What effect does web-based information sources have on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms?

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Preface

The master's thesis is the last part of our master’s degree in business administration, specializing in economic management, at the department of economics and finance at University of Agder (UIA).

Our prior work with quantitative studies in the bachelor thesis and other courses served as a key source of inspiration for composing this thesis. Additionally, we found the thesis's theme to be intriguing because Markovich, Raban & Efrat (2022) had previously conducted research on competitive information sources and dynamic capabilities. We realized that we wanted to contrast service and manufacturing firms in relation to this issue to identify disparities and advance previous studies on the subject.

The process has been highly educational, especially because we were both about to begin with the largest assignment we had ever completed, and that we needed to benefit from a productive cooperation make it work. Although it has challenged our abilities, everything has worked out precisely as planned, and we can both use this experience to our advantage in both our work lives as well as our everyday lives.

Finally, we want to express our gratitude to Kalanit Efrat, our esteemed supervisor, for sharing her knowledge with us. Her advice has been beneficial for both our motivation and the outcome of the thesis.

Abstract

This article examines the effect web-based information sources have on dynamic capabilities, and furthermore performance, in service and manufacturing firms. To our knowledge, there are no studies that address a comparison between service and manufacturing firms inside the aforementioned research area. Previous research points to several differences in the aforementioned firm types, which underlines the importance of a comparison between service and manufacturing firms regarding this topic.

The research question of the thesis is therefore:

"What effect does web-based information sources have on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms".

We have made a research model that makes the foundation of our approach to this study. The study is a quantitative study, where we utilize a questionnaire to approach managers and board members of service and manufacturing firms. Additionally, it is a correlation study, which is based on a deducting strategy, with testing of hypotheses. We used the data analysis program AMOS 23, using structural equation modelling (SEM) to analyze the gathered data material from the questionnaire.

The result of the study shows that the effect web-based information sources have on the dynamic capabilities sensing, seizing, and reconfiguring, and furthermore performance, is just as strong, and in most cases more so, in manufacturing firms in comparison to service firms.

Keywords: *Dynamic Capabilities, Competitive Intelligence, Web-based Information Sources, Performance, Service Firms, Manufacturing Firms.*

Sammendrag

Denne avhandlingen undersøker effekten nettbaserte informasjonskilder har på dynamiske evner, og videre på prestasjon, i tjenestebedrifter sammenlignet med produksjonsbedrifter. Til vår kunnskap, finnes det på nåværende tidspunkt ingen studier som tar for seg en sammenligning mellom tjeneste- og produksjonsbedrifter innenfor det nevnte forskningsområdet. Tidligere forskning peker på flere forskjeller i de nevnte firmatypene, noe som understreker viktigheten av en sammenligning mellom tjeneste- og produksjonsbedrifter angående dette temaet.

Avhandlingens forskningsspørsmål er derfor:

"Hvilken effekt har nettbaserte informasjonskilder på dynamiske evner, og videre på prestasjon, i tjenestebedrifter sammenlignet med produksjonsbedrifter?"

Vi har laget en forskningsmodell som danner grunnlaget for vår tilnærming til denne studien. Studien er en kvantitativ studie, der vi bruker et spørreskjema for å henvende oss til ledere og styremedlemmer i tjeneste- og produksjonsbedrifter. I tillegg er det et korrelasjonsstudie, som er basert på en deduktiv tilnærming, med testing av hypoteser. Vi brukte dataanalyseprogrammet AMOS 23, og brukte strukturell ligningsmodellering (SEM) for å analysere det innsamlede datamaterialet fra spørreskjemaet.

Resultatet av studien viser at effekten nettbaserte informasjonskilder har på de dynamiske evnene å sanse, å gripe verdien av og å rekonfigurere, og videre på prestasjon, er like sterk, og i de fleste tilfeller sterkere, i produksjonsbedrifter sammenlignet med tjenestebedrifter.

Nøkkelord: *Dynamiske Evner, Konkurransedyktig Intelligens, Nettbaserte Informasjonskilder, Ytelse, Tjenestebedrifter, Produksjonsbedrifter.*

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1. Introduction

In today's complex and constantly changing world, firms are dependent on abilities to discover, process and react to the opportunities and challenges that arise. Dynamic capabilities are seen by many as abilities that can help firms achieve such abilities (Eisenhardt & Martin, 2000; Teece, 2007). Previous research has not been focusing on specific firm types and have not considered the different sectors and the requirements different firms face in their environment. This is despite the growing complexity of the world and the need to have more accurate and relevant information for decision-making and applies both to the era of the information society (Dabrowski, 2018) and information overload (Saxena & Lamest, 2018).

Although dynamic capabilities have received a lot of attention in recent years, research is limited on how competitive information sources foster the dynamic capabilities of a firm (Markovich, Raban & Efrat, 2022). This study expands on the mentioned study by Markovich et al. (2022) on competitive information sources and dynamic capabilities. They suggested that further research could look at comparing service firms and manufacturing firms, to derive a more comprehensive resolution of the effects that can be obtained. To our knowledge, there is no current study that has looked at what effect web-based competitive information sources have on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms. This is a research gap we want to fill. We see it as important to compare service and manufacturing firms regarding the topic of this study, because of the different characteristics and complexity of the firms. We therefore believe that it is necessary and interesting to investigate the effect web-based competitive information has on dynamic capabilities, and furthermore performance, in these distinct types of firms.

The purpose of our thesis is to uncover connections between the different concepts in the research model, and furthermore look at how the strength of the relationships differ between these concepts in the two types of firms. This is done by examining the concepts through drawing up hypotheses based on previous research. Our unit of analysis in this thesis are service and manufacturing firms. The goal is to examine and understand what effect web-

based information sources have on the dynamic capabilities sensing, seizing, reconfiguring, and furthermore a firm's performance, in service firms compared to manufacturing firms.

Thereby our research question is:

"What effect does web-based information sources have on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms."

The data for this thesis was collected through a cross-sectional study, by using a questionnaire, and was sent out to managers and board members of both service and manufacturing firms. We analyzed the data using structural equation modelling (SEM), using the data analysis program AMOS 23. By doing so, we can test and evaluate multivariate causal relationships. The result of the study shows that the effect web-based information sources have on the dynamic capabilities sensing, seizing, and reconfiguring, and furthermore performance, is just as strong, and in most cases more so, in manufacturing firms in comparison to service firms. It is necessary to consider the study's time constraint as a limitation for this study. We could have obtained additional input and data by extending the data collection time and contacting more managers and board members.

The remainder of this thesis is organized as follows: In chapter 2, the study's research model and hypotheses are provided. In chapter 3, we will discuss the methodological approach of the thesis, before turning to chapter 4 and concept validation. Testing of hypotheses occurs in chapter 5, followed by discussion in chapter 6, and a conclusion based on the analysis and related theory in chapter 7. References are placed in chapter 8, while appendices are found in chapter 9.

2. Theoretical background and hypotheses

In this chapter, the theoretical background for the thesis, the research model, and related hypotheses will be presented. The connection between the concepts in the model will be derived and argued for. Through such explanations, the rationale behind the research model can be provided.

2.1 Dynamic capabilities

Research on dynamic capabilities has gained significant traction in strategic management. Most of the literature dealing with dynamic capabilities refers to it as a bundle, but recent research focuses more on envisioning each individual capability on its own. Dynamic capabilities involve adjusting managers' resource base, acquiring, and shedding resources, integrating them together, and recombining them to generate new value-creating strategies (Eisenhardt & Martin, 2000, p. 1107). By this means, they create, evolve, and recombine other resources into new sources of competitive advantage in an organization (Eisenhardt & Martin, 2000, p. 1107). Dynamic capabilities play a particularly key role in maximizing long-term performance and achieving a sustainable competitive advantage (Markovich et al., 2022). Based on the abovementioned, dynamic capabilities can be defined as:

"[...] the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic capabilities thus reflect an organization's ability to achieve new and innovative forms of competitive advantage given paths dependencies and market positions". (Teece, Pisano & Shuen, 1997, p. 516)

Most of the current research's basis on dynamic capabilities can be traced back to Teece (2007). He divided dynamic capabilities into three comprehensive groups. These groups were sensing opportunities and threats, seizing these opportunities, and the ability to reconfigure organizational assets or resources of the organization to stay competitive, often through the application of innovation. Firms often sense opportunities, but then fail to capitalize on them (seize), due to lack of commitment, aversion to risk, or financial concerns (Teece, 2007). To overcome such failings, firms must enhance rules and routines, strengthen their leadership,

and enhance strategies to be able to understand, capture and evaluate potential business opportunities (Teece, 2007). Getting external information may help to lessen the possibility of bias in investment decisions, which is a crucial component of seizing actions.

Additionally, competitive information contributes to building dynamic capabilities through four knowledge processes, which serve as micro foundations of those capabilities: (1) Knowledge from external sources builds up and is renewed through experimental internal learning (Markovich et al., 2022). Particularly for small firms, this outside information is seen to be difficult to acquire (Eriksson, 2014). (2) Knowledge integration takes place when knowledge amassed from internal and external sources is combined. Combining and consolidating internal and external knowledge makes use of the dynamic capabilities of the firm (Eriksson, 2014). (3) Knowledge use is essential since underutilized data and information are either useless or, at most, connected with latent worth (Markovich, Efrat, Raban & Souchon, 2019). Yet, this topic has received little attention in the literature. Codification and knowledge sharing are examples of typical usage processes. (4) Knowledge reconfiguration is the creation of novel combinations of pre-existing knowledge or the inventive use of pre-existing knowledge.

2.2 Competitive intelligence and web-based information sources

Competitive intelligence is a broad term that refers to a process where an organization acquires and produces external information from its competitive environments (de Almeida, Lesca & Canton, 2016). Managers can use this information as a tool in decision-making situations to achieve a competitive advantage. The use of competitive intelligence goes back several decades, but Ranjan & Foropon (2021) point out that the intellectual origins belong to Michael Porter because of his work in 1980 where he used competitive intelligence in analyzing. In the last twenty years, the concept has grown rapidly, and there are several definitions available. Calof and Wright (2008, p. 717) define competitive intelligence as follows:

"Competitive intelligence is regarded as a system of environmental scanning which integrates the knowledge of everyone in the company."

