environments, means that change is a given. Jim Hemerling (2016), managing director of Boston Consulting Group (BCG) mentions 5 general ways in which organisations can deal with change:

Inspire employees through purpose: inspire people through a deeper sense of purpose to be an active part of daily change within an organisation. This **deeper purpose** allows employees to feel that they are a part of something bigger rather than just increasing revenue.

Go all in: instead of purely focusing on cost reduction and figures, organisations can **invest in initiatives** that build leadership and general development amongst employees.

Enable capabilities: acknowledge that every person needs different tools and skills in order to succeed. This needs to be translated into actionable outcomes that allow for tailored growth within a company - allowing employees to feel appreciated and involved in the organisations and therefore be more willing to give back and work hard.

Install a culture of **continuous learning:** with stagnant operations comes silos. Having a culture open to constantly learn enables a culture more willing and able to change.

Inclusive leadership: leaders need to involve all members of the organisation in order for each employee to feel ownership for tasks and visions. Within inclusive leadership, leaders need to set clear visions and milestones.

Psychological Stability in Change

When there is a lot of change in work culture, people tend to decrease in optimism and resilience. This therefore decreases the amount of drive seen in employees. This lack of drive leads to a decrease in efficiency and quality of outcomes (Youssef-Morgan & Luthans. 2015). Alongside this, when change occurs and the path ahead is unclear for people, a lot of energy is spent thinking about ones' future and how they can prepare for it (Gottschalk. 2019). This lack of clarity and understanding which often occurs with immense change, is a big reason why organisations face blunders. However, as change is crucial, a strong balance between stability and change needs to be achieved. This balance is where organisations often struggle. Stability however does not need to mean being stagnant in growth. Stability does not always refer to structures and outputs that need to remain the same, but can rather be seen in the organisational communication and culture (Luthans, Youssef, Sweetman & Harms. 2013). Organisations have, in recent years, focussed primarily on racing to be ahead of innovative trends and digital transformation. However, the desire for stability is felt on an individual level of an organisation. **If this workforce does not have adequate levels of certainty or stability, the output of the company decreases.** However, stability can be achieved with the successful implementation of basic foundations such as: timely feedback, role/job clarity, work structure and adequate resource allocation (Gottschalk. 2019). These factors show how strong management and communication can help organisations navigate changes within an organisation. This therefore shows how it is not only important to develop technical and digital capabilities, but to constantly evaluate and strengthen communication competencies. Clear and coherent communication is essential for positive psychological capital (PsyCap). Factors that influence positive PsyCap is coined as having "HERO" (Gottschalk. 2019) resources:

Hope: Having a belief in one's ability to pursue future goals. This also relates to having belief in the organisational prosperity, purpose and vision, and the methods/tools used to achieve these goals.

Efficacy: Having confidence in that individual efforts will affect the final outcome of projects, and knowing that work is directly used and not wasted.

Resilience: Having the ability to pursue goals and success, despite setbacks or pivots in directions.

Optimism: Having a generally positive association of the organisation, co-workers and self.

This **positive PsyCap** can help create an organisation to progress based on cultivating the passion and loyalty of each employee. PsyCap in the workplace is influenced by unspoken and intangible factors of the relationship between employee and employer (Youssef-Morgan & Luthans. 2015). This relationship is known as a psychological contract. These are unexpressed expectations, beliefs and responsibilities that are continuously exchanged within appropriate boundaries of employment relationships. These psychological contracts are unspoken agreements which are directly relatable to outputs of the business. These contracts could be for example: the exchange of an employees

time and efficiency, with the promise of career or salary growth. There are many unspoken aspects of psychological contracts. However, within this context it is important to focus on acknowledging that these contracts are present. Therefore, organisations should constantly focus on determining the current and desired fair tradeoffs between employee and organisational well-being (Luthans et al,. 2013). For stability of employees and better functioning of the organisation, this goes hand-in-hand with clear communication. This psychological contract (usually relating to aspects of trust and stability) often experiences friction due to immense change. This is due to differing expectations such as individual financial compensation vs that of sustainable reorientation resources. Therefore, during times of change, reevaluating possible psychological contracts is important (Youssef-Morgan & Luthans. 2015).

This helps answer subquestion 3: Which factors are important for ensuring stability? In summary, people need a strong foundation of job security. They need to have optimism in themselves and the organisational prosperity, receive timely feedback to see how their work is paying off and to receive clear and coherent communication. Equipped with these factors allows employees to thrive rather than be threatened and discouraged amongst change.

Q3

I need from my employers:

- -Timely feedback of work quality and progress
- -Clear communication of changes, vision and goals
- -Clarity in job role and responsibilities
- -Adequate resources to successfully complete my tasks
- -Understandable and approachable work structure

I need to feel:

- -Secure in the future of my job
- -Optimistic about the environment and my colleagues
- -Trust in a fair trade between what I give and get from the job
- -I have prospects for career and personal growth
- -Up-to-date on all relevant changes before they happen
- -Resilient in being able to individually, and as a company pursue goals despite setbacks and changes

Figure 3: Summary of Achieving Stability for Employees

Key Insights

based on literature

There are multiple themes that stand out when looking at the struggles and opportunities of large organisations in relation to the topics of dynamic capabilities and change management. Identified themes that are possible key elements to highlight in the redesign of a framework is:

- Removing silos in organisations
- Allowing for the balance of agility and stability of operational structures
- Improving understanding of key resources and how to better orchestrate them in different situations
- Successful communication and alignment of an organisations purpose
- Correct communication of projects and how they align with the purpose
- Evoking a culture of learning
- Better predicting changes in the direct and indirect markets
- Creating successful multi-disciplinary teams where the needs of each discipline are balanced in relation to the initially desired output

The Hidden Research Connections

A key focus of this research is providing deeper understandings of the relationships involved in the key themes mentioned in the literature review. This aims to help better understand when and why change is needed and how organisational changes might influence other areas. This aims to remove siloed thinking and operations in order to make a more fluid and effective organisation. The main relationship within these themes are summarised in the figure below. Within such a complex, modern world, these relationships are iterative and interconnected, rather than linear and rigid. All these factors can be influenced by one another, as well as external influences outside of the summary shown on the following page.

VUCA Environments

complexity results in daily changes in needs and desires. It is important to identify: demographic, economic, social, technological, ecological and political changes which may gain momentum

Proactively seeking development

Organisations need to adapt and change

Learning Organisational Culture

when motivated and clear communication is present, employess are more psychologically equipped for change

Dynamic Capabilities

develop and enhance capabilities comprising of: sensing, seizing and transforming allowing for change

Leaders as visionaries and coaches are developed

Frequent internal and external changes

Clear and Coherent Communication

employees need to see personal and organisational prosperity, receive timely feedback and understand their contribution to the organisation and projects

Individual Instability

organisational change mostly results in job insecurity, and a decrease in motivation, productivity and employee retention

Need for Stability

Figure 4: Research Connections and Relationships

Chapter 03

Reaction to Covid-19

Expert Research and Strategies

There is no question as to the extent of change the world is experiencing because of the Covid-19 outbreak. While organisations are experiencing having to shift their operations to survive during the lockdown, they also need to start reimagining their business strategies after the outbreak. In order to gain a better perspective of how companies will need to change strategies, research from some of the top global consultancy firms is taken. This includes McKinsey & Company, Bain & Company and Deloitte.

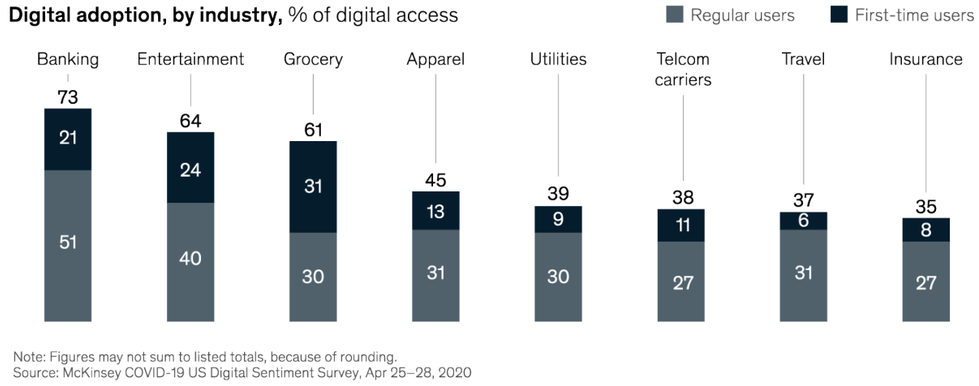
At this stage, it is already seen that companies have shifted to online services and thus adopt more digital strategies. An anonymised CEO of a large tech company says that "We are witnessing what will surely be remembered as a historic deployment of remote work and digital access to services across every domain." (Baig et al,. 2020). It is estimated that these business developments over eight weeks have amounted to what would have taken five years without the urgency caused by the pandemic (Baig et al,. 2020). All industries have been affected. As such, the way in which society as a whole operates and works has, and will change.

Some organisations which already catered to the current (pandemic induced) needs and expectations of society can be argued to benefit from the pandemic and the shift to digital strategies. However, these organisations also have to change their internal structure and operational strategy as well as their supply chain. Furthermore, these organisations need to deal with structural overload due to the sudden increase in demand (Saenz et al,. 2020). Therefore, it is argued that whether some may be on better inherent foundations than others, change is relevant for everyone. Success during this current and future change can be divided into 3 categories of how organisations: respond, recover and thrive (Kilpatrick. 2020). Success in the first stage of response can be attributed to agility. There is "...a direct correlation between pre-crisis agile maturity and the time it has taken companies to launch a first crisis-related product or service." (Baig et al,. 2020). This shows that it is more about a companies ability to act and argues against more conservative approaches in leading business change. While some people view working remotely as counterintuitive for agile business approaches, agility can be achieved and possibly further promoted in the future. "Remote working can help organisations move at a faster clip as companies tap into new labor pools and specialised remote expertise." (Baig et al,. 2020). It therefore aids the argument in the need for creating dynamic organisations that can be more adaptable and pivot with changes of incoming factors. This change in operations to become more agile also demands different performance measurements. In general, dynamic capabilities do need different performance indicators compared to traditional means (Saenz et al,. 2020). Currently this shift in performance indicators has become far more relevant. With the 2008 financial collapse demanding new financial models after recovery, so will life after Covid-19 demand new models. Therefore, models relying on factors such as oil prices, unemployment and time-series data, will have less relevance. These future models will rely more heavily on digital channels and different data streams (Luijs et al,. 2020).

The Shift to Digital

While all industries have been affected, some industries have experienced a more dramatic increase in digital adoption. Most notable increases include: education, grocery shopping, banking and entertainment. Even industries associated with high levels of person to person contact has had to adopt new ways of working (Baig et al,. 2020). One such example includes healthcare where telemedicine is becoming increasingly used. While this may cause customer journeys riddled with friction, it also opens up new opportunities such as overcoming the lack of relevant medical expertise in remote locations. While society has currently been forced to shift to online and digital services, it is said that this will continue as new practices after the pandemic. Research indicates that 75% of first-time users of new digital channels mention that they will continue to make use of these channels after the lockdown and restrictive measures have been lifted (Baig et al,. 2020).

US consumers are accelerating adoption of digital channels, a trend seen across global regions.



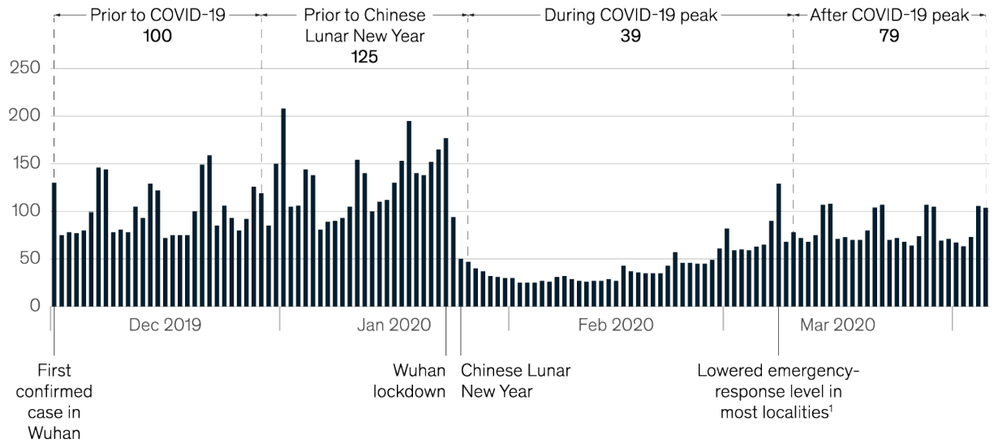
Note: Figures may not sum to listed totals, because of rounding.
Source: McKinsey COVID-19 US Digital Sentiment Survey, Apr 25–28, 2020

Figure 5: Digital Adoption Research by Baig et al,.

Looking at countries such as China, which have already started operating with relaxed measures after the initial Covid-19 wave, shows how offline activities have not returned to prior pandemic states. This is seen in McKinsey & Company's study presented on the next page:

Based on data from countries already in the recovery phase, consumption patterns will be uneven and unlikely to return to pre-COVID-19 levels quickly.

Average daily China offline consumption, % (100% = daily average consumption in Dec 2019)



[1]On Mar 8, 2020, 21 Chinese provinces (involving >70% of country's population) announced lowering of epidemic-response level.
Source: MIYA; McKinsey analysis

Figure 6: Covid-19 Recovery Patterns by McKinsey & Company

The idea of remote learning has been a topic of conversation in education for years in order to remove limitations placed on physical learning methods. However, due to a lack of competitive or societal challenges, this went unchanged. The changes, while intimidating for most companies, can therefore be said to have positive outcomes in the future of progression.

Key Capabilities for Recovering

Supporting the understanding of developing dynamic capabilities, professionals mention that during and after Covid-19, business models need to change from a central command to a central orchestration of resources (Kilpatrick. 2020). Organisational leaders should therefore constantly update their knowledge on available resources, market changes, resource capabilities and limitations. This understanding of factors means that a better acknowledgement of the current resources can be better translated into new resource configurations. Knowing more explicitly how these resources will change (both in having different orchestration and different resources altogether), allows leaders to better communicate this change within the organisation (Luijs et al,. 2020). This communication is essential for the smooth operationalising of changes within large organisations. This orchestration of resources should be supported with cross-functional and cross-enterprise orchestration. This allows multidisciplinary teams to combine expertise to best respond to the central orchestration (Kilpatrick. 2020). This is supported by the findings that organisations that have adopted a "flatter, fully agile organisational models have shown substantial improvements in both execution pace and productivity." (Baig et al,. 2020).

When recovering from Covid-19, organisations should monitor the "economic rebound" (Kilpatrick. 2020). Signals should be tracked in order to gain a more precise understanding of the progression of the economy and how it is changing. This monitoring of the economy can also be extrapolated as being important after the pandemic - always monitoring progress of the market, society and other factors in order to better adapt to changing factors.

McKinsey & Company (2020) provides a model that helps to give foundational understanding to organisations of strategies to use within the 90 days after the crisis mode of an organisation is over. This is presented below:

A plan for the first 90 days has four efforts to launch immediately.

	Refocus digital efforts toward changing customer expectations	Use new data and AI[1] to improve business operations	Selectively modernize technology capabilities	Increase organizational drumbeat
Sprint 1: days 1–29	Align organization to new digital priorities	Assess performance of critical decision-support models	Create rightsizing plan for shifting to variable cost structure and begin assessing cyberrisks	Assess where organizational velocity is needed and where remote-work models could drive productivity
Sprint 2: days 30–59	Bring digital channels to parity or better vs competition	Recalibrate and/or rebuild models	Set up cloud-based data platform and automate software-delivery pipeline	Deploy new models leveraging agile and remote
Sprint 3: days 60–90	Launch new digital offerings or channels	Develop next-generation data sets and models for optimal performance	Begin strengthening technology talent bench	Upskill organization for accelerated digital world

Figure 7: Covid-19 Recovery Strategy by McKinsey & Company

Survey Results

Surveys were distributed amongst employees in large organisations. These surveys aimed to gather qualitative data in understanding how people were dealing with changes caused by Covid-19 and how they would anticipate changes after the main impact of Covid-19. They are aimed to determine any relationships between multidisciplinary teams, hierarchy, job security, decision making structures and overall agility of the company. Responses were collected from countries such as: Canada, South Africa, The Netherlands, Germany, Belgium, Denmark and Sweden. This aimed to gather different responses across cultural backgrounds. However, due to the continuation of the research being focussed in The Netherlands, Dutch companies were the majority of respondents. A total of 60 responses were gathered (this is elaborated upon in the limitations). Answers were converted to a data set and linear regression analyses were run through SPSS. This was used to help determine any significant relationship. One-way and two-way ANOVA analyses were then run in order to better understand the significant relationships. These output sets can be found in the Appendix. However, these have been combined with findings from literature in order to create more relatable and actionable understandings. Statistical significance is acknowledged when p<0,05. Bar graphs and pie charts representing the results of the questions are below, which is later followed by an explanation of relationships. The Bar charts use a seven (7) point Linkert scale, where 1 represents a low value of the x-axis variable, and 7 represents a high value of the variable. The pie charts make use a percentage representing the multiple choice slection made by respondants.

