UNIVERSITY OF GOTHENBURG

Organizations and Enterprise Search: a Strategic Perspective

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Abstrakt

I dessa dagar är det vida känt att den tillgängliga informationen inom en organisation bara ökar. Att på ett framgångsrikt sätt dra nytta av den informationen är en stor utmaning. Den här studien ämnar bidra med djupare kunskap kring Enterprise Search, i.e. hur organisationer ser på frågor som handlar om hur intern sökning av information hanteras. Det finns en avsaknad av forskning som adresserar området strategier för Enterprise Search i allmänhet. Studien har sin utgångspunkt i tidigare studier som gjorts gällande strategier för informationssystem och föreslår ett ramverk vilket kan användas för djupare analys beträffande strategier för Enterprise Search. Nio intervjuer med organisationer av olika storlek genomfördes för att samla in data och ny kunskap till det outforskade området Enterprise Search ur ett strategiskt perspektiv. Studien bidrar med ett teoretiskt ramverk för hur organisationer kan tillmötesgå Enterprise Search på ett strategiskt sätt och vår studie visar att strategier gällande Enterprise Search är betydelsefulla för organisationer i deras arbete med dessa frågor samtidigt som de påverkar organisationers mognadsgrad. Vår studie visar att om en organisation har en strategi för Enterprise Search eller på något sätt jobbar strategiskt med dessa frågor kan det ha signifikanta positiva effekter. Vi kan emellertid konstatera att termen strategi i sig själv är vag, icke desto mindre för Enterprise Search, och strategiska krafttag behöver nödvändigtvis inte finnas nedskrivna på ett papper för att bidra med nytta inom en organisation.

Nyckelord: Enterprise Search, Organisationer, Strategi, Sökstrategi, Information

Abstract

Nowadays, it is widely known that the available information in an organization only increases. To successfully absorb and exploit that information is a challenge of major proportion. This study aims to contribute with deeper knowledge in regards to Enterprise Search, i.e. how companies work and look upon issues related to how internal search issues are managed. In the past, there is a lack of research addressing strategies for Enterprise Search in general. This study draws upon previous work regarding Information Systems-strategies and proposes a framework which can be used for deeper analysis of Enterprise Search-strategies. Nine interviews with organizations of various sizes were conducted in order to gather data and new knowledge to the unexplored research area of Enterprise Search from a strategic perspective. The study contributes with a theoretical framework for how organizations could approach enterprise search strategically. Our study shows that strategies regarding Enterprise Search are important for organization in their work with these issues and have an impact on the level of maturity of the organization. Our study shows that having a strategy or to strategically work with Enterprise search has significant positive effects. However, we can also conclude that strategy is a diffuse term in itself, nonetheless for enterprise search, and the strategic efforts must not have been written down in print to achieve its positive benefits.

Keywords: enterprise search, organizations, strategy, search strategy, information

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1 Introduction

It is well-known that the available information in today´s organizations only increases (White, 2016, Beath et al., 2012; Whittaker, 2011). To keep and store information is one thing but to successfully exploit that information is something completely different (Whittaker, 2011; White, 2016). White (2016) emphasizes that there is usually very little guidance from management on the process of information creation and curation. Thus, it is important to have an outlined strategy for the organizations overall Information Systems (IS) in general and Enterprise Search in particular (White, 2016). IS strategies is seen as an essential function that have a direct influence on the benefits generated from IT investment (Chen et al., 2010; Mooney et al., 1996; Weill, 2004). It is therefore not surprising that the term is widely used by both practioners and scholars without a clear definition or understanding of the underlying meaning of the term.

According to Whittaker (2011), it is of vital importance that the employees at any given company is successful in extracting information that exists internally or else, in a sense, management activity have been wasteful. He also establishes that the more information that is stored within a company, the more it is of high importance to organize and maintain it. Often, employees proceed in making own initiatives in regards to storing and organizing information, efforts that often result in nothing at all and hence are seemingly pointless (Whittaker, 2011). Stenmark et al. (2015) suggest with empirical evidences that an explicit strategy regarding enterprise search has a positive effect on the employee's level of productiveness and satisfaction.