Furthermore, it is important to distinguish between the concepts of competitive intelligence and espionage. While espionage focuses on illegal information gathering methods, competitive intelligence is only about gathering public information that is available for everybody (Chen, Chau & Zeng, 2002). Competitive intelligence is processed information, which means that it is analyzed and interpreted, so that it can be useful in decision-making situations to gain an advantage over competitors (du Toit, 2003). An organization's competitors can be defined as: *"[...] organizations that can have adverse effects on sales through their own success in winning business"* (West, 2001, p. 4). Competitive intelligence provides information about competitors strengths and weaknesses, which can influence the adverse effect that competitors can have, by providing knowledge about the competitors strengths and weaknesses (Nasri, 2011). It can therefore give organizations advantages over their competitors. Some of the leading firms in the world have their own units for the concept, who are responsible for collecting information for strategic decisions (Bartes, 2013, p. 283). Capital, land, and labor are examples of traditional factors that influenced an organization's competitiveness in the past (Sher & Lee, 2004). From the last decade we can see a change in this, due to the enormous development of the web, one sees today that knowledge has become a solid source for competitive advantage (Markovich et al., 2019).

The contribution and use of competitive intelligence in organizations are determined by the awareness of the decision makers in the organizations (Markovich et al., 2019). A firm's structure can affect the effectiveness of a competitive intelligence practice if the structure is decentralized, according to (Garcia-Alsina & Ortoll Espinet, 2012). This is because of the possibilities for information diffusion in a decentralized structure that can arise between the various units in a firm.

The competitive intelligence process can differ from different firms and environments. A typical process consists of: *"[...] a series of business activities that involve identifying, gathering, developing, analyzing and disseminating information*" (Chen et al., 2002). The "intelligence cycle" is well known to be the process of competitive intelligence (Markovich et al., 2019). It consists of several phases (Nasri, 2011):

1. Planning
2. Collection
3. Analysis
4. Communication

In the first phase, you work with decision-makers to find out what information is necessary in relation to the knowledge that is already possessed today (Markovich et al., 2019). Phase two deals with identifying potential information sources and collecting competitive information (Nasri, 2011). Naturally, phase three is about processing the raw collected information into intelligence that is ready to be used. The data must be processed in order for it to be useful and actionable (Markovich et al., 2019). Once this is done, information must be presented to the decision-makers and top management, which is phase four. This can be done through, for example, presentations and reports (Nasri, 2011).

Competitive intelligence also includes the activity of environmental scan, which is the process where the organization is learning about the competitive environment through senses, interprets and acquiring knowledge (de Almeida et al., 2016). The purpose of environmental scan is to obtain external information that will help with decisions and planning for management in organizations. By looking externally for added information, organizations can also acquire knowledge about the organization's own strengths and weaknesses, as well as identify new problems (Albright, 2004, p. 40).

There are several sources that organizations can acquire competitive information from, defined as competitive information sources. In the past, organizations usually looked to human-based information sources, especially salespeople, as the best sources for acquiring competitive information (Ahearne, Lam, Hayati & Kraus, 2013, p. 37). However, technological advancement in recent years have changed this, and the web-based information source has become a method that is available and dynamic all over the world, which makes it an up -to-date method (Markovich et al., 2022). Web-based information sources are sources of information that are accessible over the internet, and they are becoming more and more popular due to their accessibility, usability, and relevancy (Markovich et al., 2019). Digital journalism, search engines, social networks, forums, YouTube, and competitors' websites are

all examples of newly developed channels for competitive information (Chen et al., 2002). These newly developed channels make information searching easier, cheaper, and quicker (Markovich et al., 2019).

Chen et al. (2002) points out some relevant challenges about the competitive information opportunities coming from the internet. As pointed out earlier, the amount of information available on the internet is constantly increasing and there is endless information available today. As a result, looking through the information is time- and effort consuming. To clarify the number of internet users, we refer to Data Reportals reports which state that at the start of 2023 there are 5,16 billion users on the internet (Data Reportal, 2023). The number of users on the internet also means an increased availability of information, which again underlines the points made by Chen et al. (2002) that a lot of time and effort is required to search and analyze the information that is available.

In this part of the theory, we have looked at the big picture and included more general theory to give a broader understanding of the concept competitive intelligence. Continuing the thesis, we will mainly focus on the less broad sub-concept of web-based information sources.

2.3 Service and manufacturing firms

There are some notable differences between service firms and manufacturing firms. Service firms are more complex, since evaluating their performance from the end user is difficult (Dale, Barber, Williams & Wiele, 1997). These firms must study their customers and their behaviors before they can create new products or improve existing products. However, in the service sector, client outcomes are constantly unexpected (Ordanini, Parasuraman & Rubera, 2014). Manufacturing firms have other requirements to deal with, including indeterminate changes in consumer requirements, technology, and competition (Nyachanchu, Chepkwony & Bonuke, 2017, p. 439).

Globally, firms are being impacted by the digitalization phenomena. Regarding digitalization, previous research shows that service firms were the first to take use of digital assets (Gandhi, Khanna & Ramaswamy, 2016). In later years, manufacturing firms have increasingly adopted

digital technology. These challenges affect the traditional business model of manufacturing firms and put pressure on the firms' ability to change (Kulkarni, Verma & Mukundan, 2019) The adoption, though, appears to be taking longer time among manufacturing firms (Buer, Strandhagen, Semini & Strandhagen, 2021).

Björkdahl (2020) emphasizes the importance of dealing with these modern issues, pointing out that:

"If manufacturing firms do not seize opportunities and do not transform themselves to embrace the growth opportunities offered by digitalisation, they are likely to be outcompeted by firms able to solve customer problems in creative ways".

Manufacturing firms use equipment and procedures that have already been created and may diverge from their specifications. Methods applied in service firms are more flexible in this way (Nyachanchu et al., 2017, p. 439). This may entail that service firms are more flexible and agile in reacting to their surroundings than manufacturing firms are. It can therefore seem likely that service firms have higher adaptive capability, since this is a firm's *"ability to identify and capitalize on emerging market opportunities"* (Wang & Ahmed, 2007). Teece et al. (1997) states that firms with prominent levels of adaptive capabilities exhibit dynamic capabilities better, which underlines the fact that service firms can be more flexible and agile than manufacturing firms.

According to Fernández, López-López, Jardón & Iglesias-Antelo (2022), there is a difference in the entrance to competition between service and manufacturing firms. Service firms focus more on where they will compete and focus on positioning according to their main competitors. While manufacturing firms focus on how to compete and thus have resources as a basis for competitive advantage as well as part of the strategy. Based on the previous research our hypotheses are formulated.

2.4 The research model

Figure 1 shows the developed research model. The research model indicates that web-based information sources have a direct effect on sensing, and an indirect effect on seizing, reconfiguring, and performance. In the research model, web-based information sources is the independent variable, while sensing, seizing, and reconfiguring are the intermediate variables, and performance is the dependent variable.

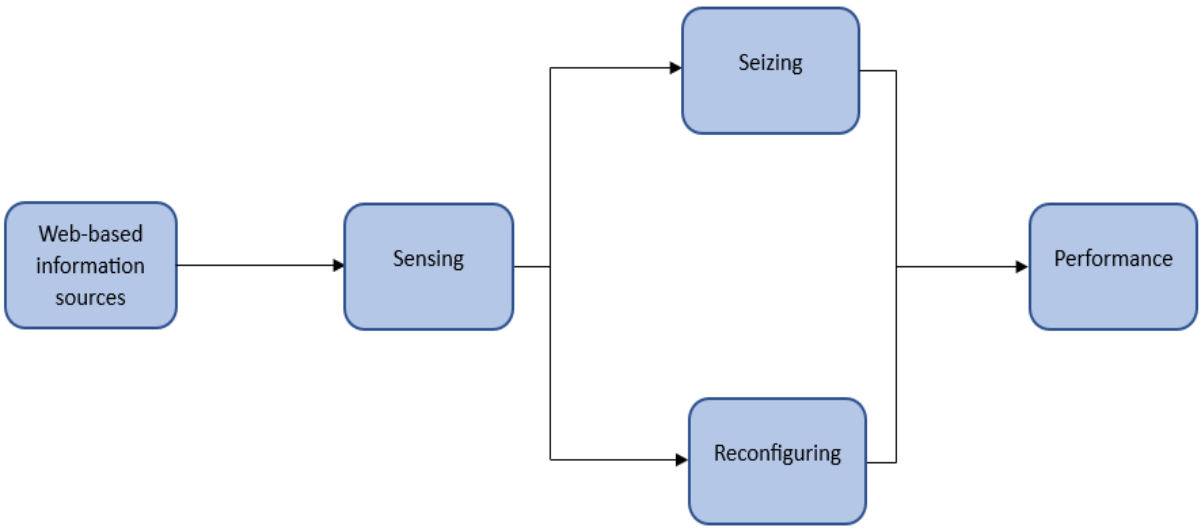

Figure 1 - The research model

2.5 Hypotheses

Sensing is the ability to scan environmental trends, especially in internet-based areas such as social media, to gather relevant marketing intelligence (Matarazzo, Penco, Profumo, & Quaglia, 2021). Digital sensing abilities need to be built by firms to better understand unanticipated developments in a changing business landscape and to take actions to manage change (Warner & Wäger, 2019). It was noted by Matarazzo et al. (2021) that digital platforms can be exploited and the value of doing so can be realized by examining social networks such as LinkedIn, Facebook, YouTube, blogs, micro-blogs (Twitter and Snapchat), and other mobile applications, denoted as web-based information sources. Web-based information is a source

for gathering competitive intelligence, characterized by being global, cheap, easy to use, and up to date (Markovich et al., 2022; Markovich et al., 2019). The study of Markovich et al. (2022) found that use of web-based information sources affected firms sensing abilities positively. Service firms are assumed to be more complex, adaptable, and flexible than manufacturing firms. Adaptability increases the likelihood that firms will possess dynamic capabilities (Teece et al., 1997). As a result, these firms appear more likely to adopt a sensing capability from collecting and utilizing web-based information sources. Additionally, service firms have the reputation of being more digitized than manufacturing firms, meaning use of web-based information sources are more usual in these firms. These arguments result in the first hypothesis:

Hypothesis 1: *Web-based information sources have a more significant impact on sensing in service firms compared to manufacturing firms.*

As Teece (2007) summarized the micro foundations of sensing, he identified three stages that are inherent components of the competitive intelligence cycle: gathering, filtering, and analyzing competitive information. Sensing requires extant knowledge about customers' needs and technological development. Once a new market or technological opportunity is sensed (through web-based or human sources), new products, processes, or services are required to seize it (Teece, 2007, p. 1326). Teece (2007) also emphasized the importance of using filtered information and its meanings to keep management informed. According to Kirzner (1979), firms with strong sensing capabilities are more likely to be highly aware. Firms that are highly aware are also likely to be adept at tying together developments, events, and trends (Baron, 2006). A seizing capacity allows a firm to capture the value of sensed business opportunities and to decide what specific changes are needed throughout the organization to seize the value of the new opportunities (Yeow, Soh & Hansen, 2018).