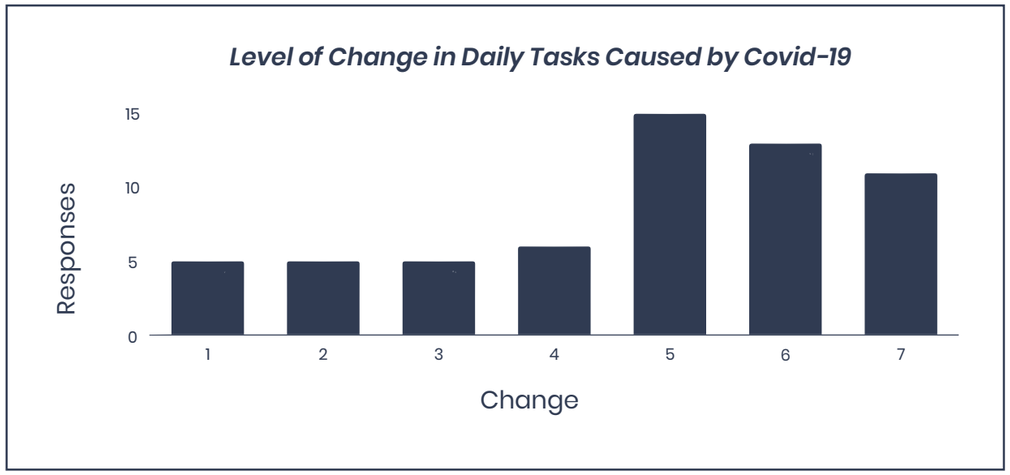


Figure 8: Change Caused by Covid-19

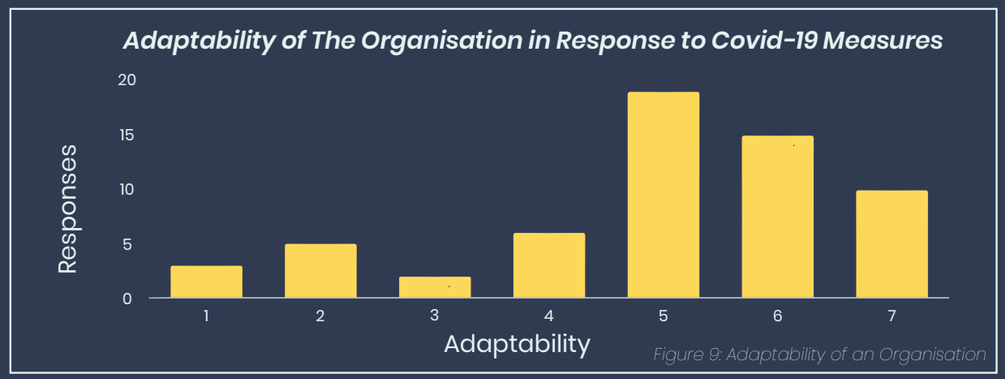


Figure 9: Adaptability of an Organisation

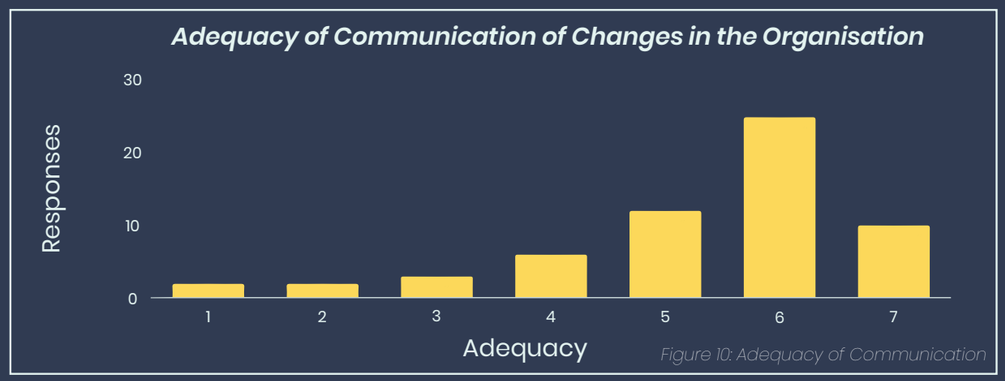


Figure 10: Adequacy of Communication

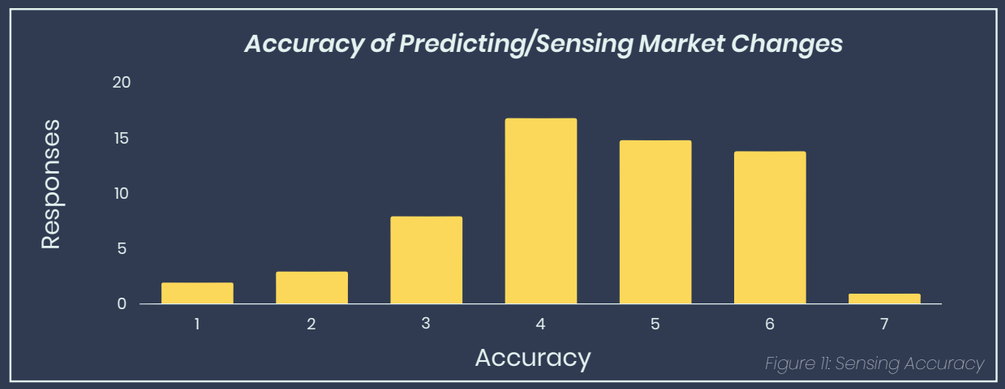


Figure 11: Sensing Accuracy

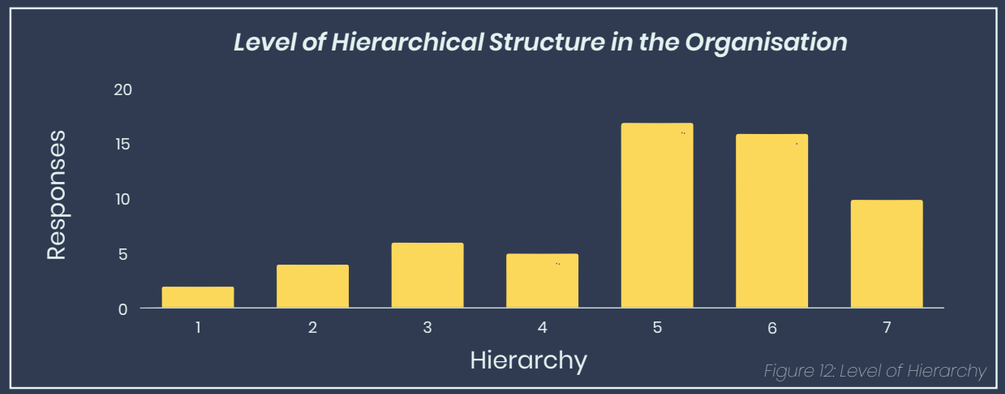


Figure 12: Level of Hierarchy

Figure 13: Organisational Culture Fostering Change

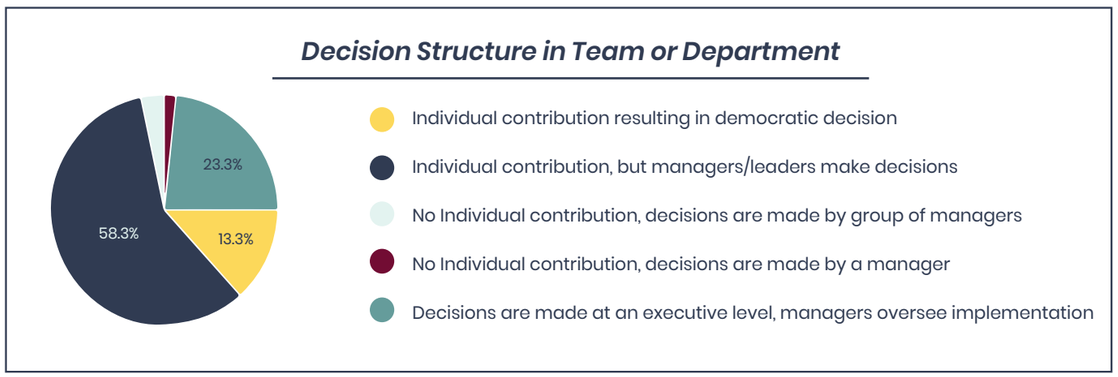


Figure 14: Decision Structure

Figure 15: Organisational Alignment

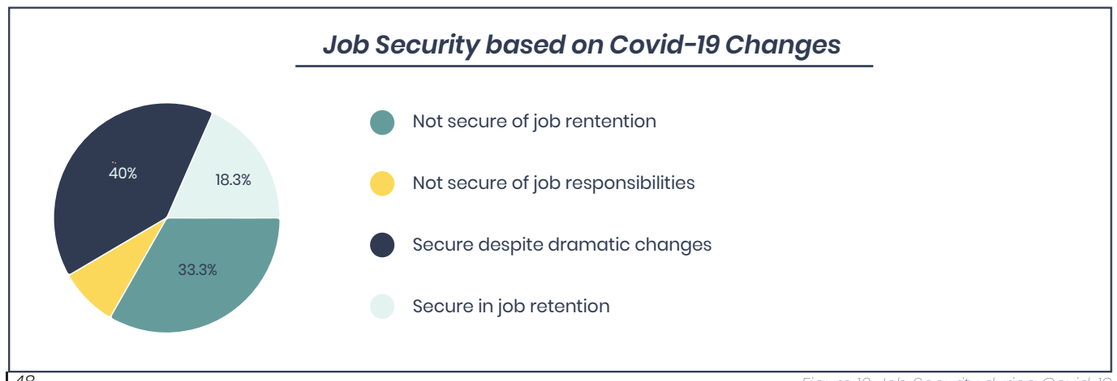


Figure 16: Job Security during Covid-19

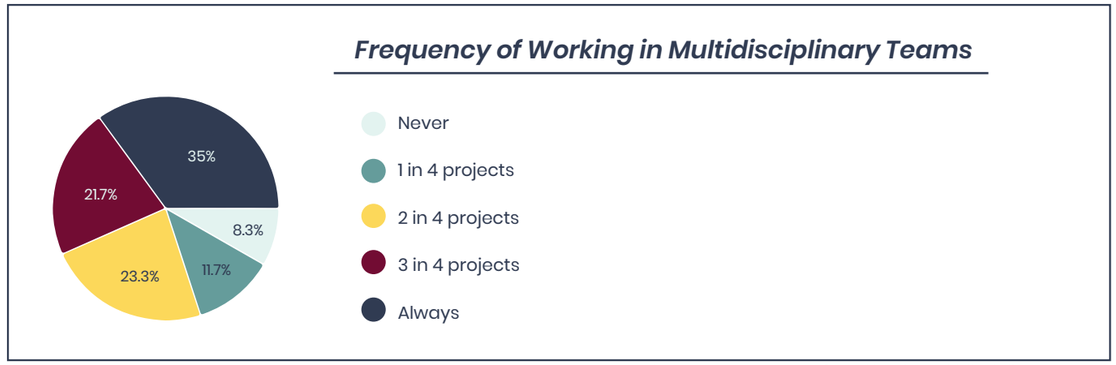


Figure 17: Frequency of Working in Multidisciplinary Teams

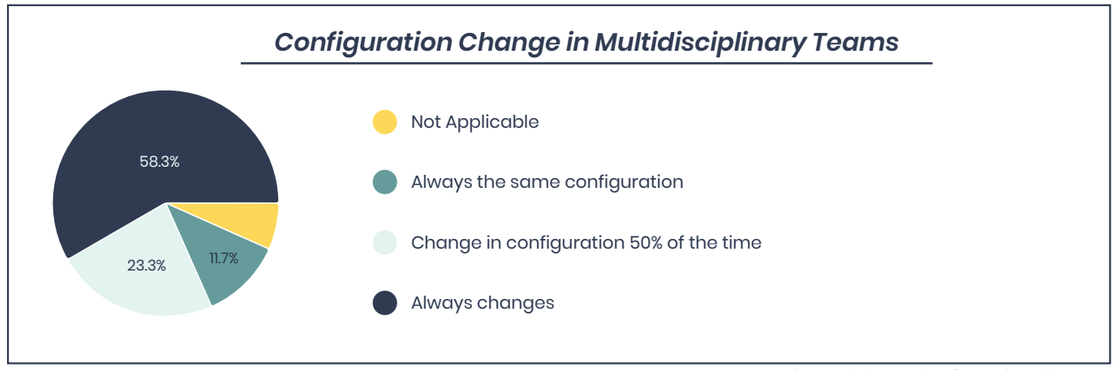


Figure 18: Team Configuration Changes

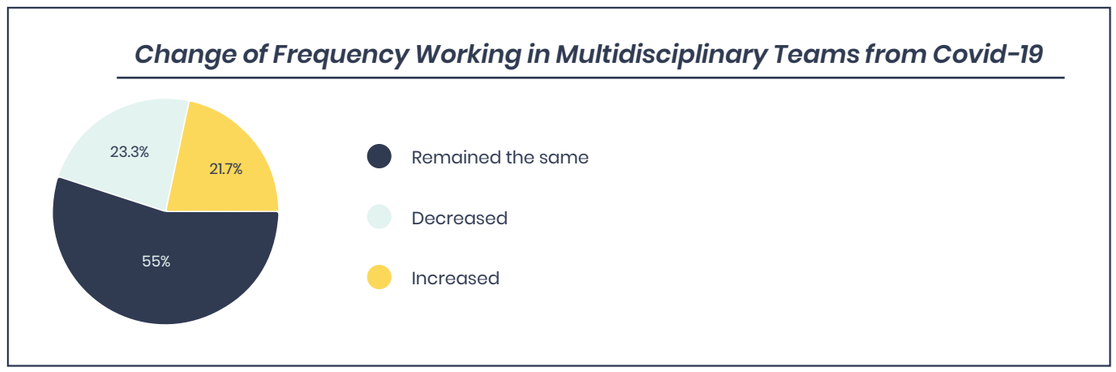


Figure 19: Change in Multidisciplinary Team Frequency during Covid-19

The adaptability of an organisation has a statistically significant relationship on employees' sense of job security. This is a positive correlation, which may be attributed to an employees belief in the long-term prosperities of the organisation. Thus, this gives more room for job security. This links to arguments by Gottschalk (2019), referring to the importance of people's job security. This security allows more mental and emotional freedom to focus on tasks and therefore, directly translates to more efficient and effective results within an organisation. Adaptability can therefore be argued to be an important aspect for creating stability in the morale of employees.

An organisation's culture which is orientated around frequent and effective change, and the ability to communicate

change, both have statistically significant, positive relationships with job security. This culture orientated around change, is hypothesised to give more job security particularly during Covid-19, as employees are more used to change within the organisation. They therefore may have stronger belief in the progression of the organisation. The ability to communicate this change, links to the ability to create positive psychological capital and better psychological contracts within an organisation. Referring to the standardised coefficient Beta values, shows that organisational culture has a stronger effect on job security than that of communicating change. This is hypothesised to be so as culture has built-in communication structures and interpretations. The way the question in the survey is asked, also refers mainly to Covid-19. This therefore is a singular occurrence rather than the culture which is built up over time. However, it represents that these strong and transparent communication channels should be interwoven within an organisation's culture.