The evolving notion among business executives is that they to a higher extent than in the past appreciate the value in emerging technologies (McAfee and Brynjolfsson, 2008). Even though some of the literature (Barua et al.. 1995; Francalanci and Galal 1998) prove the opposite, Drnevich and Croson (2013) suggest that the link between investments in Information technology (IT) and performance of a firm on certain strategic levels is somewhat a bit unclear and that it is determined by a certain organization´s ability to implement new technology. It has been proven that although the implementation of IT often comes with great potential, frequently it suffers from poor implementation making it hard for organizations to capture the gains (Brynjolfsson and Hitt, 1998; Mooney et al., 1996). Furthermore, often too much attention is placed on technology rather than organizational issues (Luftman et al., 1993). An investment in itself cannot establish sustainable competitive advantage (Stenmark et al., 2015). Instead, the available array of information and communi-

cation technologies are, if not controlled, a recipe for development characterized by ad hoc-decisions, incompatible systems and the large excess of information overload (Edmunds & Morris, 2000).Therefore, the viewpoint here is that technologies simply cannot create value by just existing.

A lot of work has been done when it comes to information-seeking (Khulthau 1991; Spink and Cole 2006; Marchionini, 2006) where typically the individual is in focus. However, there seems to be a gap when it comes to viewing matters related to enterprise search from a larger perspective where the organization as a whole is studied. There are hundreds of search engines available on the market but only a small portion can actually manage work with a widespread range of databases, content management systems and various kinds of documents. Quality of search results is often overlooked when purchasing decisions about the organization as a whole are made (Hawking, 2004). If business leaders and executives of IS can deploy a mutual view on the way new technologies can facilitate the organization in different ways, the chance is high that it will influence the overall Business Strategy in a way that is advantageously. Many organizations experience a hardship in reaping the benefits of information systems strategy due to the belief in that information technology can be managed solely by technologists in the company (Chen et al., 2010). Adding this conclusion with what Stenmark et al. (2015) conclude; organizations that actively engage in and work with search issues on their agenda and have an outlined strategy for search is likely to have more pleased workers in regards to search applications and to what extent they can find information. These conclusions make us assume that an investigation regarding what a strategy for search can entail might help organizations and scholars to become more aware of the benefits implementing such a strategy. Stenmark et al. (2015) believe that such a strategy is more often implemented at companies where an active IT governance function is involved (Stenmark et al., 2015).

1.1 Problem

The purpose of this study is to contribute with deeper knowledge in regards to how companies work and look upon issues related to how internal search is-

sues are managed. Given the lack of previous studies within this area, our aim with this exploratory study is to investigate if search strategies exist and what they might may look like and what components they entail by answering the following research question:

> *How do organizations strategically work with Enterprise Search?*

1.2 Definitions

In this thesis, the term Enterprise search is used extensively. It is of great importance to understand the meaning of the term and therefore we will use the definition used and formulated by White (2016).

> "Enterprise Search is a managed search environment that enables employees to find information they can rely on in making decisions that will achieve organizational and personal objectives" (White, 2016, p. 151)

2 Related work

We assume that a strategy for Enterprise search is a part of an organizations IS-strategy. Since previous literature related to IS- strategies tend to be highly based upon strategy in the context of strategic business management, we feel a need to present strategy at a business level in order to generate a greater understanding for strategies in the field of IS. Following section starts with a short overview of why search is important for today´s organizations. The section later presents strategies in extent to management and then strategies from an IS perspective are discussed. At the end, enterprise search and its strategic value will be described.

2.1 Search of information in the modern society

The amount of available information in the modern organization increases rapidly (Beath, et al., 2012). As stated by White (2016), information has successively grown to become a critical asset for today's organizations and can be the key for future success. However, information that cannot be found does not have any value. Of that reason, information seeking in general and enterprise search in particular is of major importance for the modern organization and its competitive status on the market (White, 2016). Thus, the need of a good search environment with effective search engines is essential (White, 2016; Stenmark et al., 2015; Halavais, 2009).

Halavais (2009) argue that the search engine has become a so well integrated part in our everyday life that those algorithms are seen as the cure for stupid questions. He means that search engines represent the screen through which we view the content of certain system allowing us to actually tame and find value in the ocean of information out there (Halavais, 2009). These search engines will only get more sophisticated by time and thus become even more important when seeking for valuable information in our digital society with, more or less, unlimited amount of information as sources (Fischer et al., 2005). Furthermore, Halavais (2009) suggest that it is important to treat the search engine and its related issues in a larger context and not consider it to be an isolated technology which is built upon another independent technology (Halavais, 2009). Therefore, a strategic holistic approach needs to be taken regarding these search issues in order to improve the organizations enterprise search (Stenmark, et al., 2015).