For a firm to define its commercialization, investment strategy and priorities, it should create a business model (Teece, 2007). Liu & Yang (2020), state that business models are built through information-gathering activities. In this circumstance, a business model is an asset that enables a firm to grasp and take advantage of sensed opportunities (Teece, 2007). These business models consider the behaviors of competitors and identify the market segments to

be targeted in defining the firm's path to the market. It requires knowledge of the firm's environment and market to accomplish these tasks, and to seize these sensed opportunities (Teece, 2007). Hence, we argue that enhanced sensing abilities are synergistic with enhanced seizing abilities. In addition, we believe sensing has a stronger positive impact on seizing in service firms, rather than manufacturing firms, since agility and adaptability can help grasp and exploit sensed opportunities.

Hypothesis 2: *Sensing has a more significant impact on seizing in service firms compared to manufacturing firms.*

While sensing refers to recognizing and assessing opportunities and threats, reconfiguring refers to managing change by reconfiguring core- and complementary resources and capabilities in a firm's day-to-day operations to augment them (Matysiak, Rugman, & Bausch, 2018, p. 230). This implies a continuous renewal and transformation of routines within an organization (Yeow et al., 2018). Reconfiguration capabilities are crucial when it comes to creating added resources, changing existing ones to fit new strategies, and filling present resource base gaps (Yeow et al., 2018).

Furthermore, reconfiguration calls for an understanding of current market trends and innovative technologies, according to Pavlou and El Sawy (2011). They argued that to uncover new product prospects, firms should sense their environment and gather market data. These opportunities should subsequently be pursued during the early exploratory stage of research activities. These knowledge processes involve gathering information from web-based information sources as the primary information source (Hribar, Podbregar, & Ivanua, 2014). Firms need to scan the environment so they can sense opportunities, and furthermore be able to develop reconfiguration skills (Markovich et al., 2022). Therefore, we argue that sensing enhances reconfiguring, but also that it enhances reconfiguring capabilities in a stronger way in service firms than in manufacturing firms, since service firms are more likely to be flexible and agile in managing changes inside the firm.

Hypothesis 3: *Sensing has a more significant impact on reconfiguring in service firms compared to manufacturing firms.*

Despite the abundance of empirical studies on dynamic capabilities and convergence regarding core theoretical tenets, the contribution of dynamic capabilities to competitive advantage and firm performance remains unclear (Pezeshkan, Fainshmidt, Nair, Frazier & Markowski, 2016, p. 2950). Some studies have found relationships between dynamic capabilities and performance, while others have not. Despite the belief that firms with greater dynamic capabilities tend to perform better on average, it is unclear whether firms achieve the expected results from dynamic capabilities (Wilden, Gudergan, Nielsen & Lings, 2013, p. 73).

On the other hand, according to Teece et al. (1997, p. 516), a firm's performance (price, quality, etc.) relative to its competitors, depends on its competences (which, over time, depends on its capabilities). According to Chmielewski & Paladino (2007), dynamic capabilities increase the productivity, swiftness, and efficiency of organizational reactions to environmental turbulence, which again increases performance. Dynamic capabilities have a positive impact on firm performance in a variety of ways, by matching the resource base with shifting environments (Teece et al., 1997), bringing about market change (Eisenhardt & Martin, 2000), supporting the selection of resources and the development of capabilities (Makadok, 2001), and enhancing inter-firm performance (Gudergan, Devinney, Richter & Ellis, 2012). New decision options also have the potential to increase firm performance, which sensing opportunities and reconfiguration can provide the organization (Eisenhardt & Martin, 2000). In addition, Wilden et al. (2013) stated the relationship between dynamic capabilities and organizational performance were synergistic. According to their analyses, organic organizational structures facilitate the impact of dynamic capabilities on organizational performance. Using empirical studies in the past 17 years, they assessed the relationship between dynamic capabilities and organizational performance and found that dynamic capabilities contributed to performance in a positive and significant way.

Based on the abovementioned theory, it seems evident that dynamic capabilities can improve firm performance, resulting in the last two hypotheses. Furthermore, we believe that service firms have a better chance to obtain the direct effects dynamic capabilities have on performance. We again substantiate this with the fact that they are more flexible, hence more

adaptive, which leads to better dynamic capabilities (Teece et al., 1997), which again enhance firm performance (Chmielewski & Paladino, 2007). The hypotheses below do not deal with direct effects; hence the hypotheses do not include a prediction regarding the type of firm.

Hypothesis 4: *Seizing mediates the effect sensing has on performance.*

Hypothesis 5: *Reconfiguring mediates the effect sensing has on performance.*

3. Methodology

In this part of the thesis, we will present our methodology. The method chapter aims to clarify the thesis's methodological approach, the process we followed to create the questionnaire, and establish a foundation required for tying the theory to the empirical evidence. First, we will discuss the type of research design we utilized and why. Furthermore, the collection strategy and selection of respondents will be covered, before we look at the development of the questionnaire. Finally, we will discuss ethical concerns regarding the research.

3.1 Research design

The research design determines how one addresses the problem statement. A research design is a strategy or method for gathering, measuring, and analyzing data that was developed to address your research questions (Sekaran & Bougie, 2016, p. 95). There are two approaches to research: inductive and deductive. Depending on the study challenge and purpose, one must decide when to use inductive or deductive approaches. Deductive reasoning is a scientific method that involves starting with a general theory before applying this theory to a particular case (Sekaran & Bougie, 2016, p. 26). In our thesis a deductive approach is suitable, as it allows us to explain causal relationships between concepts and variables coming from the theory.

Exploratory, descriptive, and causal research methods are the three primary categories of data collection techniques. Whatever design is preferred depends on the problem formulation, so it must be carefully considered. Exploratory research design is normally preferred when not much is known about a particular phenomenon, existing results are unclear or suffer from serious limitations, the topic is highly complex, or there is not enough theory available to guide the development of a theoretical framework (Sekaran & Bougie, 2016, p. 43). Our research method is exploratory since we want to gain a better understanding of a phenomenon. We are looking more closely at connections between the concepts in our research model and at differences in the correlation between these concepts for service firms compared to manufacturing firms.

Regarding data collection, one must decide between an analytical method, to comprehend a small number of controllable factors (qualitative) and a systematic approach, to understand a large number of variables in a complex environment (quantitative) (Salomon, 1991). We decided to use a quantitative approach in the form of a questionnaire. Questionnaires are frequently used to measure the responses of a wider group of individuals. Based on the responses, the questionnaire might identify similarities, differences, and causal relationships. Our method is closed since the data we gather is derived from predefined questions. The benefit of this is that the data becomes more organized and straightforward to examine, but it has the drawback that respondents are forced into predefined categories.

When we made the decision to adopt a quantitative design, we initially advised that it would be sensible to attempt to gather data over a period of time, i.e., a panel study. According to Jacobsen (2005, p. 62), this directly lays the groundwork for one to discuss the problem causally to a greater extent. Unfortunately, we later learned that this was not possible, as our work was limited by a short timeframe. As a result, we decided to conduct a cross-sectional study instead. When doing a cross-sectional study, you only measure the subject at one moment in time. This kind of research design, also known as a correlational design, examines reality at a specific time. With the help of a cross-sectional study, it is therefore possible to examine the experiences managers/board members have regarding the concepts we are studying at a specific time. It is not possible to directly prove connections with this method, but instead make them probable.

3.2 Collection strategy and selection of respondents

Throughout the following section, we will explain how we decided to go about collecting and processing the data material. Our electronic questionnaire was sent through email to firms we found using different websites. This was for instance websites of business associations in different regions of Norway. Typically, they listed the email addresses of managers or board members of each member firm on their website. This enabled us to contact the appropriate individuals within the firms.

The unequal distribution of replies from service and manufacturing firms was the largest issue we encountered when gathering data. We struggled to get enough responses from manufacturing firms, which made it impossible to go ahead with the analyses. Fortunately, we were able to contact a few additional managers of manufacturing firms. We could begin analyzing the data once enough managers/board members had finished the questionnaire and the distribution was equal. To avoid dropouts, measures can be taken such as ensuring anonymity and sending reminders (Jacobsen, 2015, p. 309). We guaranteed respondents' anonymity in the invitation email and in the introductory paragraph of the questionnaire, and we sent reminders about a week after the questionnaire was sent to the individuals and firms for the first time.

The collected cross-sectional data was collected through March 2023, with the aim of collecting information about the use of web-based information, and the influence this has on dynamic capabilities, and furthermore performance, in service and manufacturing firms. Our electronic questionnaire contained several questions, which were there to ensure that our respondents met the requirements we had set. We had requirements to what positions they held in the firm (being a manager or board member was a requirement) and whether the firm was a service or manufacturing firm. In total, we received 198 complete questionnaires, which equals a response rate of approximately 6%. Since four of the respondents were either low-level managers or had job titles that suggested they were not exposed to our research issues, they were dismissed as they did not match the criteria for the sample group. There were 194 managers/board members in the final sample.

3.3 Development of the questionnaire

This section will examine every step of the questionnaire development process. We will list the questions we used, the concepts they are meant to measure, and the sources from which they were taken.

We decided to build our electronic questionnaire using “Nettskjema.no”. On this site, there are no limitations on the quantity of responses or forms, the system is always available, and large surveys with numerous simultaneous deliveries are possible (UIO, 2021). Our electronic

questionnaire was developed as a systematic review of the concepts in the research model in the thesis. It contains 43 questions/statements. The questions must be intelligently designed to ensure that we measure what we intend to measure, and to avoid unintended outcomes. We therefore adapted scales from Markovich et al. (2022) and Zou, Taylor & Osland (1998). By using items that have been used in earlier research we guarantee their quality regarding well-formulated questions and statements, and that they measure what they are intended to measure. For all the questions we used to assess each concept, we used a Likert scale from 1 to 7.