The Decision making structure of an organisation has a statistically significant relationship with the adaptability of an organisation. This can be seen in that the greater the bottom-up and individually inclusive structures of the decision making process are, the more an organisation is perceived as being adaptable. This is hypothesised as a result of individuals supporting change in which they feel they contributed to, rather than decisions being cast upon them to follow, without as much of a purpose. This also links to individuals being better prepared as they know the root causes and justification for decisions rather than just executing without prior awareness. The hierarchy of an organisation does not have statistical significance on adaptability. However, it does have a significant relationship with the decision making structure of the business. Therefore, it can be argued that the hierarchy of an organisation also needs to be considered - namely approaching a flatter hierarchical structure.

The ability to adapt is statistically significant to the organisations ability and accuracy to sense changes in the market. The frequency of working in multidisciplinary teams does not have a statistically significant relationship with adaptability. However, the frequency of multidisciplinary teams does have a significant relationship with an organisations' ability to sense changes in the market. Therefore it can be argued that working in multidisciplinary teams does play a role in improving an organisations' ability to predict such changes. This is hypothesised to be as a result of many different expertise and focal points being considered in order to sense changes that might come from peripheral markets or from areas completely outside of the organisation's main portfolio. This increased ability and accuracy in predicting these changes can help give organisations better lead time in making internal changes, which meet the needs of threats or opportunities presented. Furthermore, working in multidisciplinary teams might help in enabling a culture more prone to change, as individuals are more readily able to understand their purpose and role within a project despite the main subject matter of the project changing. Within the context of Covid-19, countries outside of China could have better sensed the effects and procedures put in place and started planning measures before it became crucial in the specific country. A group of experts in different fields such as healthcare, risk planning, economics etc. could have been assembled and consulted earlier in the process in order to lay out different scenarios and effects. Thus, countries could have been better prepared for an approach which could have better prepared businesses to adjust to upcoming measures. This of course is a difficult case to comment on, as politicians had to balance the needs of being prepared versus the need to avoid causing unnecessary panic.

Significant Relationships

Figure 20: Significant Relationships

Qualitative Results

The survey had qualitative questions in order to better understand the driving factors, challenges and predicted outcomes of changes caused by Covid-19. These aimed to understand individual mindsets within large organisations in order to better inform larger strategic initiatives. Many of the views given are in support of both published literature as well as the research reports conducted by the large consultancy firms.

Many of the problems faced during Covid-19 have been as a result of immense change which organisations and individuals were not prepared for. The pandemic has made a large impact in a relatively short period of time worldwide. The arguments surrounding dynamic capabilities in large organisations is based on allowing these transitions, even when faced with sudden change, to happen more seamlessly and efficiently. As such, primary focus was to determine how different industries and organisations believe they could have been better prepared. This ability to be prepared does not mean for a pandemic specifically, but rather for drastic changes which happen suddenly. The context of Covid-19 changes can therefore be seen as an extreme example of how organisations may better cope and thrive amongst large (and subsequently small) changes.

While organisations that already operated remotely and throughout day and night mentioned having little change in job tasks and approaches, most other respondents mentioned a need to respond to the situation a lot faster. It therefore became a scramble to get things done, where precious time was lost pushing decisions until later stages of the process. This left employees feeling misinformed, and clear communication channels were not established. Many respondents mentioned there being a problem of not knowing what was expected, and therefore, as seen in silos, tasks were duplicated. One respondent mentioned ***"...they sometimes lack a clear overview/system of coordination - who does what where and who coordinates/ makes decisions. It seems to me, this is not always clear to everyone and causes duplication of work".*** While duplication of work leads to wasted resources, during such a time where such change is needed, time needs to be spent wisely in order to survive such turbulent situations. Alongside the duplication of work, many respondents mentioned the need for a flatter hierarchical approach where more well-rounded approach strategies could be developed - ***"I think less and less hierarchical structures would speed change up by a lot".*** Respondents also mention that they could have ***"set up a multidisciplinary team for crisis management not only the executives of the company".*** This links to arguments of orchestrating resources effectively. By making use of people that may see a problem and solutions from different standpoints, means that a solution which was more well-rounded could have been developed, rather than one created by executives who often share the same backgrounds and approaches. These operational structures were further scrutinised by mentioning how it not only loses efficiency, but it also creates internal conflicts. These were said to have ***"caused conflict of interests and internal politics".*** Furthering the need to assess reactions at an individual level, is the repeated need for a clear purpose which employees believe in. The process of Covid-19 has people questioning the meaning of their purpose, and craving something deeper that may stand true regardless of such changes. ***"We have to reconsider our purpose and what we are good at".*** This stood true especially in the airline industry as one respondent mentioned ***"Is our purpose to be an airline? Is our purpose to bring people to places? What is it that we are good at? And can we use that in other ways? Are people still willing to fly in the face of safety or sustainability?".*** This is particularly interesting as it links to arguments of redefining what drives human behaviour - both for internal alignment and purpose, as well as understanding the deeper needs and desires of an organisations consumers.

One of the biggest themes in the answers given, was orientated around employee wellbeing. While this may be due to the pandemic being health related, many arguments were made that are applicable to daily operations and changes. These viewpoints show a need for an organisation to focus more attention on the individuals that create an organisation rather than just how the organisation performs through numbers. People expressed the need to ***"foster a healthy working environment"***, and that ***"...trust and relationships matter".*** Overall, respondents mentioned that ***"the [organisational] culture is key".*** This can be seen reflected also in an organisations key performance indicators (KPI). As mentioned by Luijs et al. (2020), these KPI's will shift in focus. This was further mentioned by creating ***"...more anticipation and long term investment in the people: not focused on short term profit mainly based on euro but mid-/long-term value creation with other performance indicators like turnover, employees satisfaction survey, flexibility".*** The need to focus more on human value can also be seen in the need for a better leadership presence. Respondents mentioned that a lot of problems have occurred due to limited overviews of the organisation and situation. As a response to remedy this, one person mentioned the need to highlight inherent skills over traditional and rigid systems, particularly when selecting the leadership of an organisation - to have leaders that ***"... really empower people".*** Alongside this systematic need for emphasis placed on human value, was the need to feel secure and supported on a foundational level. Employees mentioned that ***"we could have used precautionary measures, such as mouth caps and plexiglass, to make staff feel safe".*** This lack of feeling safe also affects one's ability to perform successfully in their job.

Key Insights

- Covid-19 has helped speed up organisations' digital transformations. However, long term strategies and implementation for this digital shift, in most organisations, has yet to be developed.

- An employee's wellbeing is a crucial point for an organisations' success. Covid-19 has brought about a lot of misunderstanding and has jeopardised peoples job security. Employees have also gone through many changes in their job expectations and work procedures. Due to this uncertainty, the work output of employees has decreased.

- Increased job security can be attributed to increased levels of adaptability and a strong organisational culture orientated around change and transparent and timely communication. This increased job security allows for both increased mental wellbeing of employees as well as their work output and flexibility.

- A clear and meaningful purpose and vision for the organisation needs to be established. This should be one which employees believe in, understand their personal role and receive timely feedback in their progress. The purpose needs to be meaningful despite market changes which may demand a change in portfolio. Therefore, the purpose needs to solve the deeper questions of why people get up in the mornings to go to work, and how they can contribute to the organisation in a more meaningful manner.

- Working in multidisciplinary teams can be seen as beneficial due to allowing for more accuracy in being able to sense changes in the direct and indirect markets. This increased ability to sense changes, positively correlates to an organisations ability to adapt. This could be because individuals are used to being surrounded by teams which change in focus and input information and as such are more routinely able to still understand their purpose despite the goals or tasks changing.

- A clear overview of processes and structures needs to be established in order to avoid silos and duplication of work. This should also be communicated successfully in order to avoid conflicts and frustrations caused from completing work that in the end is not used. This overview should also create clear communication channels where information is readily available and employees know who, where, when and how they can feed information.

- The decision structure and overall hierarchy of an organisation needs to be considered. Flatter hierarchies with input from all employees leads to greater results if managed correctly.

The factors mentioned above, act as a summary of the scenario to help understand factors concerning subquestion 4: *How do big disruptions like Covid-19 affect an organisation?*. In general, people have become more insecure in their jobs during such disruptions, which has led to lower levels of productivity. This is also due to time being spent to try to assemble new operations and procedures. The sudden change in procedures also shows weaker communication structures faltering - it was often seen that organisations had a poor overview of the organisational operations and therefore tasks were duplicated and tensions amounted. Organisations which showed better forms of communication and a flatter hierarchy, allowed for employees to feel more secure in their jobs. Such disruptions have also led to employees more readily accepting change. Accepting this change also resulted from actions taken that benefitted each employee rather than just the organisational as a whole. This can be seen in the safety and preventative measures being well-received, despite it creating a big change in people's work routines.

Q4

The research areas which are covered so far in the report are presented in the summary below:

Literature Review

	Complexity	Dynamic Capabilities	Change Management	Psychological Stability	Dynamic Stability
Summary	Volatile, Uncertain, Complex and Ambiguous (VUCA) environments are a reality and need a change in operations and outlook to cope and succeed. Both descriptive *(factors involved in the project such as stakeholders and assets)* and perceptive *(how complex projects and systems are perceived)* complexity need to be managed.	Sensing is ability and accuracy in anticipating opportunities and threats in the market. Seizing is the ability to translate this into actionable and tangible change (internal or external). Transforming is the organisations ability to embed this change and perpetuate a culture of learning These Capabilities look at the organisation as a whole and involve ability to change.	Employees need clear and coherent communication channels where change is communicated throughout the process. Employees need to understand their role and position in the organisation and projects. Timely feedback is needed.	Employees need to feel: hope, efficacy, resilience and optimism from a personal and organisational standpoint. The change in organisational practices brings insecurity from an individual perspective. This affects productivity, motivation and in-turn organisational effectivity and efficiency.	Successful balance of changing due to incoming market threats/opportunities and providing stability of organisational operation. This could be the balance between developing new capabilities and services, whilst developing and refining existing operations which employees are attuned with.

Opportunities

- Removing silos in organisations
- Allowing for the balance of agility and stability of operational structures
- Improving understanding of key resources and how to better orchestrate them in different situations
- Successful communication and alignment of an organisations purpose
- Clear and coherent communication of projects, job roles and responsibilities, and how they align with the organisations purpose.
- Evoking and embedding a culture of learning
- Better sensing (predicting) changes in the direct and indirect markets.
- More efficiently and effectively seizing opportunities
- Creating successful multi-disciplinary teams where the needs of each discipline are balanced in relation to the initially desired output
- Develop capabilities that help with change.
- Focus on employees job security and prosperity

Survey Findings

- Covid-19 has helped speed up organisations' digital transformations. However, longterm, digital strategies need to be developed.
- An employee's wellbeing is a crucial point for an organisations' success. - Covid-19 has brought about a lot of misunderstanding and uncertainty. This has jeopardised peoples job security, resulting in decreased work output.
- Increased adaptability, clear and coherent communication and organisational culture open to change, results in increased job security.
- A clear and meaningful purpose and vision for the organisation needs to be established and communicated in relation to specific job roles and responsibilities.
- Working in multidisciplinary teams can be seen as beneficial due to allowing for more accuracy in being able to sense changes in the direct and indirect markets.
- A clear overview of processes and structures needs to be established in order to avoid silos and duplication of work - clear communication of this is essential.
- Flatter hierarchies with input from all employees leads to greater results if managed correctly.
- Organisations that had a better overview of resources and processes were able to adapt faster by shifting processes around with minimal work duplication.

Figure 21: Research Summary

Chapter 04

Understanding Organisations

Organisational Lifecycle

An organisation is a group of people which are organised by a common purpose. Therefore an understanding of the purpose, people and structure is imperative to a successful organisation. Alongside this, when creating strategies for organisations, an important aspect is to understand which stage of the organisational lifecycle they are in. Experienced leaders are quick to understand which stage they are in and can adapt strategies and operations accordingly. Each stage has different goals and is characterised by different operations. They therefore need to be approached differently. There are five stages of an organisational lifecycle: startup, growth, maturity, decline and death (Sirmon, Hitt, Ireland, Gilbert. 2010).

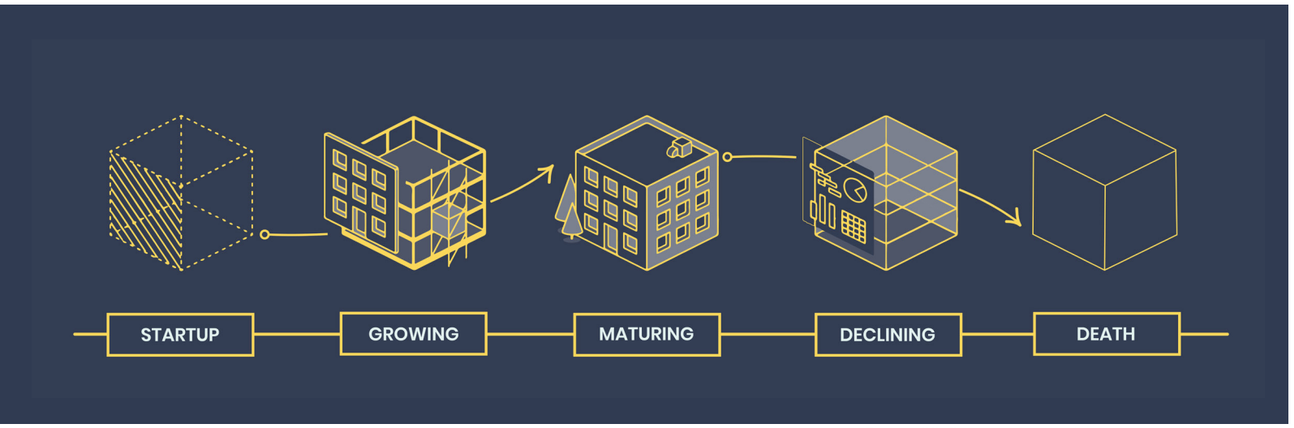


Figure 22: Organisational Lifecycle

In the startup phase of an organisation, people are recruited and there is a general sense of excitement at establishing new avenues of success. Organisations in the startup phase are usually more agile as they have not yet developed rigid structures or a specified position in the supply network. This often means that these organisations are riddled with confusion and frustration as to not fully anticipating what is going on. The growth stage is characterised as strengthening internal systems while expanding external market opportunities. The focus during this stage is successfully balancing setting up organisational structures whilst still actively seeking new market growth opportunities. During the maturity stage of the lifecycle, organisations have reached a comfortable level of success. During this stage the focus is on sustaining momentum. This stage, while providing stability in success, often allows for organisations to be overwhelmed with bureaucracy. This heightened bureaucracy often leads to increased hierarchal layers and resulting problems in communication. The declining phase is recognised as needing to cut back on operations. This could be as a whole organisation due to lack of prosperity, or on a systematic level if certain projects are not working out. During this stage, leaders need to effectively cut back on spending and efficiently make use of declining access to resources and opportunities.

This stage will often have more devastating results on human morale. The lifecycle is thus followed by the "death" of the organisation where it has to cease to exist (Sirmon et al,. 2010).

Large organisations are often in the stages of maturity and thus looking at goals and needs of this stage is important. This includes the argument of restricting extra layers in the hierarchy, better instilling a deeper purpose and improving communication streams. However, when looking at the journey that organisations have been facing during Covid-19, one could say that they go through similar lifecycle stages more rapidly. Some organisations can be seen to be in the growth stage due to being more in demand. These organisations are seen to be digitally run and offer other organisations the opportunity to improve their own internal and external digital strategies. Other organisations appear to be in the declining stage of the lifecycle due to being heavily impacted by restrictions put in place. This is seen in the airline industry having to minimise flights, and making a loss in money. This has led to employees being laid off, and the business model needing to be readjusted. In the more extreme sides of the scale, some organisations have been created due to different opportunities arising. Unfortunately for many, death of the organisation is a reality as they were not prepared for such a harsh change and decline in business.

The organisational lifecycle understanding can also be applied to departments or projects within an organisation. It is important to understand when and how to start, grow and sustain projects. It is equally as important to understand when it is time to cut back and remove projects altogether if they are not favourable in the market. However, this lifecycle is very linear and does not explain smaller changes or setbacks in the bigger scheme of the organisation. It is very rigid and can mislead organisations into believing it best to keep in a state of maturity. This, while proving successful in traditional organisational ecosystems, is not as successful in today's VUCA environments. This rigidity is the reason for hierarchy and operational inertia. Therefore, when considering the potential agility of organisations, a more iterative lifecycle is proposed.