For respondents to successfully complete a questionnaire, the order of the questions is crucial (Jacobsen, 2015, p. 274). One way of doing so is by saving the simple questions to the end. By placing the easy questions at the conclusion, you give the responders a feeling of accomplishment while avoiding exhausting their resources on easy questions at the beginning of the questionnaire. As a result, they are more eager to provide us with answers to the issues that interest us the most (Jacobsen, 2015, p. 274). This format is what we settled on, although we did put a few easy questions at the beginning of the questionnaire. This is done to prevent an abrupt start and can help in "warming up" the respondents prior to progressively sharpening the questions (Sekaran & Bougie, 2016, s. 115). It can also have a motivational effect because the respondent's initial impression of the survey is that it is simple to complete, which should prevent or significantly lower dropout rates (Sekaran & Bougie, 2016, p. 118).

Furthermore, when conducting a quantitative study, the concepts in the research model must be operationalized (Jacobsen, 2015, p. 235-236). This is required to standardize the information we get from the answers of the managers and board members as numbers. As a result of using the data analysis program AMOS 23, we can standardize the information we collected as numbers and be able to confirm or deny relations of the concepts in our research model by analyzing several units at once.

3.3.1 Web-based information sources

To assess web-based information sources we use the question "To what extent does your firm use web-based information sources to perform the following competitive intelligence tasks?"

Respondents indicate how often their firm uses each competitive intelligence task that is listed below. The items used to measure web-based information sources were gathered from the study of Markovich et al. (2022). It is measured on a linear scale from 1 to 7, where 1 is “not at all” and 7 is “very much so”.

1. Monitor social media (WIS1)
2. Gather customer feedback on competitors’ products/services (WIS2)
3. Review competitors financial reports (WIS3)
4. Analyze competitors financial reports (WIS4)
5. Analyze competitors’ websites (WIS5)
6. Review competitors advertising strategy, execution, and targeting (WIS6)
7. Access web-based job commercial sites (WIS7)
8. Review competitors job posting (WIS8)

3.3.2 Sensing

To measure sensing, we use the question “To what extent do the following statements fit your firm?”, followed by the statements listed below. Based on respondents' answers, we get insight into the firm's sensing capabilities. Sensing was measured using items from Markovich et al. (2022). It is measured on a linear scale from 1 to 7, where 1 is “not at all” and 7 is “very much so”.

1. We use established processes to identify target market segments, changing customer needs, and customer innovation (SEN1)
2. We observe the best practices in our sector (SEN2)
3. We gather economic information on our operations and operational environment (SEN3)

3.3.3 Seizing

To measure seizing, we use the same question as we did to assess sensing, which was “To what extent do the following statements fit your firm?”. The indicators used to determine the

firm's seizing capabilities are listed below. They are gathered from the study of Markovich et al. (2022). It is measured on a linear scale from 1 to 7, where 1 is “not at all” and 7 is “very much so”.

1. We invest in finding solutions for our customers (SEI1)
2. We adopt the best practices in our sector (SEI2)
3. We respond to defect pointed out by employees (SEI3)
4. We change our practices when customer feedback gives us a reason to change (SEI4)

3.3.4 Reconfiguring

To gauge the firm's reconfiguring ability, we ask “How often have you carried out the following activities in the last few years?”, followed by the reconfiguring abilities that are listed below. The items used to assess reconfiguring are also collected from Markovich et al. (2022). It is measured on a linear scale from 1 to 7, where 1 is “not at all” and 7 is “very much so”.

1. Implementation of new kinds of management methods (REC1)
2. New or substantially changed marketing method or strategy (REC2)
3. Substantial renewal of business processes (REC3)
4. New or substantially changed ways of achieving our targets and objectives (REC4)

3.3.5 Performance

To assess the firm's performance, we use the question “To what extent do the following statements fit your firm?”, followed by the statements listed below. The items used to measure performance were gathered from the study of Zou, Taylor & Osland (1998). It is measured on a linear scale from 1 to 7, where 1 is “not at all” and 7 is “very much so”.

3.3.5.1 Financial performance

The firm:

1. … has been very profitable (FP1)
2. … has generated a high volume of sales (FP2)
3. … has achieved rapid growth (FP3)

3.3.5.2 Strategic performance

The firm:

1. … has improved its overall competitiveness (SP1)
2. … has strengthened its strategic position (SP2)
3. … has significantly increased its overall market share (SP3)

3.3.5.3 Satisfaction of firm

1. The performance of the firm has been very satisfactory (SOF1)
2. The firm has been very successful (SOF2)
3. The firm has fully met its expectations (SOF3)

3.4 Ethics

In carrying out the research for this thesis, we have taken a significant amount of responsibility as researchers. There are currently three fundamental prerequisites for the relationship between the researcher and the research object in Norwegian research ethics (Jacobsen, 2005, p. 47). The first is "informed consent", which denotes that the study participant agrees to participate voluntarily and is aware of any potential negative effects of doing so. The second is "demand for privacy", which concerns the volume of personal data gathered. Finally, we have "demand to be correctly reproduced", which refers to the research subject's right to expect that the responses they share in the questionnaire will be replicated accurately.

In the introduction of the questionnaire, we presented ourselves as two UIA (University of Agder) master's students conducting this survey as part of writing a master's thesis inside the study program Business Administration. The objectives of the study and the procedure of responding to our electronic questionnaire were also explained. We made it noticeably clear that participation was voluntary, both in the email and in the questionnaire's introductory paragraph. Following that, the respondents were provided with sufficient information to make an informed decision about participating or not.

As mentioned earlier, we also made it clear that the survey was anonymous and that individual respondents' responses could not be identified. The Norwegian Data Protection Authority must be notified of any research that involves the gathering and processing of personal data (Jacobsen, 2005, p. 50). We sent a notification form to NSD (Norwegian Center for Research Data) prior to the work starting. Later on, we contacted them directly and described what our study entailed, including, for instance, how we planned to manage the managers and board members' email addresses, and what kind of questions we had in the questionnaire. They concluded from what we wrote that we were exempt from reporting our research to them, but in accordance with the UIA's guidelines, we still reported it. Since the questions in the questionnaire are related to the managers and board members' experiences with the firm they are employed by and not their personal lives, the information we have gathered was not considered to be particularly sensitive or confidential. Once our study was completed, we deleted the data collected during our investigation, as well as the managers and board members' email addresses.

4. Concept Validation

This chapter will examine the outcomes of the data collection and the procedure to determine the validity and reliability of the study. First, we measure the normality of the study. Secondly, we look at concept validity, convergent validity, and discriminant validity. Lastly, we review the reliability of the findings of our research. The analyses are done using the analysis program SPSS and AMOS 23.

4.1 Normality measures

The number of replies (N), average, standard deviation, skewness, and kurtosis for each of the items are presented in appendix A. Since all questions related to the different concepts were mandatory, the number of replies should be 194 for every item. To ensure consistency of our data, we measure skewness (shifts in normal distributions) and kurtosis (the pointiness of distribution curves). According to Hair, Black, Babin & Andersson (2010), the data is considered normal if skewness is between -2 and +2 and kurtosis is between -7 and +7. From the results of the analysis, we see that the results remain continuously within the requirements for normality. In other words, the respondents seem to have utilized both sides of the scale. For the chapter's flow, normality measures for the concepts are supplied further down.

4.2 Control of validity and reliability

In this sub-chapter, we look at validity and reliability. This is accomplished by looking at the concept validity, the convergent validity, the discriminant validity, and the reliability. The convergent validity determines whether the questions inside a factor correlate with one another, while the discriminant validity gauges if the questions are sufficiently independent of one another (Jacobsen, 2005, p. 350). To be able to get these answers, we conducted a test of the fitness of our model, a convergent factor analysis, a correlation analysis of the concepts, and a Cronbach's Alpha test.

4.2.1 Model-fit measures

The model's overall goodness of fit was evaluated using model-fit measures (NFI, TLI, CFI, and RMSEA). NFI, TLI and CFI has a level of acceptance > 0,90, while RMSEA has a level of acceptance at < 0,08 (Awang, 2015). The fact that every value fell within its respective common acceptability suggests that both models yielded good fit measures and help confirm the concept validity of the study.

Model-fit measures

	NFI	TLI	CFI	RMSEA
SERVICE FIRMS	,966	,990	,996	,019
MANUFACTURING FIRMS	,953	,972	,990	,060

Table 1 - Model-fit measures

4.2.2 Convergent Factor analysis

A factor analysis can also be conducted to determine convergent validity. It looks at whether items meant to measure a specific concept, load well inside the concept (Sekaran & Bougie, 2016, p. 222). The purpose of this type of test is to find out which items should, and should not, be part of a concept. We chose to use factor analysis with the extraction method “Principal components” and chose “Varimax” as rotation. Empirical practice suggests that the lower threshold for factor values is at least 0,5 (Sürücü & Maslakci, 2020, p. 2703). The results from the factor analysis are presented in the table below.

Convergent Factor Analysis

FACTOR	ITEM	FACTOR LOADING	
WEB-BASED INFORMATION SOURCES		**Component 1**	**Component 2**
	WIS1	**,786**	-,042
	WIS2	**,528**	,355
	WIS3	,173	**,919**
	WIS4	,215	**,919**
	WIS5	**,540**	**,571**
	WIS6	**,718**	,357
	WIS7	**,758**	,257
	WIS8	**,656**	,391
SENSING	SEN1	,825	
	SEN2	,855	
	SEN3	,850	
SEIZING	SEI1	,733	
	SEI2	,805	
	SEI3	,802	
	SEI4	,735	
RECONFIGURING	REC1	,768	
	REC2	,726	
	REC3	,873	
	REC4	,882	
FINANCIAL PERFORMANCE	FP1	,826	
	FP2	,933	
	FP3	,838	
STRATEGIC PERFORMANCE	SP1	,886	
	SP2	,911	
	SP3	,836	
SATISFACTION OF FIRM	SOF1	,903	
	SOF2	,934	
	SOF3	,885	

Table 2 - Convergent factor analysis

As we can see from the factor loadings in table 2, all items load well within the factor we want them to measure. All the items of the concepts sensing, seizing, reconfiguring, financial performance, strategic performance, and satisfaction of firm load over a value of 0,7, and on the same component. The lowest factor loading of these items is REC2 with a loading of 0,726. In the case of web-based information sources, it is different. Here, the test found that items load on two components. WIS1, WIS2, WIS6, WIS7 and WIS8 load well inside component one,

while WIS3 and WIS4 have high loadings for component two. We therefore make the new variables WB1 and WB2 out of these items. WIS5 is deleted from the study since it loads well inside both WB1 and WB2. WIS2 has the lowest valid loading out of all items, with a value of 0,528. What is interesting about this is that WB1 includes more future-oriented questions, while WB2 includes questions regarding reviewing the past.

Furthermore, we did the same normality measures as in appendix A, only this time for the concepts. As we can see from table 3 below, these measures were well inside the requirements for normality (Hair et al., 2010).

Descriptive statistics – Concept-level

	N	AVERAGE	STANDARD DEVIATION	SKEWNESS	KURTOSIS
WB1	194	4,11	1,252	-,332	-,312
WB2	194	4,27	1,647	-,240	-,631
SENTOTAL	194	5,00	1,214	-,569	,496
SEITOTAL	194	5,83	,874	-1,327	2,934
RECTOTAL	194	4,72	1,143	-,701	,941
FPTOTAL	194	4,86	1,205	-,592	,373
SPTOTAL	194	5,23	,972	-,624	1,233
SOFTOTAL	194	5,02	1,108	-,811	,870

Table 3 - Descriptive statistics at concept-level

4.2.3 Discriminant validity

To be able to determine the discriminant validity of the study, we checked correlations between the concepts in the research model to see how the concepts correlate with each other. Here, we want correlations to be as low as possible, to confirm that the concepts do not “overlap” with each other. The strongest correlation is between financial performance and strategic performance, which is to be expected as questions in these concepts are similar. Overall, the values in table 4 confirm the discriminant validity of the study to a certain degree, as most correlations are low.

Correlation matrix – Concept level

	WB1	WB2	SEN-TOTAL	SEI-TOTAL	REC-TOTAL	FP-TOTAL	SP-TOTAL	SOF-TOTAL
WB1	1							
WB2	,529	1						
SENTOTAL	,518	,356	1					
SEITOTAL	,352	,252	,581	1				
RECTOTAL	,335	,180	,481	,528	1			
FPTOTAL	,244	,249	,332	,276	,261	1		
SPTOTAL	,256	,193	,385	,363	,377	,661	1	
SOFTOTAL	,134	,092	,296	,247	,133	,657	,580	1

Table 4 - Correlation matrix at concept-level

4.2.4 Reliability

Considering the reliability of the concepts is essential when combining the items to create a concept. The term "reliability" refers to the stability of the used measurement instruments and its consistency throughout time (Sürücü & Maslakci, 2020, p. 2707). We conducted a reliability test using Cronbach's Alpha, which ranges from 0 to 1. For this kind of test, a satisfactory result requires a value of 0,7 or higher (Sürücü & Maslakci, 2020, p. 2715). The results of the Cronbach's Alpha test are seen below. All values are over 0,7, which indicates that the reliability of the study is solid.

Cronbach’s Alpha - Concept level

	N	CRONBACH’S ALPHA
WB1	194	,799
WB2	194	,919
SENTOTAL	194	,786
SEITOTAL	194	,758
RECTOTAL	194	,827
FPTOTAL	194	,829
SPTOTAL	194	,843
SOFTOTAL	194	,891

Table 5 - Cronbach’s Alpha test

5. Test of hypotheses

In this chapter, we will assess the hypotheses developed in chapter 2 based on our research model.

We used structural equation modelling (SEM) in the data analysis program AMOS 23 to test and evaluate the result of our hypotheses. In these analyses, one is trying to determine which independent variables can predict the outcomes of the dependent variables. To determine covariation between an independent variable and a dependent variable, we look at the standardized beta value. Here, high numbers indicate a strong correlation. The analysis assumes that if an independent variable increases by 1, the beta value will also increase by the given value. In addition, we look at the significance levels (p-value) and R-Square. As for the latter, it indicates how much of the variation in the dependent variable is caused by the independent variable.

SERVICE FIRMS	P-VALUE	STANDARDIZED BETA VALUE	R-SQUARE	
WB1 --> SENSING	**< ,01**	**,549**	**SENSING**	(31,5%)
WB2 --> SENSING	,639	,042		
SENSING --> SEIZING	**< ,01**	**,584**	**SEIZING**	(34,1%)
SENSING --> RECONFIGURING	**< ,01**	**,483**		
SENSING --> FINANCIAL PERFORMANCE	,243	,137	**RECONFIGURING**	(23,4%)
SENSING --> STRATEGIC PERFORMANCE	,181	,146		
SENSING --> SATISFACTION OF FIRM	**,017**	**,279**	**FINANCIAL PERFORMANCE**	(6,8%)
SEIZING --> FINANCIAL PERFORMANCE	,936	-,010		
SEIZING --> STRATEGIC PERFORMANCE	,228	,132	**STRATEGIC PERFORMANCE**	(20%)
SEIZING --> SATISFACTION OF FIRM	,948	,008		
RECONFIGURING --> FINANCIAL PERFORMANCE	,119	,170	**SATISFACTION OF FIRM**	(7,8%)
RECONFIGURING --> STRATEGIC PERFORMANCE	**,010**	**,262**		
RECONFIGURING --> SATISFACTION OF FIRM	,948	-,007		

Table 6 – Hypothesis testing (service firms)

MANUFACTURING FIRMS	P-VALUE	STANDARDIZED BETA VALUE	R-SQUARE	
WB1 --> SENSING	< ,01	,329	SENSING	(25,2%)
WB2 --> SENSING	,014	,273		
SENSING --> SEIZING	< ,01	,566	SEIZING	(32,0%)
SENSING --> RECONFIGURING	< ,01	,491		
SENSING --> FINANCIAL PERFORMANCE	,013	,300	RECONFIGURING	(24,1%)
SENSING --> STRATEGIC PERFORMANCE	,067	,224		
SENSING --> SATISFACTION OF FIRM	,096	,217	FINANCIAL PERFORMANCE	(24,3%)
SEIZING --> FINANCIAL PERFORMANCE	,066	,237		
SEIZING --> STRATEGIC PERFORMANCE	,111	,207	STRATEGIC PERFORMANCE	(22,7%)
SEIZING --> SATISFACTION OF FIRM	,081	,242		
RECONFIGURING --> FINANCIAL PERFORMANCE	,828	,027	SATISFACTION OF FIRM	(12,3%)
RECONFIGURING --> STRATEGIC PERFORMANCE	,266	,137		
RECONFIGURING --> SATISFACTION OF FIRM	,409	-,108		

Table 7 - Hypothesis testing (manufacturing firms)

Hypothesis 1 - *Web-based information sources have a more significant impact on sensing in service firms compared to manufacturing firms.*

From the results of the regression analysis, we see that only one of the two categories of web-based information sources has a positive effect on sensing in service firms. WB1 has a significant value of < 0,01, while WB2 has a non-significant value of 0,639. This indicates that service firms use web-based information sources more for looking ahead than for looking back in time (reviewing and analyzing competitors' financial reports). The standardized beta values support these statements. R-square is 0,315, which implies that web-based information sources account for 31,5% of the variance in sensing.

From the regression analysis, one can see that web-based information sources have a positive effect on sensing in manufacturing firms. Here, the significance levels WB1 and WB2 have on sensing are both strong enough (< 0,01) to establish the result with certainty. The beta-loadings are at 0,329 (WB1) and 0,273 (WB2), which is acceptable. R-square tells us that web-based information sources explain 25,2% of the variance in sensing.

Based on hypothesis 1, one can see a clear difference between service and manufacturing firms. In manufacturing firms, web-based information sources have an impact on sensing both in accordance with the strategy for the firm going forward and looking back in time. This differs from service firms, where only WB1 is a significant predictor of sensing, indicating that they only look forward in time. Based on these results we can state that hypothesis 1 is not supported.

Hypothesis 2 - ***Sensing has a more significant impact on seizing in service firms compared to manufacturing firms.***

Table 6 shows that sensing correlates strongly with seizing in service firms, with a p-value of < 0,01. Due to the low p-value, it is unlikely that the results are a coincidence. The beta-value solid, at an estimated value of 0,584. R-square is at an acceptable value of 34,1%. For manufacturing firms as well, the p-value shows high significance between sensing and seizing. The beta value of 0,566 underlines this finding. With R-square being at 0,32, we can say that sensing explains 32% of seizing.

As part of this hypothesis, we stated that we believed that the effect sensing has on seizing would be stronger in service firms. The results support this statement, but it must be said that the difference in the results between the two types of firms is minimal. The results indicate that hypothesis 2 is supported.

Hypothesis 3 - ***Sensing has a more significant impact on reconfiguring in service firms compared to manufacturing firms.***

From table 6, we see that sensing has a significant positive effect on reconfiguring for service firms, illustrated by the p-value being < 0,01. The beta value is also solid. R-square tells us that sensing explains 23,4% of the outcomes in the reconfiguring variable. Table 7 shows that in this case, the p-value for manufacturing firms matches the p-value of the service firms. The beta-loading is also strong at 0,491. The R-square value is 0,241, telling us that sensing explains more of reconfiguring in manufacturing firms than in service firms.

We argued the effect sensing had on reconfiguring would be stronger in service firms because they would be more suited for making changes in their firm, being more adaptable and agile than manufacturing firms. The results show the opposite, with a very minimal margin. Due to this we can say that hypothesis 3 is not supported.

Hypothesis 4 - ***Seizing mediates the effect sensing has on performance.***

Our fourth hypothesis was that seizing mediates the effect sensing has on performance. There are no significant values that help support this hypothesis. The p-values of the correlation between seizing and the three performance variables are non-significant. The beta values tell us the same. Therefore, there is no evidence of a mediating effect either. For manufacturing firms, we see that seizing directly enhances both financial performance and satisfaction of the firm, with marginally significant p-values of 0,066 and 0,081. The beta values are slightly low but support these findings. Additionally, sensing correlates directly with all performance indicators. Although, there is no sign that seizing mediates the effect sensing has on any of the types of performance.

Overall, there is no mediating effect to be found for either type of firm regarding this hypothesis. What we found was that seizing had a direct positive effect on financial performance, but only in manufacturing firms. Hypothesis 4 is therefore not supported.

Hypothesis 5 - ***Reconfiguring mediates the effect sensing has on performance.***

The fifth and final hypothesis is that reconfiguring mediates the effect sensing has on the performance of the firm. Sensing is mediated through reconfiguring on strategic performance in service firms. Reconfiguring has a positive effect on strategic performance, with a significant value of 0,01. Also, the test of the mediating effect gave us a significant value of 0,006. It is therefore clear that reconfiguring mediates the effect sensing has on strategic performance in service firms, but not regarding financial performance or satisfaction of firm.