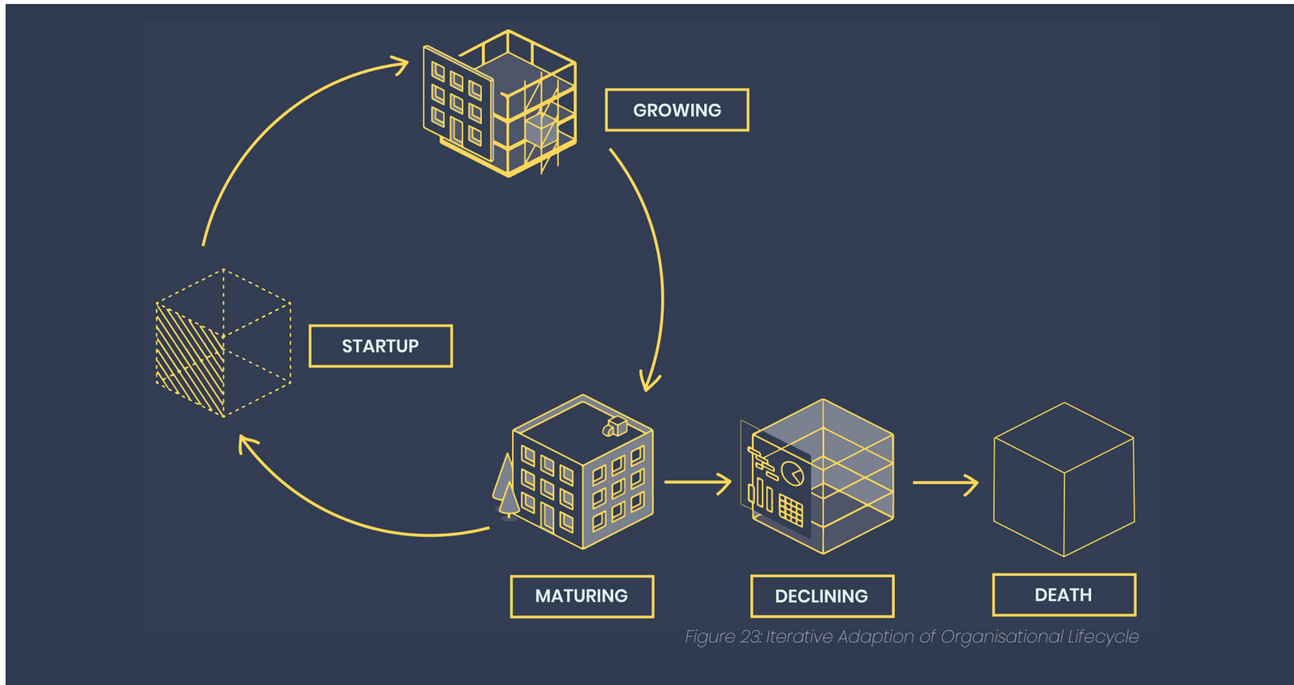


Figure 23: Iterative Adaption of Organisational Lifecycle

It is clear that the stages of startup, growing and maturing are favourable, whilst stages of declining and eventual death, are to be avoided. In order to avoid these undesirable outcomes, an iterative cycle of startup, growing and maturing of thought regimes, approaches and projects could be taken. This more iterative approach allows for a more agile approach considering how immense change may impact the organisation on such a level that they have to reestablish the organisational operations - as one would in the startup phase. On an approach and mindset level, the categories of dynamic capabilities can be likened to the three favourable stages of the lifecycle. The startup phase can be said to be an organisation's ability to sense opportunities' or threats. The growing stage can be said to be the organisations' ability to seize opportunities. The maturity phase (when in positive motion) can be said to be the organisation's transformative abilities. As dynamic capabilities are successful when in state of cyclical repetition, causing an iterative cycle of the organisational lifecycle is beneficial. This could be applied to the organisation as a whole when impacted dramatically such as with Covid-19, or on a project/department level when smaller changes require aspects of the organisation to change.

This more iterative cycle requires a more agile organisation which is able to interpret changes as they occur and react accordingly. With more agility and frequency of change, stability needs to be provided for the employees of the organisation. This therefore requires two parallel areas of focus which impact each other. Dynamic approaches will therefore be a focal point from an organisational perspective, and stability will be a focal point from an employee's perspective.

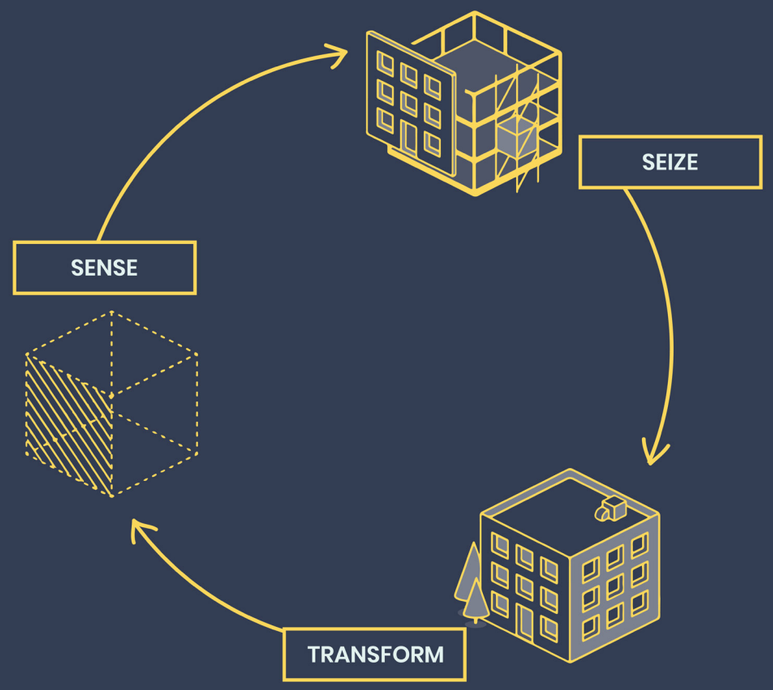


Figure 24: Ideal Iterative Organisational Lifecycle

Achieving dynamic agility from an organisational level while providing stability from an individual level

Agile Organisations

Within the understanding of creating a dynamic organisation, is agile approaches. These approaches are currently of interest to many organisations as an approach to achieve more competitive advantage within VUCA environments. While traditional organisations are described as having linear organisational models and rigid structures, agile organisations are flexible and are able to respond faster to changes in the market. Traditional approaches use top-down management and comprise of many hierarchical layers. In comparison, agile organisations seek to achieve more co-creation through flexible teams, and empowered employees who proactively seek to develop themselves and the organisation (Aghina, De Smet, Lackey, Lurie, Murarka. 2018). This need to achieve agility is inline with the survey findings, namely: less hierarchical layers improve more rapid change and sensing accuracy, and the more organisations work in mixed teams improves sensing accuracy and rapid change.

Aligned with the survey findings, agile approaches acknowledge the importance of the people within the company. Traditional organisations focus more on numbers and spreadsheets, while agile organisations acknowledge the power of their people - harnessing individual and diverse talent and experience. This agility relies on the people within an organisation to be aligned and able to change (Denning. 2010). Therefore, the role of people within organisations also changes. Leaders within an organisation shift from directors, controllers and planners, into visionaries, coaches and architects. These leaders should be able to inspire and evoke a culture of learning and proaction.The differences between traditional and agile organisations are compared below (Aghina et al,. 2018):

Traditional Organisations	Agile Organisations
- Linear business model - Rigid organisational structure - Top-down management - Many hierarchical layers - Steering employees through instructions - Static job roles and responsibilities - Leaders as: directors, planners and controllers	- Flexible and cyclical business model - Dynamic organisational culture - Bottom-up approaches and co-creation - Flatter hierarchy - Empowering, motivating and inspiring employees - Fluid job roles and responsibilities equipped to proactively develop individual capabilities - Leaders as: visionaries, coaches and architects

Figure 25: Traditional Versus Agile Organisations

While linear business models were useful in the mass-production era, fluid and cyclical business models and structures are required in current environments.

This can be described as the shift from seeing organisations as machines, into organisations as living organisms.

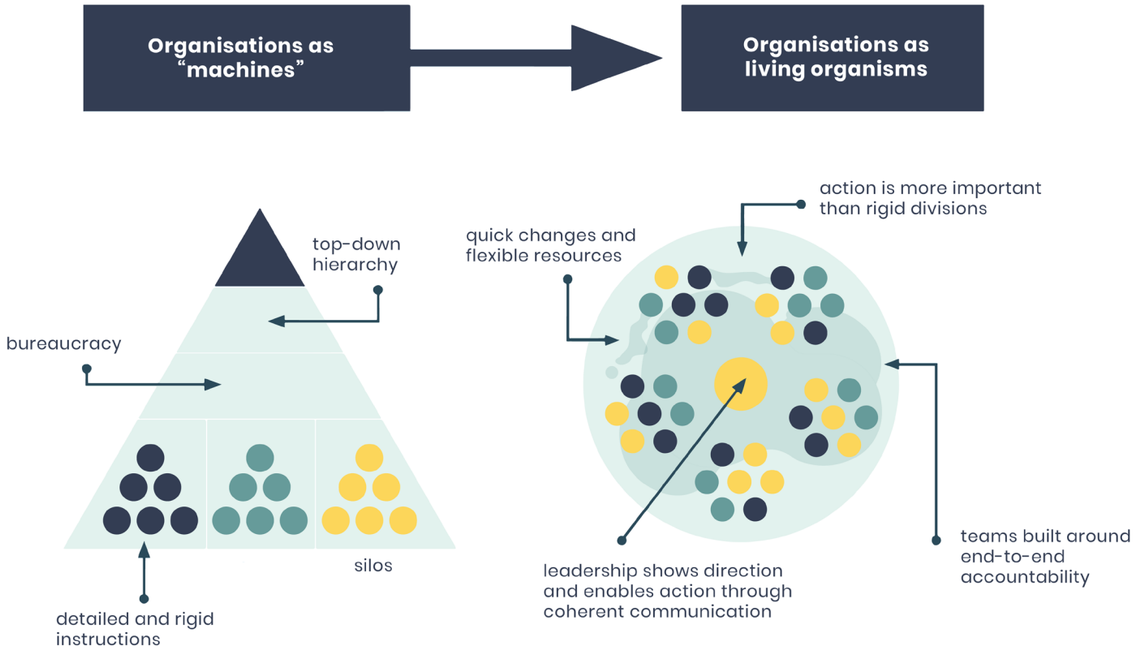


Figure 26: Organisations as Living Organisms. Diagram Adapted from Aghina et al,. 2018

Chapter 05

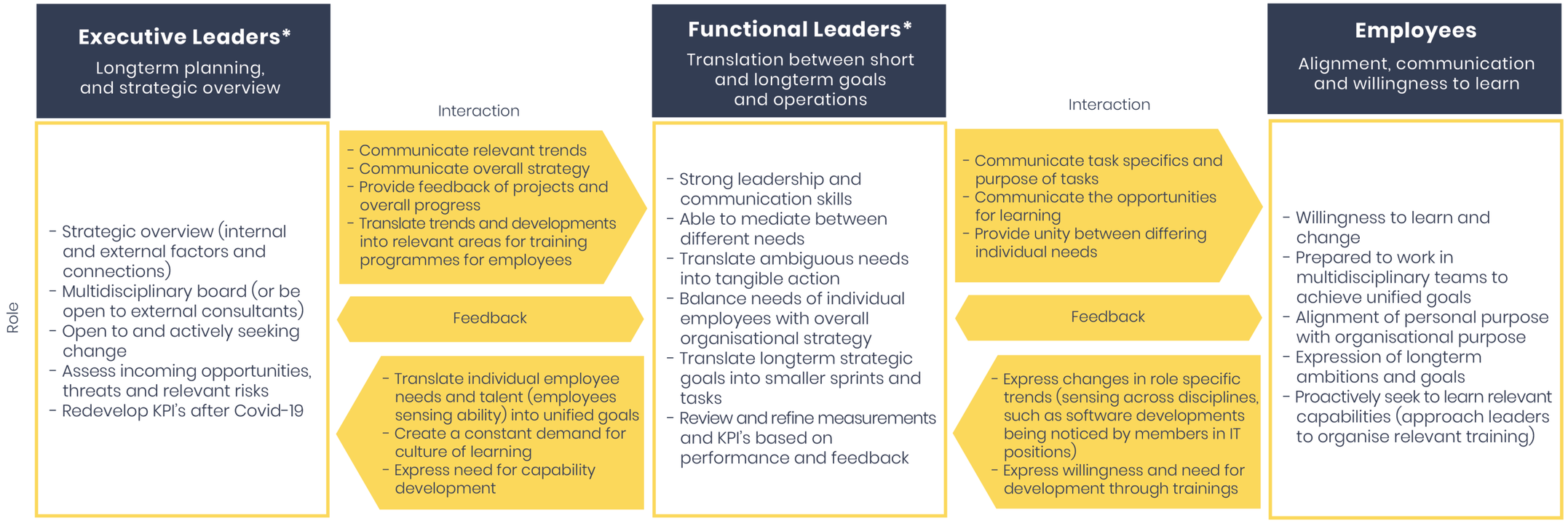
Direction

There are many opportunities that can be explored when looking at building dynamic capabilities in large organisations while still ensuring stability for individual employees. Dynamacy is a focal point from the organisational level, whilst stability will be a focal point from an individual level. As these two both affect how the other performs and operates, they are dealt with as a collective focus. These two areas will be further supported with recommendations that act as a foundation for organisations. In order to achieve dynamic stability, there are many possibilities. From the literature research, expert predictions for change in the future, and the survey findings, a list of goals for the concept is derived. This was created after mapping out all of the key areas and seeing where connections could be made and prioritising connections which would better aid one another. Some of these goals will be of primary focus and highlighted in the concept more than other goals which will be of smaller relevance in the concept. However, all the goals aid in the creation of the concept. These ***goals*** are:

- Allow for more co-creation within the organisation through multidisciplinary teams.
- Empower employees to be proactive in developing capabilities
- Aid in personal alignment to organisational purpose
- Achieve faster reconfiguration of resources/capabilities (software, hardware, people, etc.)
- Provide a more understandable overview of the organisation
- Live reconfiguration of resource updates, to avoid handover time and confusion
- Enable more clarity of role and tasks within organisational purpose and goals
- Aid faster decision making
- Enable a culture of learning
- Allow for better feedback loops
- Focus performance indicators on people rather than numbers
- Merge the digital and physical world by connecting the home working environment and the office

Due to the broad nature of the research, a general concept which connects many different areas is developed. The details (such as algorithms and exact software used) are therefore provided as recommendations for further research in each specific field.

Before creating the concept, a general understanding of optimal organisational structures and roles is developed in order to better understand the needs, goals and interactions of employees from different roles in the organisation. Based on merging the research previously described, an optimal, generalised overview was created:



*Leaders have traditionally often been chosen due to length of time in an organisation. For successful leadership structures, these leaders need to be selected based on their ability to communicate, motivate and mediate between differing needs and people.

Figure 27: Optimal Organisational Roles and Communication

This generalised indication of ideal interpersonal relationships and responsibilities, mainly focuses on creating stability amongst employees and people involved in the organisation. From an organisational structure, the aim is to achieve a dynamic and agile company as expressed above. Therefore, the aim for the concept should help aid in creating a flexible working environment which can better grasp opportunities or manage threats. Competitive advantage is seen in effectiveness and efficiency of the organisation in responding to these factors. A generalised and simplified comparison of traditional organisations and an ideal organisation is depicted below.

Traditional Organisations

The traditional organisations described, struggle with rigidity. These organisations often focus time on maintaining existing systems and creating incremental changes to their services or products. As such, they are less open to changes from incoming opportunities or threats. This shows less sensing capabilities than that of an ideal, agile organisation. In the figure, it is seen that the organisation is open to receiving information which may inform changes only in the top hierarchical layers. This is because there is often a top down, high hierarchical organisational structure which creates such rigidity.
The funnel represents the layers of hierarchy and bureaucracy which adds complexity and increases the time taken to translate opportunities or threats into outcomes. With limited sensing capabilities which informs organisational leaders of changes within their direct market, these organisations create outcomes suitable for these existing markets - limiting growth potential in new markets. Furthermore, these outcomes, even when limited to existing markets, often lack diversity and do not accurately resemble the potential many organisations have.