For manufacturing firms, reconfiguring has no direct noteworthy influence on either of the performance variables, meaning there is no mediation through reconfiguring.

Overall, the only mediating effect found regarding this hypothesis was that reconfiguring mediates the effect sensing has on strategic performance in service firms. Hypothesis 5 is therefore partially supported.

The following table provides a summary of our hypotheses, in addition to whether they are supported, partially supported, or not supported.

Hypothesis 1	*Web-based information sources have a more significant impact on sensing in service firms compared to manufacturing firms.*	**Not supported**
Hypothesis 2	*Sensing has a more significant impact on seizing in service firms compared to manufacturing firms.*	**Supported**
Hypothesis 3	*Sensing has a more significant impact on reconfiguring in service firms compared to manufacturing firms.*	**Not supported**
Hypothesis 4	*Seizing mediates the effect sensing has on performance.*	**Not supported**
Hypothesis 5	*Reconfiguring mediates the effect sensing has on performance.*	**Partially supported**

Table 8 - Summary of hypotheses

6. Discussion

In this chapter, we are going to discuss the findings of our research. In addition, theoretical- and managerial implications of the study will be presented. Furthermore, we will discuss the limitations of the study and our recommendations for further research. Lastly, we look at method criticism.

6.1 General discussion

The aim of this thesis was to investigate whether there are differences between the effect web-based information has on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms. To be able to investigate this, we started with theory belonging to the concepts "competitive intelligence" and "dynamic capabilities". Furthermore, our hypotheses contain the effect web-based information sources have on sensing, how sensing affects the remaining dynamic capabilities and how seizing and reconfiguring mediate the effect sensing has on performance. This formed the framework of this thesis.

As mentioned earlier, there are minimal existing research on web-based information sources on dynamic capabilities. To our knowledge, Markovich et al. (2022) is one of a few that has studied the effect web-based information sources have on dynamic capabilities. Furthermore, no studies have looked at the effect of these concepts in service firms in comparison to manufacturing firms, as far as we know. Our study contributes to getting an understanding of this, and additionally looks at how it further affects a firm's performance.

For service firms, only one of the two types of web-based information sources (WB1) is utilized, and additionally enhance sensing capabilities. Service firms seem to look ahead in time, while manufacturing firms seem to both look ahead in time and back in time when utilizing web-based information sources. The distinction can be seen in how manufacturing firms appear to review and analyze competitors' financial reports to a greater extent. As we know, according to Fernández et al. (2022), service firms and manufacturing firms differ in their strategical approach. Since service firms focus more on positioning in the market, it may

entail that they need to be forward-looking. Our results suggest they are looking forward when they utilize web-based information sources. Manufacturing firms' way of seeking a competitive advantage may also be seen in the context of our findings. Since their main source of competitive advantage is their resources, it may make sense that they look back in time to see how other firms have utilized their production.

The increasing use of digital technology in manufacturing firms (Gandhi et al., 2016) can also be seen in connection with the results from hypothesis 1. Our data emphasizes that manufacturing firms use web-based information to a greater extent than service firms, which may mean that manufacturing firms have faced digitalization in recent years. Markovich et al. (2022) underlines this in stating that use of web-based information sources has become a method that is available all over the world, due to the technological developments in recent decades. Additionally, if the disparity between service firms' and manufacturing firms' adaptability and flexibility is as great as what we inferred from the literature (Nyachanchu et al., 2017), then manufacturing firms' rigidity may be advantageous to their acquisition and utilization of web-based information sources. For example, manufacturing firms might profit from slower transformations and more reliable processes because it might help them become more organized while looking for and utilizing information on the internet.

Furthermore, our findings indicate that sensing influences reconfiguring and seizing in both service and manufacturing firms, with a similar effect. Wang & Ahmed (2007) points out that firms with high adaptive capabilities identify and capitalize on emerging market opportunities in a better way. As we know, high adaptive capabilities enhance dynamic capabilities in firms (Teece et al., 1997). Furthermore, Nyachanchu et al. (2017) underlines that methods applied in service firms are more flexible than in manufacturing firms. Based on this, it was expected that sensing had a strong correlation with seizing and reconfiguring in these firms. On the other hand, that service and manufacturing firms had a likewise strong correlation was unexpected, as the reasoning behind hypothesis 2- and 3 state. The prediction that the ability to seize opportunities and to maneuver changes were better in service oriented firms than in manufacturing firms is therefore questionable. Björkdahl (2020) emphasized the importance of manufacturing firms seizing opportunities and transforming their firms (reconfigure) from opportunities offered by digitalization to enhance performance and stay competitive. From

the sample of manufacturing firms in this study, it seems to be the case that these firms have adopted digitalization faster than one could expect, based on existing literature on service and manufacturing firms.

Regarding the mediating effects in the model, seizing does not mediate the effect sensing has on performance in either service or manufacturing firms. Overall, the only mediating effect found in the research model was that reconfiguring mediates the effect sensing has on strategic performance in service firms (p= 0,006). In other words, the positive effect that sensing opportunities has on performance in service firms is transmitted through the reconfiguring of the firm, leading to hypothesis 4 not being supported, and hypothesis 5 being partially supported.

There were also some noteworthy findings regarding direct effects between dynamic capabilities and performance in the model. Sensing and seizing affected all performance variables in manufacturing firms (excluding seizing on strategic performance). This was not the case for service firms, where the direct effects of dynamic capabilities on performance were more difficult to find. Sensing directly affected satisfaction of the firm, while reconfiguring directly affected strategic performance. Although we did not find anything indicating that the mediating effects would be stronger in one type of firm over the other, we had an expectation that service firms would obtain more direct effects between dynamic capabilities and performance. The rationale behind this, as indicated in chapter 2.5, was that dynamic capabilities improve firm performance (Gudergan et al., 2012) and that adaptability lay a better basis for these capabilities to develop (Chmielewski et al., 2007; Teece et al., 1997). Our research found several more direct links between dynamic capabilities and performance in manufacturing firms. Although it appeared that improved dynamic capabilities were naturally associated with better firm performance in service firms, our findings do not support this. Buer et al. (2021) pointed out that the ability to change takes longer for manufacturing firms than service firms. Based on the results in our study, this seems not to be the case. It may seem that the manufacturing firm's capacity for adaptation has been underappreciated, and one could obviously speculate that the aftermath of the pandemic could play a role in this. The pandemic could possibly have forced strategic changes in these firms, including digitalization.

6.2 Theoretical implications

Our thesis has two main theoretical contributions. Firstly, it investigates and addresses a gap in existing literature, by investigating the effect web-based information has on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms. Unlike previous studies that investigated the effect web-based information has on dynamic capabilities (Markovich et al., 2022), our study supplements existing theory on the topic and gives managers and board members of firms in the two distinct firm types an opportunity to see what effects are obtained in the distinct firm types.

In addition, our study discovered evidence that, contrary to past research findings (Markovich et al., 2022), there are actually two types of web-based information sources employed by firms. According to our research, manufacturing firms use web-based information sources to look both forward- and backward in time, whereas service firms only do look forward in time. Both manufacturing- and service firms seem to bore forward looking monitor social media, gather customer feedback competitors' products/services, access web-based job commercial sites, review competitors job posting, and review competitors advertising strategy, execution, and targeting. Only manufacturing firms seem to look back in time and review- and analyze competitors financial reports. This is an intriguing discovery that undoubtedly adds to the body of knowledge on usage of web-based information sources in different types of firms.

6.3 Managerial implications

Our study offers managers a possibility to get meaningful knowledge about synergies between web-based information sources, dynamic capabilities, and performance. This is knowledge that could be influential in decision making processes and could help improve firms' overall competitiveness. Primarily, from our study we see that web-based information sources provides opportunities for enhanced sensing capabilities. Furthermore, this enhances the firm's ability to seize the added value these opportunities can give the firm, in addition to their ability to maneuver changes (reconfigure).

We also saw that some dynamic capabilities further influenced performance, more in manufacturing firms than in service firms. Managers must be aware of the implications of

dynamic capabilities for various performance metrics. To maximize the inputs and outputs of their managerial efforts, managers must be aware of the nuances of how dynamic capabilities and environment interplay in performance. Managers of manufacturing firms should concentrate on both sensing and seizing to improve financial performance and satisfaction of the firm. To improve strategic performance, they should focus more on sensing. Managers of service firms should concentrate on reconfiguration, as this could improve their strategic performance, and sensing, as it could improve satisfaction of the firm.

6.4 Limitations and suggestion for further research

Our study also has some limitations that must be taken into consideration. First, a limitation for our research is that the managers and board members themselves categorize their firm as either a service or manufacturing firm. If the respondents either have doubts about which category their firm belongs in or simply did not read the question properly, firms can fall into the wrong category, which again leads to errors in the results and conclusion of the study.

Additionally, the time limit of this thesis must be seen as a limitation in this study. Extending the collection period could have been done to be able to reach out to more managers and board members, giving us more input and data to examine. This would also result in a more representative sample of the population we studied, more generalizable results and a more accurate conclusion to the thesis. However, our sample was more than good enough for the scale of our task.

Our study is a cross-sectional study, which means our findings can only be related to one specific moment in time. Development of dynamic capabilities happens over time, not instantly. We therefore suggest that further research in this field should contain longitudinal studies, to be able to see the development of dynamic capabilities and how it affects a firm's performance over a longer period.

6.5 Method criticism

A potential weakness of our methodology is that quantitative approaches have the drawback of not allowing for as much in-depth exploration as qualitative methods do. More in-depth descriptions from the managers and board members would likely have been helpful to better understand how they use web-based information sources, how it affects the development of the firm's dynamic capabilities, and how it affects the firm's performance. Consequently, we could have employed a "mixed method" approach, which involves conducting both quantitative and qualitative research (Sekaran & Bougie, 2016, p. 106). We then could have conducted interviews with the managers and board members in addition to the online survey.

Additionally, adding extra items to the different concept is also something that could have been done. This would mean respondents would have responded to more questions within the various concepts, which could have strengthened the study's reliability and validity. In the end, the reliability and validity measures gave satisfactory results, meaning the need for additional items was not there.

7. Conclusion

In this thesis, we have studied the effect web-based information sources have on the dynamic capabilities sensing, seizing, reconfiguring, and furthermore a firm's performance, which our research model replicates. Furthermore, we aimed to contrast service and manufacturing firms regarding the relationships between the concepts in the research model. As far as we can tell, by doing this, we have managed to fill a current research gap.

The research question for this thesis is as follows:

"What effect does web-based information sources have on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms."

Our conclusion to the research question is as follows: web-based information sources have more influence on sensing capabilities in manufacturing firms compared to service firms, as manufacturing firms seem to look both back in time and ahead in time. Regarding the effect between the intermediate variables in the research model, we see that the influence sensing has on seizing and reconfiguring is almost just as strong in both types of firms. On the other hand, the influence of dynamic capabilities on performance were overall stronger in manufacturing firms. The only mediating effect found of dynamic capabilities on performance was for service firms, where reconfiguring mediates the influence sensing has on performance.

Our recommendation for managers of both service and manufacturing firms is to continuously strive after improving mechanisms inside the firm that can help the firm access and utilize web-based information sources. This can help develop better dynamic capabilities (sensing, seizing, and reconfiguring) in the firm, and last but not least help improve firm performance, both strategically and financially.

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9. Appendices

Appendix A – Descriptive statistics at item-level

Normality - Item-level

	N	AVERAGE	STANDARD DEVIATION	SKEWNESS	KURTOSIS
WIS1	194	4,69	1,651	-,520	-,486
WIS2	194	3,89	1,730	-,084	-1,024
WIS3	194	4,52	1,701	-,413	-,602
WIS4	194	4,02	1,724	-,075	-,790
WIS5	194	4,61	1,606	-,541	-,310
WIS6	194	4,19	1,631	-,397	-,728
WIS7	194	3,98	1,708	-,133	-,852
WIS8	194	3,78	1,680	-,038	-1,044
SEN1	194	4,54	1,619	-,359	-,473
SEN2	194	5,40	1,179	-,583	,320
SEN3	194	5,06	1,515	-,810	,543
SEI1	194	5,75	1,362	-1,295	1,708
SEI2	194	5,80	,990	-,914	1,374
SEI3	194	5,71	1,238	-1,322	2,398
SEI4	194	6,04	,952	-1,312	2,669
REC1	194	4,73	1,448	-,682	,234
REC2	194	4,77	1,408	-,650	,424
REC3	194	4,61	1,440	-,656	,123
REC4	194	4,78	1,334	-,473	,114
FP1	194	4,75	1,396	-,450	,017
FP2	194	5,05	1,309	-,647	,440
FP3	194	4,79	1,478	-,514	-,025
SP1	194	5,29	1,034	-,615	1,236
SP2	194	5,49	1,034	-,880	1,637
SP3	194	4,89	1,261	-,499	,255
SOF1	194	5,06	1,227	-,892	1,365
SOF2	194	5,16	1,176	-,886	,887
SOF3	194	4,84	1,265	-,617	,233

Appendix B – Discussion papers

Discussion Paper – Markus Krogstad

Master's Programme in Business Administration

Competency goal: INTERNATIONAL

Summary of the master thesis

Our master thesis examined the effect web-based information sources had on dynamic capabilities, and furthermore performance, in service firms in comparison to manufacturing firms. Our research expanded on earlier work by Markovich, Raban, and Efrat (2022) on competitive information sources and dynamic capabilities. To identify a finer resolution of the effects that can be obtained, they advised that future studies should compare service firms and manufacturing firms regarding this topic. Therefore, this was the research gap our thesis was set to fill. In the aforementioned firm types, prior research has identified several distinctions, which emphasized the significance of comparing service firms and manufacturing firms in this context.

The research question of the thesis was as follows:
"*What effect does web-based information sources have on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms*."

Our approach to this study was guided by a research model. As this was a quantitative study, we used an electronic questionnaire to survey managers and board members of service and manufacturing firms. Additionally, it was a correlation study, which uses a deductive method and tests hypotheses. To test our hypotheses and draw conclusions, we analyzed the data gathered from the questionnaire using analysis programs.

It was found that the effect of web-based information sources on dynamic capabilities of sensing, seizing, and reconfiguring, as well as performance, is just as strong, and often greater,

in manufacturing firms than in service firms. Web-based information sources seem to be more influential on sensing capabilities in manufacturing than in service firms, as manufacturing firms seem to look both backwards and forwards in time. Regarding the effect between the intermediate variables in the research model, we see that the influence sensing has on seizing and reconfiguring is similarly strong in both types of firms. Regarding the direct effects between dynamic capabilities and performance, manufacturing firms saw a larger overall impact of dynamic capabilities on performance. The only mediating effect found of dynamic capabilities on performance was for service firms, where reconfiguring mediates the influence sensing has on performance.

Considered from a practical standpoint, for manufacturing firms to improve their financial performance and satisfaction of the firm, managers should focus both on sensing and seizing opportunities. Strategic performance could be improved by focusing more on sensing. The managers of service firms should, however, pay more attention to reconfiguration as this could improve their strategic performance.

How the thesis relates to international trends and forces

Since key words in our thesis are words like dynamic capabilities, web-based information sources, performance, service firms, and manufacturing firms, it is no doubt that much of the research can be related to and discussed up against the term “international”. This is because all these key words have a possibility to be put in an international context.

Web-based information sources are sources of information from the web, and is a place where people worldwide have access. There has been a huge increase in new channels on the web over the last decade or two. These newly developed channels make information searching easier, cheaper, and quicker (Markovich, Efrat, Raban & Souchon, 2019), meaning firms all over the world could benefit from the eased access to competitive information and utilize these channels as much as they can, which shows the internationality of it. Dynamic capabilities involve adjusting managers' resource base, acquiring, and shedding resources, integrating them together, and recombining them to generate new value-creating strategies (Eisenhardt & Martin, 2000, p. 1107). It is the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece, Pisano

& Shuen, 1997, p. 516), and has a key role in maximizing long-term performance and achieving a sustainable competitive advantage over other firms (Markovich, et al., 2022). Good dynamic capabilities are therefore something firms all over the world either have or should strive for, making the term international. Our unit of analysis, service and manufacturing firms, are distinct firm types that both can operate internationally, but will most likely face different challenges in an international context. Hence, the topic, research question, and our unit of analysis (service and manufacturing firms) and their operating environment, could all be seen in relation to international trends and forces.

As time passes and years go by, we see that the increase of web-based information sources are contributing to the phenomena of digitalization in both service and manufacturing firms. This has in many ways created a trend where many firms have to digitalize themselves to be able to stay competitive. Our findings also indicate that this is the case because web-based information sources were utilized to a high degree in both types of firms. Even though our study mostly includes respondents from local firms in Norway, some managers where managers in international firms. It would be strange to believe that the digitalization only occurs locally, so it is little doubt about that utilizing web-based information sources is an international trend, and something most international firms would need to use to adopt, evolve, and stay competitive. International firms would also logically use web-based information sources to a greater extent due to a bigger scale of capacity for handling enormous amounts of information.

When it comes to dynamic capabilities, one of the biggest obstacles facing international firms, even more than local firms, could be the requirement to adjust to various cultural, legal, and economic settings. Prominent levels of flexibility, agility, and the capacity to quickly absorb and apply new information are necessary for this. Since adaptability enhances dynamic capabilities (Teece et al., 1997), firms that have strong dynamic capabilities are better suited to adapt to changing surroundings and use their current resources and talents to take on new challenges. This is also supported by Chmielewski & Paladino (2007), who states that strong dynamic capabilities increase the productivity, swiftness, and efficiency of organizational reactions to environmental turbulence.

Dynamic capabilities could also be essential for businesses looking to expand internationally and explore new markets. To do this, firms must be able to recognize new opportunities (sense), and to gather relevant market intelligence (Matarazzo, Penco, Profumo, & Quaglia, 2021). Then, firms must find the value of the opportunity (seize) (Yeow, Soh & Hansen, 2018), before having the skills and resources needed to take advantage of them, by managing change in core- and complementary resources and capabilities in a firm's day-to-day operations (reconfigure) (Matysiak, Rugman, & Bausch, 2018, p. 230).

Another important aspect of dynamic capabilities in the international context could be their ability to manage complex global supply chains. International firms often rely on a complex network of suppliers, distributors, and partners to deliver products and services to customers around the world, as opposite to local firms. This requires a high degree of coordination and collaboration, as well as the ability to manage risk and uncertainty, which shows the importance of dynamic capabilities in international firms.

Summary and conclusion

Bigger international firms will in most cases have a bigger capacity for handling competitive information, meaning web-based information sources are an important aspect of international firms. This could furthermore enhance dynamic capabilities (as seen in our study), which again could be a major factor in the success of international firms. They help firms find new prospects for development and expansion, manage intricate supply networks, and react to changing market conditions. Firms with the ability to grow and who use their dynamic capabilities should have a greater chance of dominating the global market and gaining a sustainable competitive advantage. Enhanced dynamic capabilities could furthermore positively affect the firm's performance (seen in some cases in our study), which is a trend that could be seen in service and manufacturing firms worldwide as well.

It would be interesting to see a study of a bigger scale look at the same effects that we did, to get a further understanding of effects that can be obtained internationally. Our study includes some answers from managers in bigger international firms, but most respondents are managers of smaller local firms in Norway.

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Discussion Paper – Sebastian Lisø

Master´s Programme in Business Administration

Competency goal: INTERNATIONAL

Summary of the master thesis:

The work on the master's thesis started in October 2022 with my fellow student, Markus. After a review of various topics, it was our supervisor Kalanit Efrat who caught our attention with the topic: Dynamic Capabilities. We investigated some of her previous work, and then came across a paper dealing with competitive information sources and dynamic capabilities, written by Markovich, Raban & Efrat in 2022. Based on this paper, we decided to keep the theme, but carry out a comparison of service and manufacturing firms, something that had not previously been carried out, and this was the research gap we wanted to fill. The previous work we have done with quantitative studies in the bachelor's thesis and other subjects served as a central source of inspiration for composing this thesis. Based on this, our research question was formulated:

"What effect does web-based information sources have on dynamic capabilities, and furthermore performance, in service firms compared to manufacturing firms".

Our thesis is built on our main theory: Dynamic capabilities, with associated sub-theories competitive intelligence and web-based information sources. The guideline of this thesis is our research model, which includes the effect web-based information sources have on the dynamic capabilities sensing, seizing and reconfiguring, and furthermore on a firm's performance.