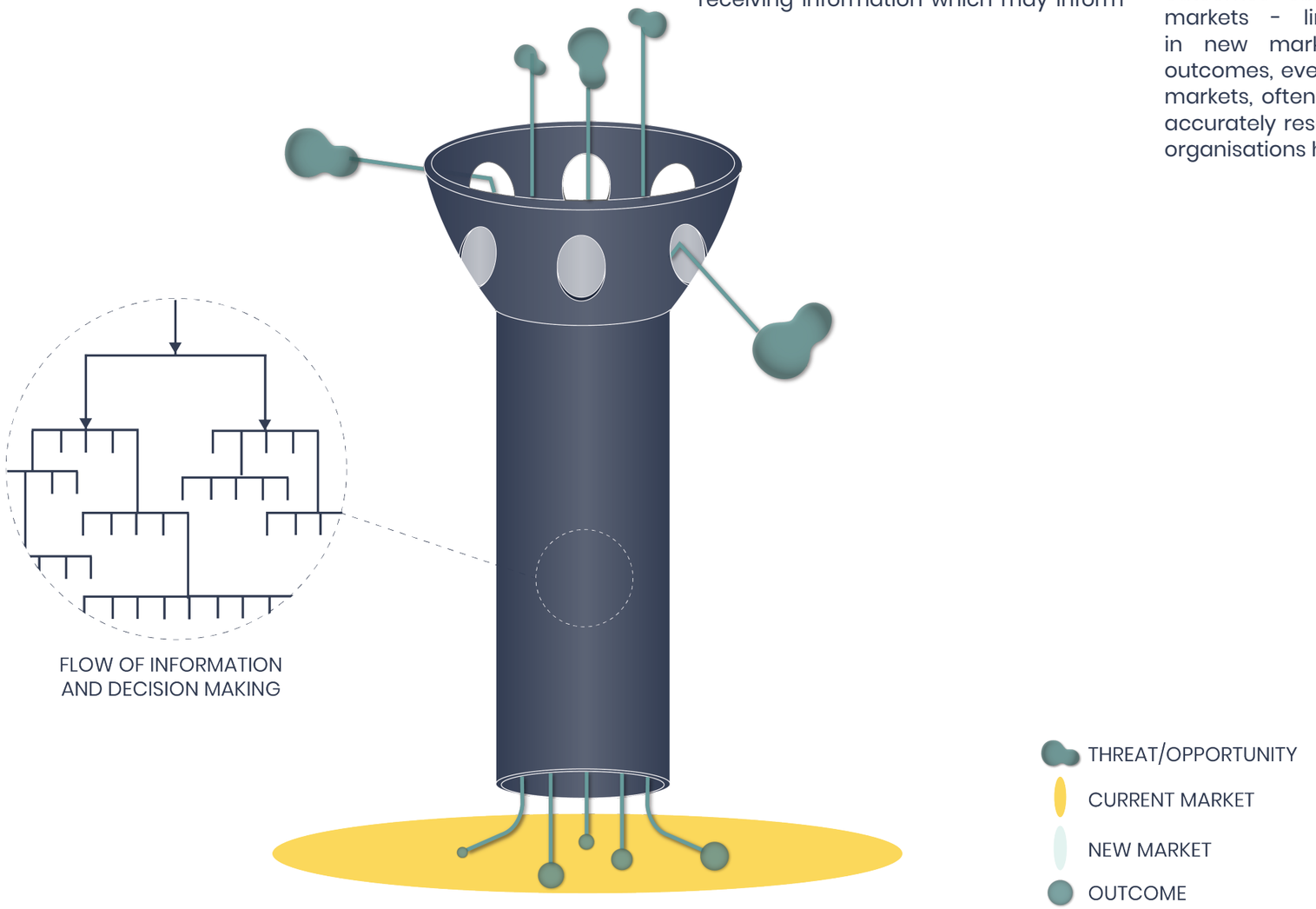


Figure 28: Visual Metaphor for Traditional Organisations

Dynamic Stability Organisations

In comparison to the traditional organisations, such agile organisations make use of flat organisational structures, and are more open to disruptive changes. Therefore, the sensing capabilities are more present and effective. Moreover, these organisations should provide the opportunity to have sensing capabilities and the translation of sensing to seizing, and transformation capabilities built throughout the organisational structure - reducing hierarchical bureaucracy and improving the breadth and accuracy of sensing changes. Improving the breadth of sensing capabilities helps identify weak and strong signalled trends in direct and indirect markets. With such sensing capabilities spread throughout the organisational structure, it allows for better support from all employees. This helps with psychologically supporting changes, and reduces the layers of bureaucracy needed to achieve change (Titman. 2017). The support from employees is increased due to employees being more involved in the whole process and therefore gaining more clarity and understanding of their role in the organisational changes. This is further enhanced by the more iterative and two-way flow of information and decision making - with all individuals in the organisation having an effect on the final outcome. These improved capabilities allow for outcomes to be targeted at new and existing markets in a more timely manner. Furthermore, these outcomes achieve more diversity from receiving better input from more layers within the organisation.

These generalised strategic changes act as a foundation for creating a concept in order to achieve the optimal balance between organisational dynamacy and individual stability.

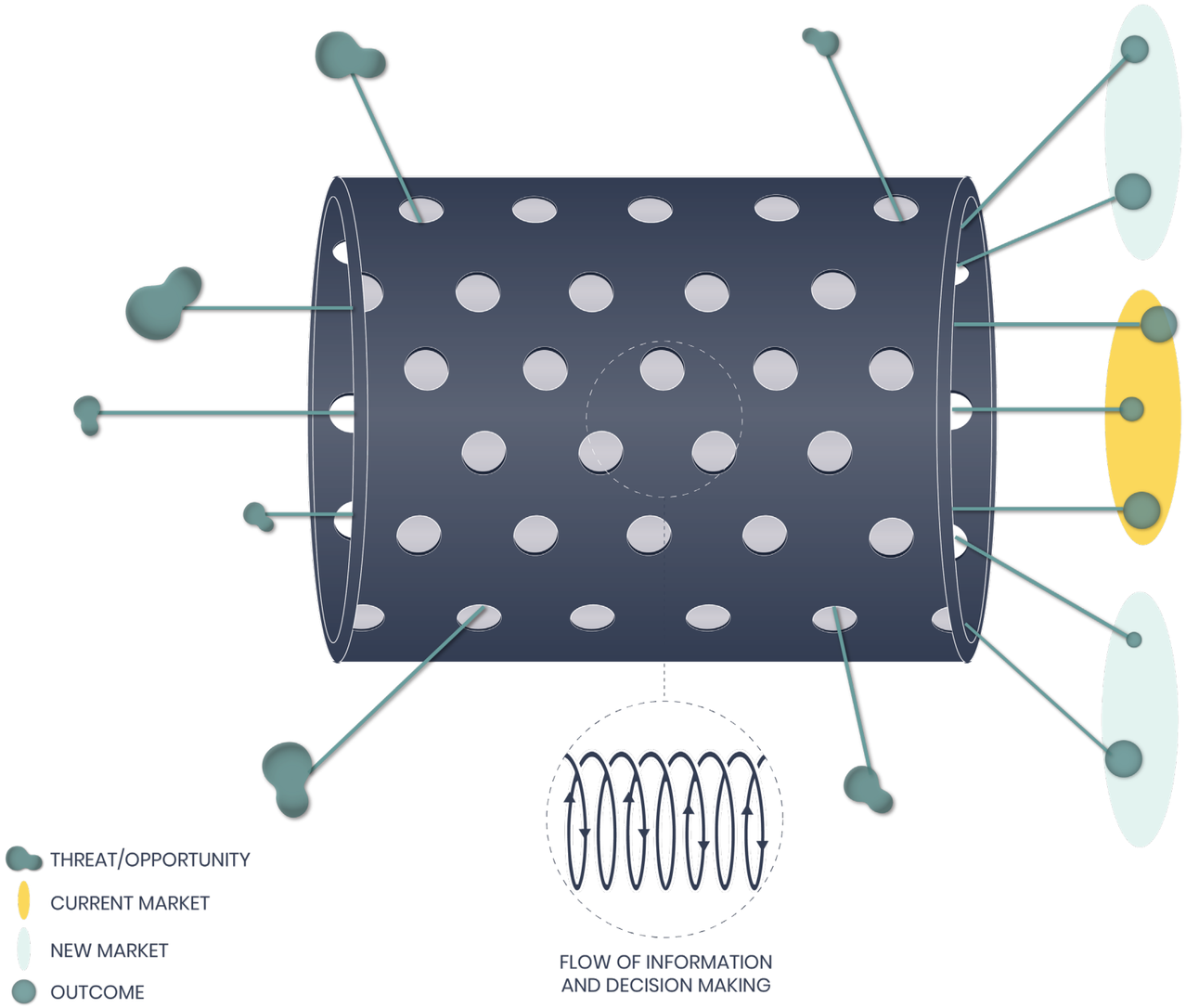


Figure 28: Visual Metaphor for Organisations with Dynamic Stability

Chapter 06

Concept

Introduction

As mentioned in the research, it is more desirable to give a general framework than a detailed plan in order that organisations can tailor the understanding to their own needs and ambitions. This framework is a simplified version in order to avoid confusion often associated with organisational structures. The aim is to create a more iterative organisation which can interchange between startup, growth and maturing phases - sensing and seizing opportunities while transforming the organisation in a more effective and efficient manner. The concept is a generalised and simplified system redesign, where details on interaction etc. can be better integrated by organisations. This is due to providing an overview and how everything should optimally connect which can be applicable to many different working contexts or methods. Focus is on integrating all aspects to more seamlessly flow as a living organism rather than a machine built of different divisions and subsequent silos. The concept is branded as *Orchestrator.*

ORCHESTRATOR

A Capability Orchestration Framework

Figure 29: Orchestrator Logo

Traditional Governance Structure

To better understand how the concept may be beneficial, a traditional structure was developed based on an existing organisational governance structure of a financial investment corporation. This information was compiled and validated with the head of one of the strategic divisions. As there is such complexity, only one branch of each layer is expanded upon to provide better clarity and understanding.

As seen in the diagram, there are multiple, complex layers within the organisational governance. As decisions are made from higher layers, there is greater potential for the information to be diluted or hold less relevance with each layer of progression down the hierarchal layer. Along with the multiple layers of hierarchy, information can be seen to be difficult to translate from lower levels to the decision makers in the organisation. According to previously described research, this results in less productivity and motivation from employees while taking longer for opportunities to become outcomes for value creation. With this understanding, it is shown that a flatter hierarchy is needed while creating better feedback loops and a two-way communication of opportunities. Decision responsibility should also be distributed throughout the structure for more timely reaction to threats and opportunities. This is incorporated in the concept of Orchestrator.

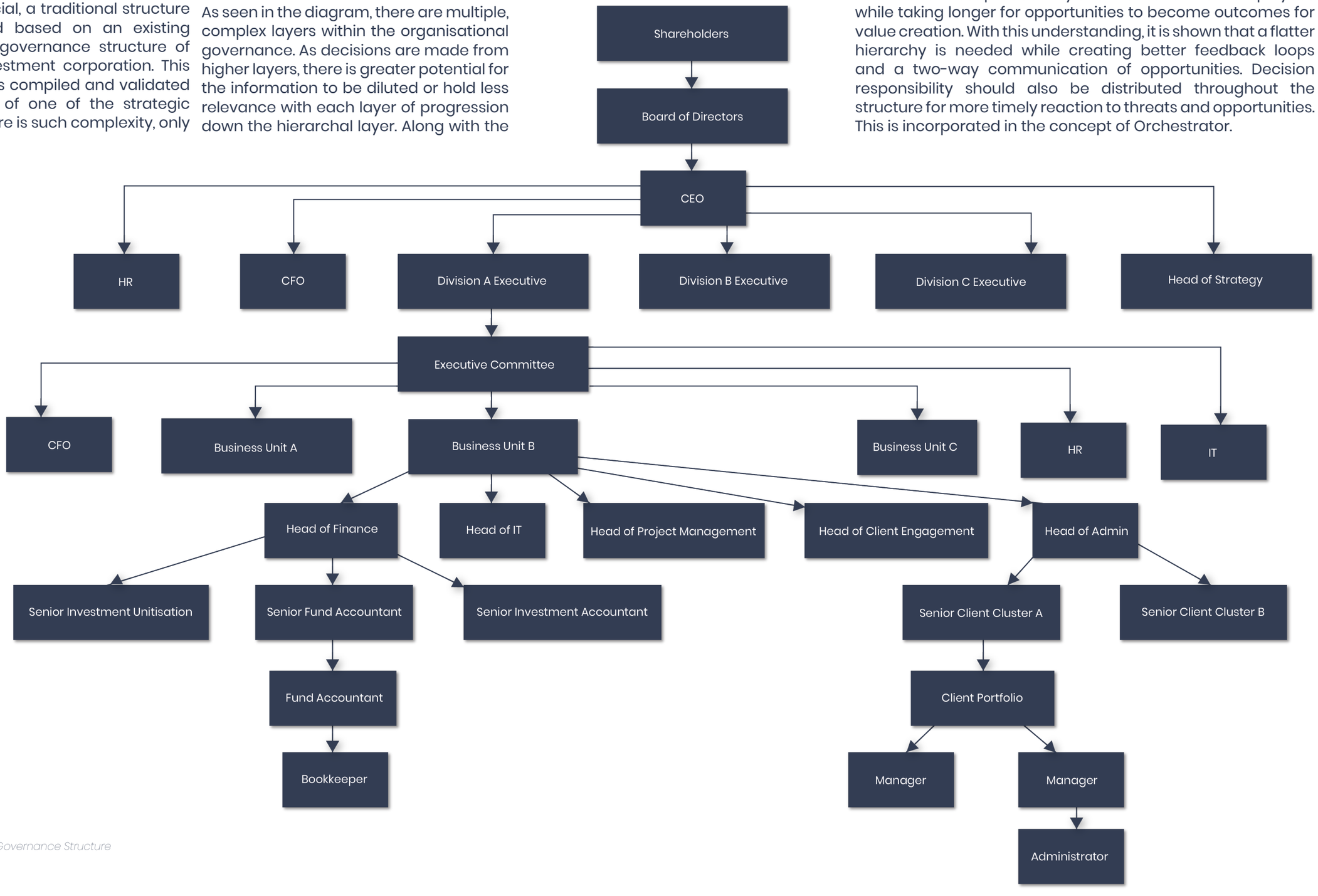
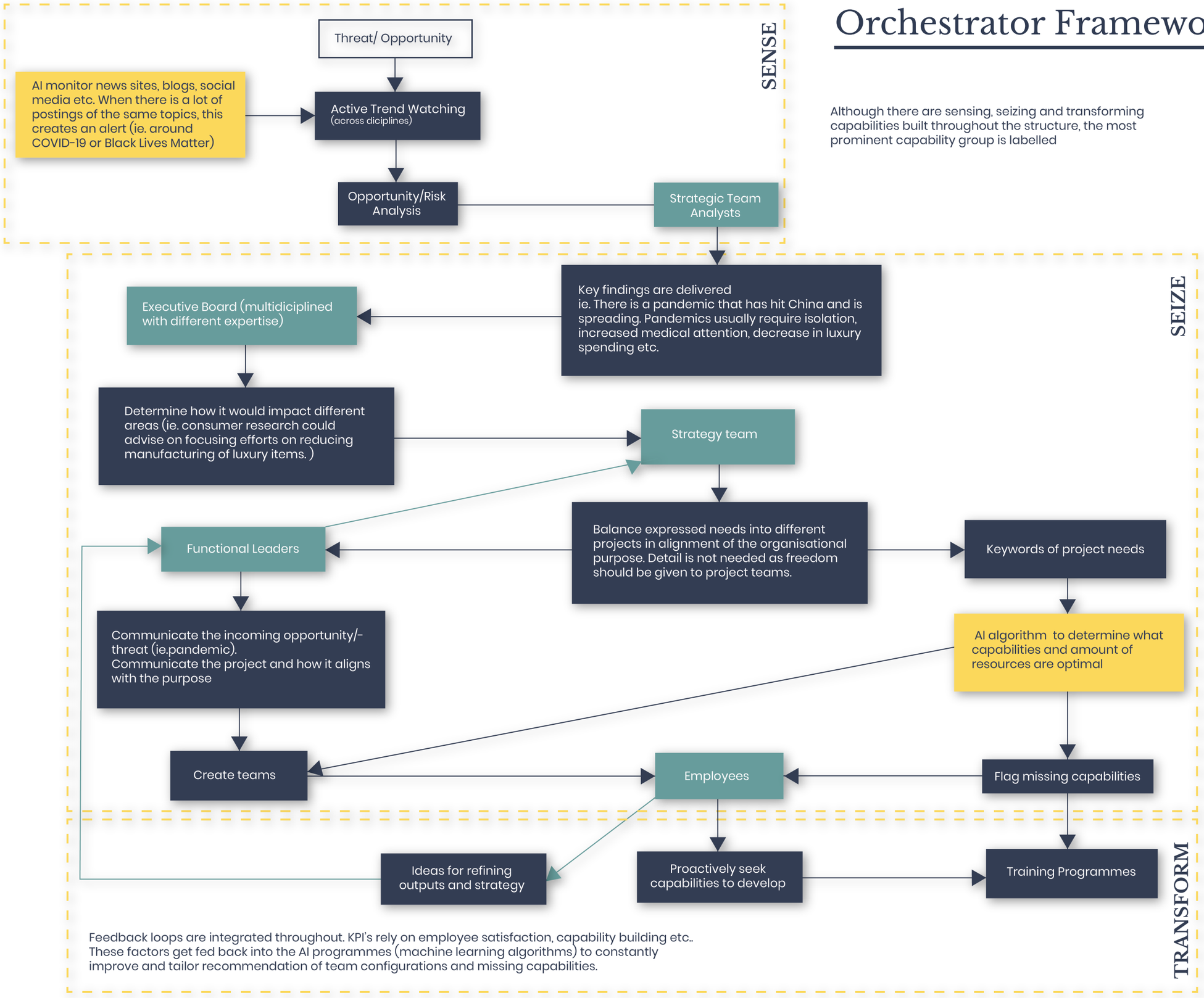


Figure 30: Traditional Governance Structure

Orchestrator Framework

Although there are sensing, seizing and transforming capabilities built throughout the structure, the most prominent capability group is labelled



Feedback loops are integrated throughout. KPI's rely on employee satisfaction, capability building etc.. These factors get fed back into the AI programmes (machine learning algorithms) to constantly improve and tailor recommendation of team configurations and missing capabilities.

Figure 31: Orchestrator Framework

The concept relies on the sensing, seizing and transforming capabilities to be present throughout an organisation. However, the main focus for the sections are highlighted. When sensing opportunities and threats and the subsequent filtering, it is important that it involve more analysts rather than an executive board. This is due to analysts generally being fairly new to an organisation compared to that of the executive board. This, along with the decreased responsibility for the whole organisation, allows the analysts to be more open to change which is far outside of the organisation's current procedures and offerings. AI input is used to flag trends in order that anything gaining momentum in the world can be examined with opportunity and risk filtering. This is due to organisations often focusing on trends which are already very prominent and are directly relevant to the organisation. Sensing these trends so late reduces the time provided to respond to such factors. As seen in the research, organisations need to sense opportunities and threats from multiple different areas. Therefore, these sensing capabilities are distributed throughout the structure where employees can voice relevant opportunities which they may come across, as well as the strategic team being split into two different sections for translating the sensed opportunities or threats into relevant seizing strategies. This along with managers needing to be trained in more agile methods correlates with the need for organisations to make use of design approaches throughout the organisation rather than limited to a single department. Design is needed throughout the structure in order to better balance the needs of different disciplines while allowing for an embracement of ambiguity and change (Brown & Katz. 2011).

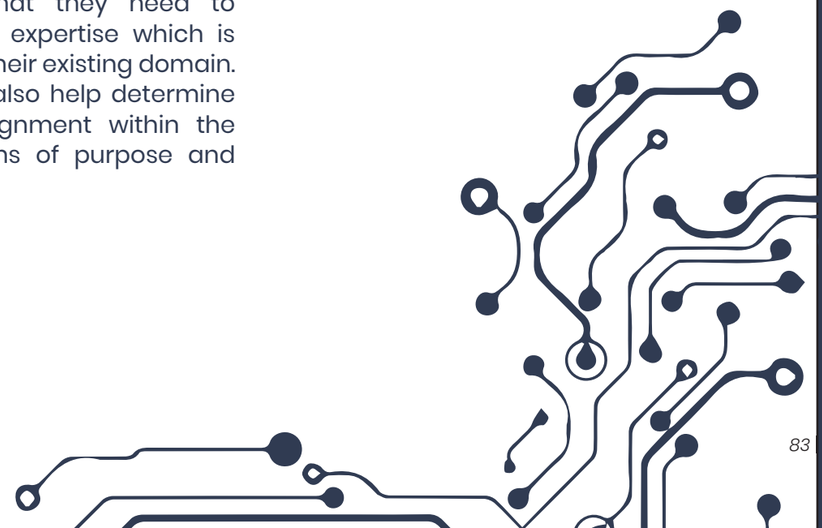
Although seizing opportunities (by creating internal or external focussed projects) is allocated to the strategic team, details are left to individual project teams and employees. The strategy team is able to translate trends into projects which fit the organisation as they have a better overview of the organisation than that of individual employees. The strategic team is able to provide key points and goals to include in the project in order to give guidance and a strong foundation for project teams to work with. Details and execution is therefore left up to the project team employees as this aims to provide more empowerment, clarity of purpose and position and overall proactivity. Through this, the concept aims to distribute responsibility throughout the organisation. In doing so, more minds from differing cultures, industries and outlooks can help create more well-rounded and diverse outcomes. Furthermore, this aims to create a more fluid organisation which operates as a living organism rather than a sequentially based, rigid organisation.

As middle management levels are shown to be a pivotal aspect in making or breaking transformative abilities (Tabrizi. 2014), focus has been placed on creating more dynamic flow of feedback loops. This aims to avoid operational inertia. As the KPI's are more people based, and feedback loops create a more well-rounded understanding of the people and capabilities of the organisation, a better handle on current and potential employment may be seen. Due to the system being continual, the executive board can determine (based on project leadership) if their functional leaders are properly translating the purpose and project, while inspiring and motivating fellow employees. Through more iterative cycles, it also aims to motivate employees and allow them to show initiative in developing capabilities in order to become a functional leader. This is therefore based on capabilities and motivation rather than the traditional practice of people rising through the hierarchical ranks based on time spent at the organisation.

Employees have the ability to give feedback which feeds into the KPI measurements. This aids in refining the algorithmic outputs, and in turn providing a mutually beneficial team configuration in the future. Furthermore, employees are able to show which capabilities they would like to develop or see which capabilities the organisation is looking to develop. They can then be proactive and elect to learn these capabilities through training programmes or workshops. Given that this also makes use of feedback loops (if the needed capability is not being developed), executive leaders can assess two main areas: if middle management teams are under-performing in inspiring or translating the purpose and empowering employees, or to determine that they need to actively recruit new expertise which is currently outside of their existing domain. Furthermore, it can also help determine if there is a misalignment within the organisation in terms of purpose and goals.

The most prominent alterations to traditional organisational structures is the integration of: AI systems for optimisation and increased sensing accuracy and scope, more interpersonal based KPI's, feedback loops and capability development with both a push (the flagged need for the development of certain capabilities) and pull (opportunity for employees to actively seek to develop capabilities in relation to the organisational needs) relationship. Therefore this integration will be further elaborated upon.

Fairness and trust in AI is still an issue. Therefore, stances against any AI system being used to automate and direct how humans should behave is avoided. Rather, the aim is improving the accuracy and reducing mundane tasks by allowing AI systems to provide more accurate and depth of options. Final decisions are always determined by the individual/team receiving the data and recommendations. The flow and decision tree used within the first proposed AI implementation is expanded upon on the following page.



AI Trend Monitoring Wireframe

REASON	PROCESS
Collection from broad sources to identify trends from multiple industries	Technology blogs; News sites; *Public social media posts (mainly Twitter and Facebook); Online trend spotters such as big consultancies → Data collection
Increasing accuracy of trend alert based on credibility of sources	Source is not known to be credible (such as personal social media accounts); Source is known to be credible (predetermined such as big news sites and posts from big consultancies) → Multiply by 2
	Words/phrases mentioned multiple times
Alert for topics gaining momentum	Alert created (predetermined minimum amount of mentions)
Assessing potential impact and pace of trend progression	Frequency of mentions
Provide context faster for analysts	Full source file pulled from credible sources
Assess impact based on supply chain connections (ie. Black Lives Matter movement first gained pace in the USA. If organisation or most consumers are based there, more immediate action should be taken)	Visualisation of geographic source of information
	Strategic team analysts review content
Identifying associations may help improve accuracy of project decisions. (eg. if a company endorses a celebrity who is associated negatively or positively with the trend, action can be taken faster. If technological trends are associated with processes used by the organisation, planning around the technology could be sped up)	Not relevant trend; Relevant trend
	Process is repeated to determine common associations

KEY

- operational flow
- feedback loop

*No data on individuals posting information is collected

Figure 32: Trend Monitoring Wireframe

Capability Orchestrating Wireframe

The second AI implementation which suggests configurations of capabilities and resources per project is expanded upon.

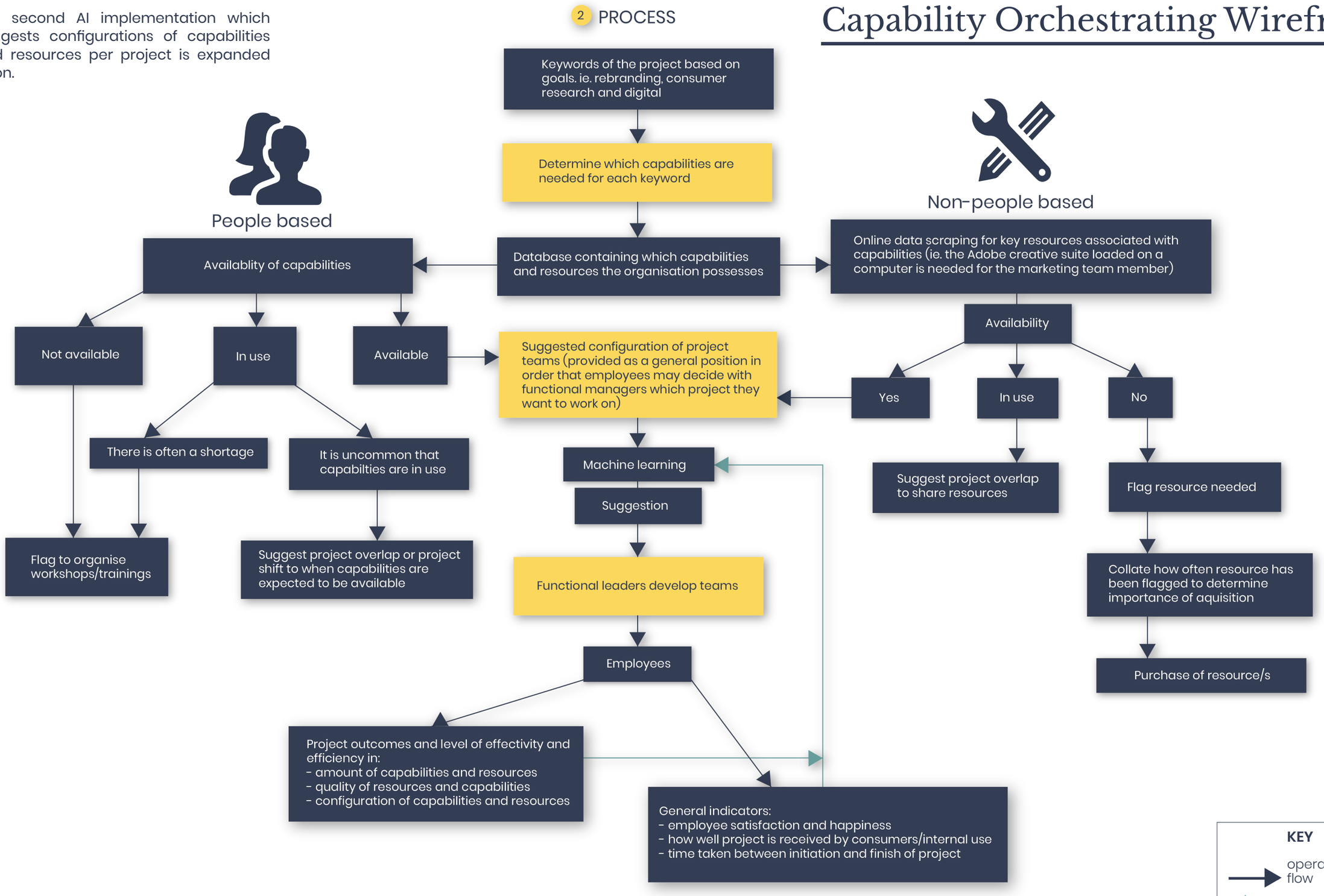


Figure 33: Capability Orchestration Wireframe

For a more in-depth explanation of how the Orchestrator framework functions, follow the link below or scan the QR code to watch the available YouTube video: https://youtu.be/mYbj-n-Ue9c

The focus of the research and concept is on the framework which can be implemented in organisations. However, a prototype for how the interface could possibly be created is provided to help aid in understanding of how such a framework could be practically implemented. This would ideally be implemented in the visual style and character of the organisation and work alongside existing platforms. The explanation video is available by scanning the QR Code or clicking on the link below:
https://youtu.be/GRfdjcqOnu0

Figure 34: Interface Prototype

Achieving

the initial goals

Goals were developed based on prior research to help guide the concept creation of *Orchestrator* (as seen on page 66). A brief understanding of how the concept achieves these goals is elaborated upon below:

Allow for more co-creation within the organisation through multidisciplinary teams.
Providing optimal configuration of capabilities through the second AI interface to allow for multidisciplinary teams to change with every project.

Empower employees to be proactive in developing capabilities
Missing capabilities are flagged for employees and the option is given to pursue capabilities which an individual may identify as important. Furthermore, having leadership positions based on capabilities and skills instead of time spent within the organisation, helps to incentivise pursuing capabilities.

Aid in personal alignment to organisational purpose
Through feedback loops and the removal of top-down governance, a culture of shared responsibility and subsequent aligning of purpose is created. If capabilities are flagged as missing, these can indicate the need for hiring specific personal. Information is available in a unified system which aims to help communicate the purpose more clearly to potential employees - aiding in setting a strong foundational understanding of the organisational purpose from the beginning.

Achieve faster reconfiguration of resources/capabilities (software, hardware, people, etc.)
Having the second AI interface allows for faster and more optimal configurations to be developed. With machine learning this helps to constantly optimise and tailor outputs for the organisation.

Provide a more understandable overview of the organisation
Having a clearer communication structure and feedback of how one's work aided in the project outcomes, aims to aid in creating a more understandable organisation. Project management tools are also incorporated. Due to shared responsibility through flat hierarchy, employees may be more empowered to initiate staying updated on the oganisational operations.

Live reconfiguration of resource updates to avoid handover time and confusion
Reconfiguration is made to happen faster and more effective through the second AI interface. It is digital and is therefore a good live tracker of operations. This leaves more room for the functional leaders to communicate and inspire employees. Handover time and confusion is aimed to be reduced through equipping leaders with clearer goals and tasks to communicate.

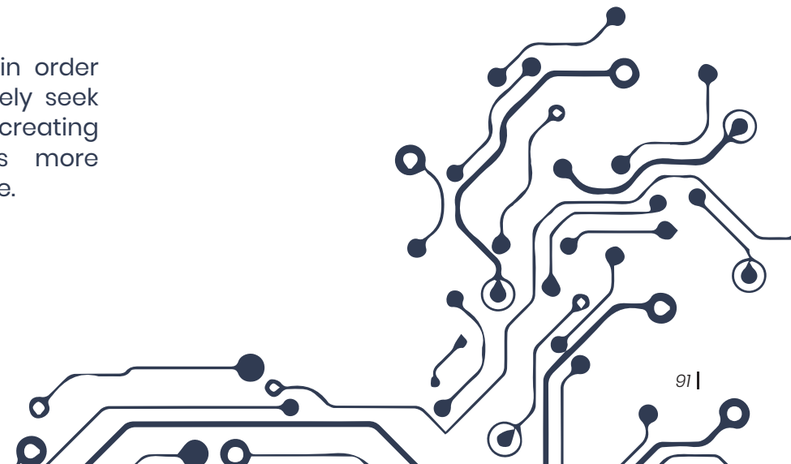
Aid faster decision making
Through automating mundane tasks and giving most impactful information sources to analysts through the first AI interface, it aims to reduce information overload while broadening the sensing lens.