Our findings in this thesis were surprisingly not consistent with our expected results. We had expected that web-based information sources would have a greater influence on service firms than on manufacturing firms. This is because of the characteristics service firms have, particularly regarding their ability to change/adapt, as previous research indicated. Our findings, on the other hand, showed that manufacturing firms were influenced to a greater

extent by web-based information sources, and that these firms look both forward and backward in time when obtaining information, while service firms only looked forward in time. Based on this, it seems that sensing capabilities are more influential in manufacturing firms than in service firms. For the direct effect between dynamic capabilities and performance, we saw the same result, since manufacturing firms' dynamic capabilities seem to have a larger impact on performance.

For the limitations of this study, we see the time constraint as a limitation, since by having a longer collection period we could have reached out to more managers and board members, which could have given us more input and data to examine. A criticism of the method is that since we have a quantitative approach, it did not allow use for as much in-depth exploration, which could have given us more information on how they use web-based information sources.

Discussion: How does this thesis relates to international trends and forces

There are countless international trends, as they vary and arise with varying degrees of anticipation in advance. In this reflection paper, I look at digitalization as an international trend and force, and I will furthermore link this to the theme of our master's thesis. Also, I see international trends as updated and raw information, which firms should acquire to keep up or create a competitive advantage over their competitors. Key words in our master thesis are: Dynamic capabilities, Competitive intelligence, and Web-based information sources. All these themes can clearly relate to international trends and forces. I would further like to divide paragraphs below with the points I consider to be the ones that are most consistent with the theme international trends and forces.

Dynamic capabilities are divided into three broad groups: Sensing, Seizing and Reconfiguration (Teece, 2007). For a firm to detect trends, it needs good sensing capabilities, so that they can scan environmental trends and gather relevant marketing intelligence (Matarazzo, Penco, Profumo, & Quaglia, 2021). Warner & Wäger further point out that the digital sensing capabilities of a firm are important, so that firms can understand and act against unforeseen developments in a changing business landscape (2019). Based on the digitalization that the world has faced in recent decades, sensing can be connected to the

theme of international trends and strengths, as sensing is an important capability for firms when challenges or opportunities from the mentioned theme arise. Furthermore, when these opportunities or challenges are sensed, firms must seize these opportunities. Regarding one of the selected sectors in this thesis, J. Björkdahl (2020) underlines this by saying:

"If manufacturing companies do not seize opportunities and transform to embrace the growth opportunities that digitalization brings, they are likely to be outcompeted by firms that are able to solve customer problems in creative ways".

This clarifies and points out how important dynamic capabilities can be for firms in relation to international trends and forces.

As mentioned, I consider international trends to be up-to-date and raw information. The process by which firms acquire this type of information and produce external information from their competitive environments is called competitive intelligence (de Almeida, Lesca & Canton, 2016). On way of obtaining competitive intelligence is by web-based information sources. Web-based information sources is characterized by being cheap, global, easy to use and up to date (Markovich et al., 2019). This clearly underlines the relation with international trends and forces, since its global and up to date. Furthermore, one can undoubtedly describe the internet as a trend that is growing and growing. Most firms today are on the internet, and the information that is available on the internet is clearly a growing trend among firms. In the past, firms looked to salespeople to obtain competitive information (Ahearne, Lam, Hayati & Kraus, 2013, p. 37). Today, however, we see that, due to technological developments, firms use web-based information sources, as this is an up-to-date and dynamic information channel worldwide (Markovich et al., 2022). As our task deals with the effect of web-based information channels has on dynamic capabilities in service and production firms, it is clear that it relates to international trends and forces.

How can actors react to international trends and forces.

Another aspect regarding the theme of this thesis, in relation to international trends and strengths, is how firms/managers can adapt to international trends and strengths. Dynamic capabilities are defined as "(...) the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments" (Teece, Pisano & Shuen, 1997, p. 516). When discussing international trends, it makes sense to say that dynamic capabilities can help contribute to a firm being able to adapt to new trends. This is underlined by the research of Lou (2000), how points out that a firm's dynamic capabilities have for a long time been seen as essential to survive in a turbulent international environment.

International trends' duration can vary, some short in length others long lasting. Regardless of this, a clear point is that a firms dynamic capabilities enable firms to adapt to rapidly changing environments, which should fit with international trends that can arise without being able to plan for it. Dynamic capabilities can generate new value-creating strategies for managers (Eisenhardt & Martin, 2000, p. 1107), which can clearly be useful for actors to react to trends and international forces.

The selected firms, our unit of analysis, that were sent the questionaries, are all firms that were registered in Norway, but several of the firms also operate internationally. In today's society, it is clear that digital media influence us to a great extent, and to that extent will be considered an international trend. It can be argued against the firms examined in this thesis that international trends thus affect them, and consequently emphasize the point that dynamic capabilities help to "prepare" the firms to change according to various international trends. By improving the dynamic capabilities of the firm, actors can influence the firm to sense and seize opportunities the challenges and opportunities that international trends and forces offers, and then reconfigure the firm to be in a better position.

Summary and conclusion:

After the discussion section that I have presented, I think it is clear to conclude that our master's thesis can clearly relate to international trends and forces. The three main themes presented; Dynamic Capabilities, Competitive intelligence and Web-based information

sources all have a clear relation to the themes. In today's world, where new changes and demands constantly arise, it is important for firms to discover, process and react to various opportunities and challenges. As our thesis shows, dynamic capabilities are seen by many as the solution to this. By being able to sense, seize and reconfigure information, firms can adapt and take advantage of the opportunities that come from international trends.

In this thesis, the firms that answered our survey mainly operate in Norway, but some are already on the international market. Dynamic capabilities can give firms opportunities to take the leap into the international market, through the competitive advantages that can be obtained from good dynamic capabilities. After the discussion earlier, I therefore conclude that the relationship between the topics discussed in this discussion paper and the terms international trends and strengths has a clear relationship.

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Appendix C – Questionnaire

Mandatory fields are marked with a star *

How many years have you been working for your firm? *

Write the answer as a number

What is your job title? *

To what extent does your firm use web-based information sources to perform the following Competitive Intelligence tasks?

Web-based information sources can be defined as firm websites, discussion spaces, and collections of web pages with hyperlinks for firms.

(1 - not at all, 7 - very much so)

	1 - Not at all	2	3	4 - Neutral	5	6	7 - Very much so
Monitor social media *	○	○	○	○	○	○	○
Gather customer feedback on competitors products/services *	○	○	○	○	○	○	○
Review competitors' financial reports *	○	○	○	○	○	○	○
Analyze competitors' financial reports *	○	○	○	○	○	○	○
Analyze competitors' websites *	○	○	○	○	○	○	○
Review competitors' advertising strategy, execution, and targeting *	○	○	○	○	○	○	○
Access web-based job commercial sites *	○	○	○	○	○	○	○
Review competitors' job posting *	○	○	○	○	○	○	○

To what extent does the following statements fit your firm?

(1 - not at all, 7 - very much so)

	1 - Not at all	2	3	4 - Neutral	5	6	7 - Very much so
We use established processes to identify target market segments, changing customer needs, and customer innovation *	○	○	○	○	○	○	○
We observe the best practices in our sector *	○	○	○	○	○	○	○
We gather economic information on our operations and operational environment *	○	○	○	○	○	○	○

To what extent does the following statements fit your firm?

(1 - not at all, 7 - very much so)

	1 - Not at all	2	3	4 - Neutral	5	6	7 - Very much so
We invest in finding solutions for our customers *	○	○	○	○	○	○	○
We adopt the best practices in our sector *	○	○	○	○	○	○	○
We respond to defect pointed out by employees *	○	○	○	○	○	○	○
We change our practices when customer feedback gives us a reason to change *	○	○	○	○	○	○	○

How often have you carried out the following activities in the last few years?

(1 - not at all, 7 - very much so)

	1 - Not at all	2	3	4 - Neutral	5	6	7 - Very much so
Implementation of new kinds of management methods *	○	○	○	○	○	○	○
New or substantially changed marketing method or strategy *	○	○	○	○	○	○	○
Substantial renewal of business processes *	○	○	○	○	○	○	○
New or substantially changed ways of achieving our targets and objectives *	○	○	○	○	○	○	○

To what extent do you agree with the following statements? The firm:

(1 - not at all, 7 - very much so)

	1 - Not at all	2	3	4 - Neutral	5	6	7 - Very much so
has been very profitable *	○	○	○	○	○	○	○
has generated a high volume of sales *	○	○	○	○	○	○	○
has achieved rapid growth *	○	○	○	○	○	○	○

To what extent do you agree with the following statements? The firm:

(1 - not at all, 7 - very much so)

	1 - Not at all	2	3	4 - Neutral	5	6	7 - Very much so
has been very profitable *	○	○	○	○	○	○	○
has generated a high volume of sales *	○	○	○	○	○	○	○
has achieved rapid growth *	○	○	○	○	○	○	○

To what extent do you agree with the following statements?

(1 - not at all, 7 - very much so)

	1 - Not at all	2	3	4 - Neutral	5	6	7 - Very much so
The performance of the firm has been very satisfactory *	○	○	○	○	○	○	○
The firm has been very successful *	○	○	○	○	○	○	○
The firm has fully met its expectations *	○	○	○	○	○	○	○

To what extent do you agree with the following statements?

(1 - not at all, 7 - very much so)

	1 - Not at all	2	3	4 - Neutral	5	6	7 - Very much so
No matter who I'm talking to, I'm always a good listener *	○	○	○	○	○	○	○
I am always courteous even to people who are disagreeable *	○	○	○	○	○	○	○
I have never taken advantage of anyone *	○	○	○	○	○	○	○
I would never try to get even rather than forgive and forget *	○	○	○	○	○	○	○
I never feel resentful when I don't get my way *	○	○	○	○	○	○	○

I never feel resentful when I don't get my way *	○	○	○	○	○	○	○

My job role qualifies me to answer questions about export sales and marketing *	○	○	○	○	○	○	○
I am competent to answer the above questions *	○	○	○	○	○	○	○
I am confident that my answers reflect the company's situation *	○	○	○	○	○	○	○

Is your firm a service-based firm or production-based firm? *

- ○ Service-based firm
- ○ Production-based firm

When was the firm established? *

Write the answer as a number

How many employees are there approximately in the firm? *

Write the answer as a number

In which industry does the firm operate? *

Is your firm local or international? *

- ○ Local
- ○ International

Enter your email address below if you are interested in a document with the study's managerial and practical conclusions.