Enable culture of learning
Providing more feedback loops in order to empower employees to actively seek learning new capabilities, and creating a fluid organisation which is more comfortable with constant change.

Allow for better feedback loops
Through proposing change of KPI measurements to empower employees to give feedback on the project. Machine learning helps translate the feedback into improved configuration suggestions. Employees can then see that their feedback is being directly used. Having these configurations digitally available, allows for tracking of organisational data. This therefore determines strengths and weaknesses for various levels of the organisation to respond to.

Focus performance indicators on people rather than numbers
Through feedback and integration of insights into the systematic flow of operation, while empowering employees (benefitting individual and organisational prosperity).

Merge the digital and physical world by connecting the home working environment and the office
Due to the system relying on data captured and used digitally, allows for restrictions to be put in place - allowing for configurations to make use of either remote or office work environments. The framework aims to pave the way for interaction designs to be developed in order to create more engaging interfaces.



Barriers to Implementation

Although such a framework may help large organisations in general, some organisations may find it more challenging to transition to such a framework. Organisations which have a preexisting, strong data developing and analysis team, as well as better integrated software throughout the organisational structure would more easily adopt such a framework. Organisations which have more bureaucracy, hierarchy and who lack data and IT structures, would transition slower. This is because the framework goes against this hierarchy and bureaucracy, due to findings in both primary and secondary research. As seen in the findings of change management, changing this culture and fighting against the operational inertia is what these organisations will struggle with most. Due to flattening the hierarchy, it is expected that those that are higher in the structure will be more opposed to such changes due to having less initially perceived control. This would be problematic as these higher levels in such organisations hold the decision power to make such vast changes. It is therefore advised that an outside facilitator help guide such a transition in order to achieve overall efficiency. It is also important to communicate that the benefits of such a shift outweigh the initial discomfort in changing routines. This change is aided by Covid-19 due to forcing organisations to change. Therefore, due to already being in a state of transition, these organisations can implement a more long lasting framework. Such a change is also a necessity for the survival of such organisations. Prior to Covid-19, there was already a shift to value more balance in personal and career life. During Covid-19 it is seen that an individual's wellbeing is of growing importance. Therefore, if these organisational structures do not operate in a way which allows for employee wellbeing, organisations run the risk of losing vital employees to organisations that have changed. Therefore, it is argued that now is the best time to make such a transition.

Business Model

Orchestrator is currently presented as a framework that can be used directly by organisations. However, the framework can also be used within a business model for a consultancy company. Orchestrator can be separated into three different, but complementary services:

Orchestrator Backend:
This would be provided as software which has preset data scraping and processing models. This would be in line with process 1 and 2. The algorithms would be preset, where termly updates would be made available. It could be connected to a centralised database which helps better detect and process trends, and up-and-coming capabilities and configurations. If used more broadly by organisations, this can help improve the database accuracy and availability of information due to receiving two-way information from more organisations and markets.
Aimed at: organisations lacking the IT architecture and data processing capabilities (and unwilling to develop it in-house).

Orchestrator Structure:
This service relies on the organisational structure being established by consultants. Therefore, optimal structures can be created free of biases from internal reconfigurations. Coaching experts would be present in order to guide the transition. Due to being designed in detail by the consultants means that it can be tailored beyond the Orchestrator framework into what is more specific to the organisation (this would be depending on the type of people, brand, partnerships, supply chain and assets within an organisation).
Aimed at: organisations which predominantly have a complex structure and need to make a big organisational change. This is also for organisations with many hierarchal levels where positions and job responsibilities need to be reestablished.

Orchestrator Embed:
Due to transforming capabilities being difficult to fully achieve, a guided transition could take place where consultants are present throughout the transition. They can act alongside leaders in every layer, slowly phasing out as a more dynamic flow has been established within the organisation.
Aimed at: organisations with immense change needed in structure and leadership presence.

Most optimal (effective and efficient transition of internal and external factors) outcomes can be seen with the incorporation of the full Orchestrator service. This aids in: sensing, seizing and transforming capabilities, while providing security and alignment within the organisation. This is structured after the currently popular business models such as: the servitisation (subscription) model, the employee-centric business, the constant innovation business and the data-driven business (Marr. 2019). With the success of subscription models being available in packages and distinct services, Orchestrator has been divided into three available options.

Orchestrator Services

BACKEND

- Software with preset data scraping and processing models.
- Applicable for both AI interfaces.
- Centralised database with periodic updates allowing for better detection and processing of trends and capabilities.

STRUCTURE

- A new organisational structure is tailormade for each organisation by consultants.
- External consultants decreases biases from personal gain.
- Coaching experts are present to help ease the transition and allow employees to have more stability.

EMBED

- Guided transition with consultants embedded in the organisation.
- Consultants help embed transformations faster and more effectively before phasing out.
- Tailored approaches can be imparted throughout change stages.

Figure 35: Orchestrator Business Services

Connection of Orchestrator to Research

Problem/Opportunity	Barriers	Goal/s	Orchestrator Element
More multidisciplinary project teams result in better sensing and seizing capabilities.	Communication between disciplines is sometimes difficult due to different objectives.	Aid in more fluid team structures which can be changed and organised more efficiently and effectively while creating purpose alignment.	The second AI interface for capability configuration helps optimise the balance of needs in the team. Having functional leaders focus on translating and motivating project and organisational goals helps align individual purposes with the organisations'.
Organisations need to orchestrate resources and capabilities to be more agile	Large organisations struggle with having an overview of these resources and therefore do not fully use their resources to the full potential.	Structure an overview of internal capabilities and needed capabilities to develop.	Flagged missing capabilities allows better project scheduling, proactive employee capability development and clearer hiring/acquisition needs.
Change causes insecurity amongst employees, subsequently lowering motivation and productivity	Higher levels of hierarchy and top-down decision structures cause more of this insecurity amongst change. This is furthered by lack of clear and coherent communication of goals, process and responsibilities.	- Create more ownership throughout the organisation. - Allow for clear and coherent communication. - Lessen hierarchical layers and bureaucracy.	Due to leaving all the decisions up to the employees in each project (only aided by the project needs and goals), helps to create more ownership and support of the caused change. The framework itself lessens hierarchy and bureaucracy by automating processes and allowing for spread out responsibilities. The increased feedback loops helps to tighten communication while removing mundane tasks helps leaders to focus on translating ideas and motivating fellow colleagues.
Increased sensing ability and accuracy helps give competitive advantage by allowing more timely reaction to opportunities and threats.	Many organisations focus on the immediate market, and often miss early detection of threats and opportunities in indirect markets. This is heightened by the increase of available information which is constantly changing - it is easy to become overwhelmed and lost amongst information. There is also an increase in fake news and therefore the accuracy of detection decreases.	Increase sensing accuracy and breadth.	The first AI interface helps detect trends, and automates the process of determining possible impact. This is increased by the geographic suggestion which helps to assess how it will directly affect the organisations' supply chain and customers. It also reduces redundancy by allowing employees to focus on the most relevant information rather than spending a lot of time manually searching for possible trends.

Figure 36: Orchestrator Relevancy to Initial Goals

Main research from:

- literature
- expert articles
- primary research

Chapter 07

Validation

Validation Feedback

In order to validate the value and clarity of the Orchestrator concept, an explanation video was created which was followed by a survey. This aimed to also gain valuable feedback in order to improve the concept. An explanation video was chosen as the method due to the complexity of the topic and respondents needing the time to process the information on their own. Furthermore, this was made digital in order to gain a further reach of respondents from different geographic regions. It also aimed to speed up the time taken to complete to research in order that more responses could be collected as people would be more willing to spend time on it, should it not interfere too much with their personal and working schedule. A copy of the validation video is available with the following link:

https://www.youtube.com/watch?v=joROrRJS8Rc&feature=youtu.be

The survey is seen the Appendix. The short questions are rated on a 5 point Likert scale.

Positive Feedback

The novelty (newness and level of innovation) of the concept was rated very highly with an average of 5. The desirability of such a concept was also rated highly with an average of 5. Participants gave feedback which helped validate the importance of increased ownership and distribution of responsibility. Furthermore, this was aided by the support in less hierarchical structures and the provision of a better overview of the organisation. Further value was identified through the ***" ...use of machine learning to create viable output and optimize the human resource capacity and empowering employees to take ownership and accountability".*** The feedback loops and use of AI to process information was said to aid in ***"... interesting insights will not be just forgotten" and "...new interesting opportunities can now be leveraged.".*** Although the feasibility of the concept was thought to be of question to respondents due to the immense amount of change needed, respondents in a position of leadership or strategy noted it as being a feasible and desirable contribution. The feasibility of the concept had an average rating of 4,3. The concept was received favourably with areas of possible struggle being identified in how organisations adopt the changes and the ***"disciplined execution"***. In order to remedy this perceived downfall, the service options of Orchestrator, which could be given by a consultancy, aim to help aid in the adoption and execution with guidance and continual support from consultants.

Improvement Points

Negative feedback from the validation video included a lack of understanding in how one may properly interact with the framework from a job specific role (such as how analysts would actually receive trend information). This mainly referred to participants not understanding that importance is placed on an overall system redesign. However, it was seen that respondents in positions of strategy and leadership showed complete understanding of the overview, whilst discipline specific respondents wanted more detail into how they would interact with the system. Although originally not the aim of the project, a prototype of a possible interface aims to help rectify this point. Informal validation with the inclusion of this prototype showed an increase in understanding and allowed the framework to be interpreted as more simple than originally perceived. The concept was also mentioned to need a strong element of trust. If this is achieved, respondents expressed that they believed the concept would work very well, saying ***"It will work well if everyone trusts the process"***. This is a very important point that organisations who adopt any changes need to focus on.

Overall, the concept was received favourably with changes only needing to be made in clarity of understanding. This is seen in interface prototypes presented in Chapter 6.

Chapter 08

Discussion & Conclusion

Research Contributions & Limitations

Contributions to Practice

One of the main strengths within strategic design is to combine insights and approaches from multiple disciplines in order to achieve an optimal outcome. It is therefore more about knowing the foundations of a lot of areas, without specifically being an expert in one. Using this mindset, the contribution to practice of the research can be seen in combining insights across fields to create a systems redesign. While most experts focus on one specific area, the overview of how everything connects is often lost. Therefore, the handover time and confusion increases. The contribution can therefore be seen to aid in the overview understanding and equipping experts in the relevant fields to create outcomes which will more easily fit with other domains. Furthermore, the framework is an actionable tool for organisations to begin making relevant changes. It therefore bridges the gap between research and practice due to stepping from a theoretical level such as existing literature unpacking the characteristics and challenges of dynamic capabilities, and translating it into relevant procedures which may add value. It is noted that organisations need to use business analytics and relevant upcoming technology to leverage potential value, particularly in a world of constantly changing information (Conboy et al,. 2019). Therefore, by implementing AI strategies within the framework this contributes to this identified need. The contribution to practice is further strengthened by the provision of translating the concept into a business model. Such a business model, as seen in literature and from validation research could allow a consultancy to bring in a lot of added value and revenue for themselves and clients alike.

Contributions to Research

Much of the available, existing research focusses on concepts and theories. The research often lacks options into how technology can help organisations leverage value in VUCA environments. The fields of organisational management, technology and design often remain very segregated. The research conducted in this thesis aids in creating a bridge between these areas. Furthermore, existing research is seen to lack giving actionable understanding - research and practice therefore have too distant a relationship. Through bridging theories into actionable outcomes through the Orchestrator concept, the research can therefore be seen to aid in understanding of theory in application. While it is already regarded as very important to study dynamic capabilities within organisations operating in VUCA environments, the growing complexity of the world helps argue how important it is to constantly revisit the understanding and implementation of dynamic capabilities. Revisiting the theories of dynamic capabilities from multiple authors and translating it into outcomes which may utilise modern technology can help open new fields of research. In the future, this may better aid organisational design and management through technology-aided designs. In this, experts can use an overview of this research as a foundation of understanding contributing factors to their own field. Many studies focus on identifying factors and the behavioural/ organisational outcomes of dynamic capabilities.

Limitations

Literature research: There were lots of research sources available on the topics surrounding dynamic stability. However, there were very limited connections between the fields. While this was a limitation in terms of validation, it was used as an opportunity to create new value in the field.

Primary research: Due to Covid-19 being a developing topic of discussion, the findings from the surveys and experts cannot be fully validated. Furthermore, this meant that face-to-face interviews and observations within the working environment (which could have helped in the depth of findings in some areas) could not be conducted. Due to people spending a lot of time working from home on their computers also meant that sending a digital survey was not as ideal due to information overload. However, rich insights were gathered regardless.

Concept: Due to not being an expert in AI structures and algorithms meant that research in this area had to be done. The concept therefore stems from an understanding of the possibilities and limitations involved in each AI interface rather than an expert's opinion. Furthermore, within informal validation of the AI interfaces with data scientists, it was seen that going into too much detail within these interfaces was seen to become overwhelming and confusing. This was therefore used as recommendations for detailed designs to occur within each process.

Validation: Optimally, a workshop would have been used with many members throughout an organisation in order to validate the desirability of the concept throughout every layer. This could have made use of a more natural question and

Recommendations and Conclusion

Recommendations

The most prominent recommendation is to have a multidisciplinary team to relook at the concept provided. A more detailed execution plan can therefore be developed. For example, data scientists could design the different AI interfaces respectively and interaction designers can better design and tailor the system for how each organisation would best use it.

Furthermore, it is recommended that the research be commented upon after the effects changes caused by Covid-19 have settled - in order to see the accuracy of advice given by experts in the field.

Research into the bridge between industry 4.0 technology and organisational management could be further developed.

Further research into how better cross cultural understanding and work procedures may also strengthen such a research and aid in such concepts being adopted with less friction.

Further recommendations would be to create a concept which makes use of calm technology principals to provide the identified information to members of an organisation in both a physical and digital environment. This may aid in creating better interaction and engagement with the information.

Conclusion

Dynamic Capabilities help large organisations to survive and thrive amid VUCA environments. These capabilities aid in timely reaction to incoming threats and opportunities and allow organisations to better react to opportunities outside of the direct market. Although this increased reaction time brings a more flexible organisation, stability from an individual perspective is necessary to combat employee turnover and a lack of productivity and motivation. Creating this stability is mutually beneficial with the needs of creating dynamic capabilities. Clear and coherent communication, flatter hierarchy and decision structures, timely feedback and dispersed ownership helps in creating stability amongst change. The need to achieve dynamic capabilities and provide stability to employees is magnified during immense disruptions such as Covid-19. However, having such strategies which successfully utilises business analytics and agile organisational structures helps organisations to overcome these disruptions and in turn create new value streams.This dynamic stability is created through the concept of Orchestrator - a capability orchestrating framework which can be applied directly by organisations. Consultancy companies are able to adopt the proposed business services created from the conceptual framework. Dynamic stability and the inclusion of technology and data analytics is a field that is yet to be explored fully, yet holds immense potential for business value creation and progression.

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Appendix

Appendix 1: Covid-19 Survey

Industry reaction to Covid-19

This research is aimed at understanding how large organisations are coping and changing with the curren situation concerning Covid-19. It aims to determine core competencies which may help large organisation in the future to be better prepared and adaptable in such sudden scenarios. Information obtained by this study is part of a master thesis by Kate Smith conducted at the TU Delft.

Your participation in this study is entirely voluntary and you can withdraw at any time. You are free to omit any question. It will take approximately 8 minutes to complete. We therefore thank you for your time in helping contribute your expertise, thoughts and insights in this study.

Importantly, all your answers will be handled anonymously and confidentially. Please make sure to indicate your preferences at the beginning of the survey.

Researcher: k.l.smith@student.tudelft.nl
* Required

1. Please indicate your confidentiality preferences *

- [ ] I want my name to be anonymised
- [ ] I want my job title to be anonymised
- [ ] I want my organisation to be anonymised

2. What is your name? *

3. What is your job title? *

4. Which organisation are you a part of? *

5. Which country do you work in? *

6. How would you rate the amount of change in your daily work tasks due to Covid-19?

	1	2	3	4	5	6	7	
little change	◯	◯	◯	◯	◯	◯	◯	lots of change

7. How would you rate how adaptable your organisation has been in adapting to measures of Covid-19? Was it seamless in adopting a strategy that would allow the organisation to rema successful?

	1	2	3	4	5	6	7	
not adaptable	◯	◯	◯	◯	◯	◯	◯	very adaptable

8. How would you describe the decision making in your own team/department?

- ◯ Each team member has an option to contribute, and a democratic stance is taken
- ◯ Each team member has an option to contribute, but the decisions are made by managers/leader
- ◯ Team members are not able to contribute and decisions are made by a group of managers/leaders
- ◯ Team members are not given an option to contribute and decisions are made by a manager/leader
- ◯ Decisions are made at an executive level and given to managers to execute in their teams

9. To what extent would you disagree or agree with the statement: my organisation is very hierarchal - decisions pass through multiple layers in the organisation.

	1	2	3	4	5	6	7	
fully disagree	◯	◯	◯	◯	◯	◯	◯	fully agree

10. How would you describe the organisational alignment?

- ◯ I understand and believe in the organisations' purpose, and know how I can help contribute to this
- ◯ I understand and believe in the organisations' purpose, but sometimes do not understand my specific part
- ◯ I understand, but do not believe in the purpose of the organisation - it is just a job to me
- ◯ I do not understand the purpose of the company, I just complete tasks required of me

11. Has Covid-19 caused you to feel insecure about your job security?

- ◯ Yes, I am not sure if I will still have this job in a few months
- ◯ Yes, I am not sure of how my job responsibilities will change
- ◯ No, there is change, but I am secure knowing that I will still work here
- ◯ No, I remain secure in my job

12. Do you believe that your organisation is generally successful at sensing/predicting change in the market? How accurate would you rate this ability to sense/predict these changes?

	1	2	3	4	5	6	7	
not accurate	◯	◯	◯	◯	◯	◯	◯	very accurate

13. What are some methods/tools or approaches used to help sense/predict these changes?

14. In general operations, how would you rate how adequately you are informed of change procedures in the organisation?

	1	2	3	4	5	6	7	
poorly informed	◯	◯	◯	◯	◯	◯	◯	well informed

15. How would you describe the organisational culture to foster organisational change?

- ◯ The organisation reacts to factors when it is absolutely necessary (urgent) to change
- ◯ The organisation responds immediately to changing factors, attempts to understand the root cause and plans necessary changes to be later implemented
- ◯ The organisation actively watches for changing factors/trends and plans relevant changes in strategy
- ◯ The organisation actively watches for changing factors/trends and is able to rapidly change

16. How often does your organisation work in multidisciplinary teams?

- ◯ we never work in multidisciplinary teams
- ◯ we work in multidisciplinary teams about 1 in every 4 projects
- ◯ we work in multidisciplinary teams about 2 in every 4 projects
- ◯ we work in multidisciplinary teams about 3 in every 4 projects
- ◯ we always work in multidisciplinary teams

17. If you do work in multidisciplinary teams, does the configuration of the teams change or remain the same?

- ◯ not applicable (we do not work in multidisciplinary teams)
- ◯ we always work in the same configuration of teams
- ◯ we change configurations of the team around 50% of the time
- ◯ the configuration of the team always changes based on the type of project

18. Has working with people in other disciplines changed during Covid-19? If so, how often?

- ◯ remained the same
- ◯ we work less in multidisciplinary teams compared to before Covid-19
- ◯ we work more in multidisciplinary teams compared to before Covid-19

19. In hindsight, how would you think that the organisation could have been better prepared f the pandemic?

_____

_____

_____

_____

_____

20. If you were not limited by any restrictions (financial, assets or other), how would you pred a change in organisational strategy after the pandemic? How would internal operations, behaviour, and services be altered?

_____

_____

_____

_____

_____

21. Do you have any comments to add that you may think is helpful?

Appendix 2: Validation Survey

Orchestrator Feedback Form

This form is used as validation and feedback for a concept created by Kate Smith for a MSc research project at TU Delft. It is developed after prior research stages being conducted.

Your participation in this study is entirely voluntary and you can withdraw at any time. Please make sure tc have watched the YouTube video (https://www.youtube.com/watch?v=joROrRJS8Rc&feature=youtu.be) before beginning the survey. The video is 4:26 minutes with a background text provided in the video description. The survey itself will take approximately 3 minutes to complete. We therefore thank you for your time in helping contribute to this study.

Importantly, all your answers will be handled anonymously and confidentially. Please make sure to indicate your preferences at the beginning of the survey. If you have any further questions or want to receive the fu research report, please email the researcher.

Researcher: k.l.smith@student.tudelft.nl

* Required

1. I give consent to use:

Check all that apply.

- [ ] Helpful quotes
- [ ] Opinions given
- [ ] Name
- [ ] Organisation
- [ ] Job title

2. What is your name?

3. Which organisation do you work for?

4. What is your job title?

5. How new/innovative do you perceive the framework to be? Have you come across anythin similar?

Mark only one oval.

	1	2	3	4	5	
Not new/innovative	◯	◯	◯	◯	◯	Very new/innovative

6. How desirable is such a concept? Would you want to adopt such a framework in your organisation? *

Mark only one oval.

	1	2	3	4	5	
not desirable	◯	◯	◯	◯	◯	very desirable

7. How feasible do you think such a framework would be to implement? *

Mark only one oval.

	1	2	3	4	5	
not at all feasible	◯	◯	◯	◯	◯	very feasible

8. How valuable do you perceive the framework to be? *

Mark only one oval.

	1	2	3	4	5	
not valuable	◯	◯	◯	◯	◯	very valuable

9. How clear is the framework? *

Mark only one oval.

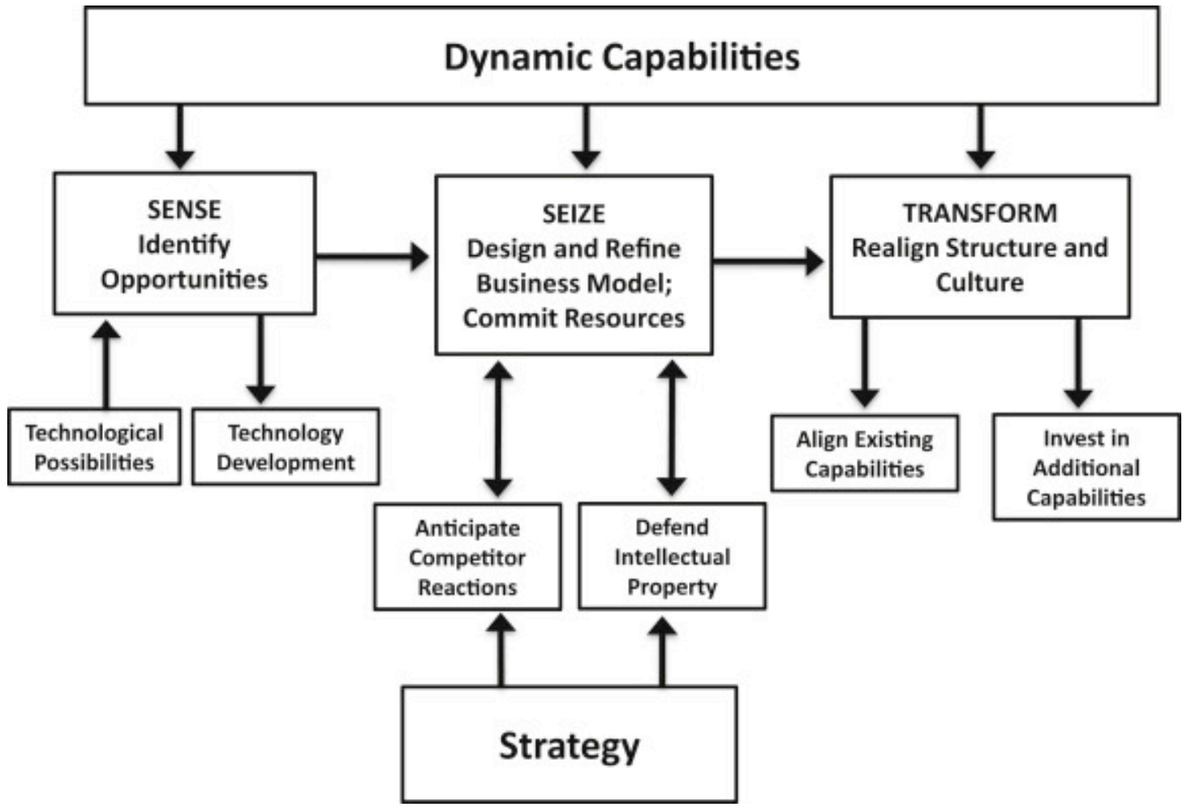
	1	2	3	4	5	
Not at all clear	◯	◯	◯	◯	◯	Very clear

10. Which aspects do you find particularly valuable or interesting? *

11. Which aspects would you change? *

12. Do you have any other comments to add?

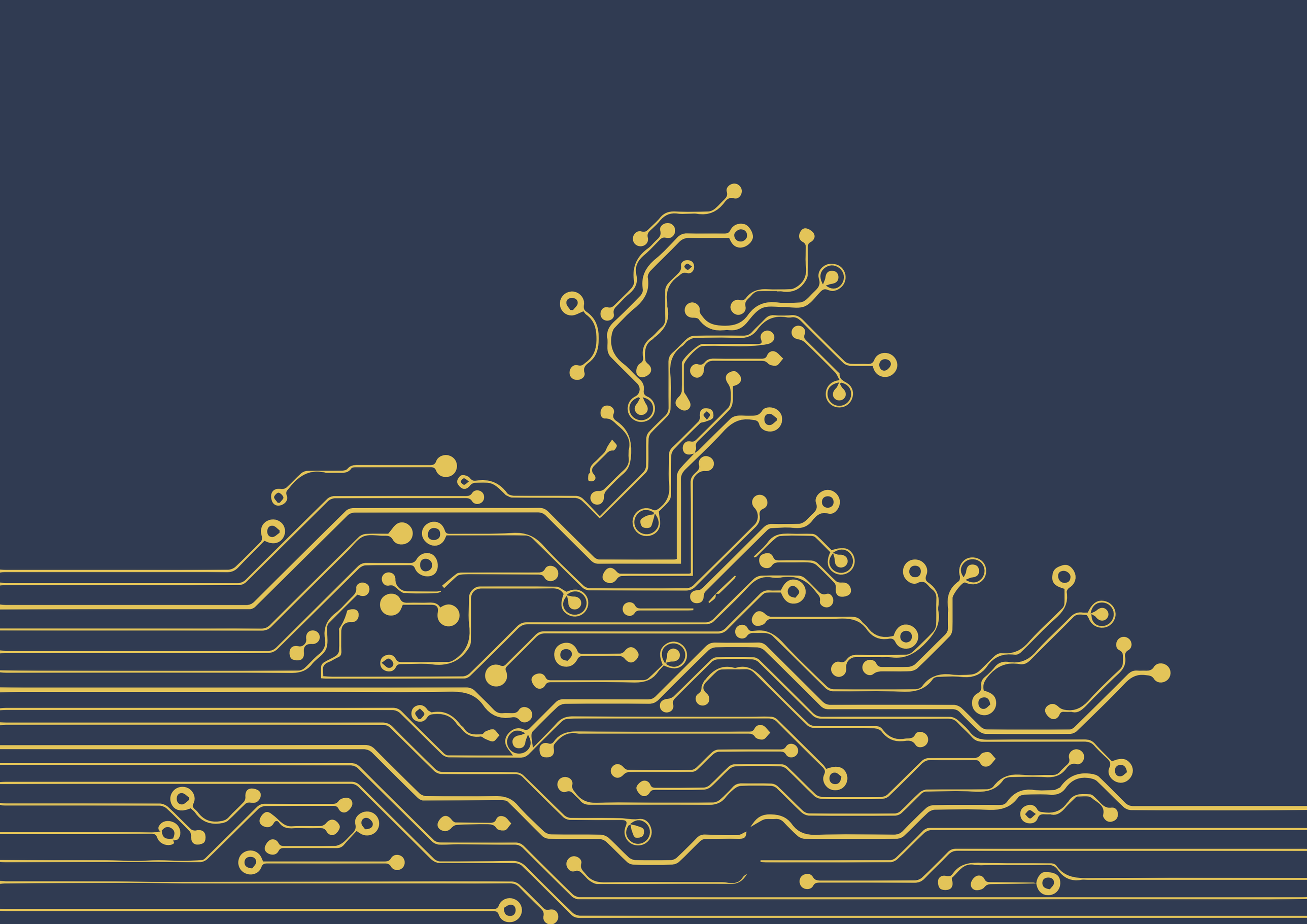
Appendix 3: Teece's Dynamic Capability Table



Appendix 4: Valid Responses Coded

*Due to size, the original responses and output tables are only available on request. Private information, or information marked to remain confidential will be removed.

Change_Work	Adaptability	Decision_Making	Hierarchy	Alignment	Job_Security	Sensing_Accuracy	Communication_Change	Culture_Change	Team_Frequency	Team_Configuration	Multidicipline_Change
5	7	5	7	4	3	4	5	2	5	2	1
1	5	2	6	4	3	6	7	3	2	3	2
1	4	5	3	4	1	4	1	1	1	0	3
4	7	1	3	4	2	5	6	3	5	3	2
3	7	2	5	4	3	6	4	3	5	3	2
5	6	3	2	4	4	5	5	3	2	3	2
6	2	2	6	4	1	6	5	1	5	3	3
5	2	5	6	4	1	3	6	3	4	3	3
5	6	2	5	4	3	5	7	3	3	3	3
1	7	2	7	4	4	7	7	4	4	3	1
7	3	5	7	2	1	2	4	1	5	2	1
2	7	2	3	4	4	5	6	3	4	2	2
5	5	2	6	3	3	3	4	3	1	0	2
7	5	2	6	4	3	5	6	1	5	1	2
5	5	2	6	4	1	4	5	2	4	1	2
7	1	5	4	4	1	3	7	4	5	3	1
5	5	2	2	3	3	6	6	3	4	3	3
5	7	2	6	4	4	6	6	3	3	3	2
4	5	2	4	4	3	6	6	3	5	3	2
6	6	2	5	4	3	5	6	4	5	3	3
6	6	5	5	3	1	6	6	3	3	2	2
6	6	2	6	4	3	5	5	4	4	3	3
2	6	1	1	4	4	6	7	3	5	3	2
7	6	5	7	3	2	3	6	3	4	3	1
4	5	2	4	4	3	6	6	3	5	3	2
6	5	1	5	3	3	4	5	3	3	2	1
7	6	5	7	3	2	3	6	3	4	3	1
6	5	1	5	3	3	4	5	3	3	2	1
7	5	2	5	4	3	6	7	3	4	3	2
7	6	5	7	3	2	3	6	3	4	3	1
7	7	2	5	4	3	4	7	2	5	3	2
5	5	2	5	4	3	3	6	2	5	3	2
6	2	2	5	4	3	4	4	2	3	2	3
5	7	2	7	3	4	4	5	2	3	2	2
5	1	5	6	4	1	6	6	1	5	3	2
3	4	5	5	4	4	6	6	3	5	2	3
4	4	2	4	2	3	4	4	2	2	1	2
3	6	2	5	4	1	5	5	2	5	2	2
1	7	1	6	3	4	4	6	3	2	1	2
5	5	2	3	4	3	4	6	2	5	3	2
2	6	2	6	4	3	5	3	2	3	2	1
2	7	2	5	3	3	5	6	3	5	3	2
4	5	5	7	4	3	4	6	3	4	1	2
5	4	2	3	3	3	6	6	4	3	3	1
3	4	2	7	3	1	4	3	2	3	1	3
6	6	2	6	4	1	4	7	2	1	0	3
7	5	2	2	3	1	5	6	3	4	2	3
5	3	1	2	4	1	1	7	3	3	3	2
1	1	1	1	4	1	1	1	3	1	2	2
7	2	5	7	4	1	5	5	1	1	0	2
6	2	2	6	2	2	2	2	2	3	3	2
6	4	2	5	4	1	3	4	1	5	3	2
5	5	3	6	2	3	5	7	2	3	3	2
7	5	2	3	4	1	4	5	1	2	3	2



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