2.2 Business Level Strategy & Strategy as a concept

There has been a lot of research done regarding strategies and what a strategy entails in terms of its construction (Cummings &Wilson, 2003). Three streams of strategy research have got substantial attention which are; A) research dedicated to define the term, B) distinguish the characteristics of strategic decisions, and C) understanding the central issues of strategy at different levels in different environments. The focus in the first of these streams is on investigating what a strategy really is and what constitutes a strategy (Chen et al., 2010). Much of this literature is quite old and the most prominent research concerning this issue is done by e.g Mintzberg (1987) and Porter (1996). Chen et al. (2010) argue that there are a plurality of models and tools for the analysis, development and execution of strategy. Among others, Porter´s five forces (Porter 1980) and the value chain model (Porter, 1985). However, none of these has become a definitive standard and thus there is no consensus regarding strategies (Markides, 1999). Chen et al. (2010) argue that each of these models and tools give a useful perspective of strategy but they do not establish an outlined definition of the term.

Regarding the second stream of research, Chen et al. (2010) focus on the difference between a strategic decision and a non-strategic decision. Wheelen and Hunger (2012) suggest that strategic decisions, unlike many other decisions, deal with the future for an organization as a whole (Wheelen & Hunger, 2012). These decisions have three characteristics. At first, they are rare and are not taken on a regular basis. Strategic decisions are also consequential which implies that they demand a great deal of commitment from people at all levels in the organization. At last, strategic decisions have a major impact on future decisions throughout the organization (Wheelan & Hunger, 2012). This goes in line with the definition of strategic decisions provided by Chen et al. (2010) where they argue that these decisions often are irreversible, that they have a long-term impact on the organization´s performance and that they give direction for non-strategic decisions. Similar to the first stream of research, the literature with this perspective on strategy have not been able to establish an outlined definition of the term (Chen et al., 2010). The third stream of research focuses on the existence of strategies at different levels within the organization and all together this stream suggests that strategy may include decisions at different corporate levels. It also argues that strategies are considered to be more than the sum of the strategic decisions they include. Thus, strategies can be seen as the glue which combines individual strategic decision to a bigger whole (Chen, et al., 2010).

There is still no definitive and common definition of strategy, neither between practitioners nor scholars (Chen, et al., 2010). However, in this study we de-

fine strategy as a set of management decisions regarding how to balance an organization's tradeoffs between being efficient, (reducing costs) and being effective (creating and capture value) to achieve its strategic objectives (Drnevich & Croson, 2013). The term IS Strategy will be derived from Chen et al. (2010) whom suggest that it can be seen as an organizational perspective on the investment in, deployment, use and management of information systems. The organizational perspective that will be adapted is initially inspired by Henry Mintzberg and his Five Ps for Strategy. In particular, the focus will be on the fourth dimension referred to as Strategy as a Perspective. It is described as an entrenched collaborative intuition regarding how to look at the world (Mintzberg, 1987).

2.3 Information Systems Strategy

Typically, in previous research, the performance of IT in regards to strategic management has been rather limited and investments in IT has mainly been looked upon as a way to achieve competitive advantage or a direct necessity in order to not fall behind competing firms (Drnevich & Croson, 2013).

In the past, IS-Strategy research has tended to overlook the concept of what an IS-Strategy actually is. Insights have been brought to what kind of employees that should participate in creating a strategy of such and how to align it with other present strategies such as the business strategy. Information systems is a widespread area related to several different aspects such as the use of technological components and human aspects related to how technology should be used within the company. Chen et al. (2010) highlight that IS Strategy research have been described in different ways in the past, such as that it must be intentional and that it is only described as something that has already happened. Instead, they point out that IS Strategy within companies is something that "happens" or take place even though it is not expressed as an actual strategy. They emphasize that no-one has actually seen a strategy and that every unique ditto is a new kind of invention on its own. A strategy in general can be seen as intentions to regulate behavior before it takes place for instance. Firms do use Information Systems and they do have guidelines for employees in regards to how they should use those systems. But it cannot be assumed that IS-usage within a company automatically generates an IS strategy (Chen et al., 2010). Oh and Pinsonneault (2007) investigate if a deployment of IS indicates the presence of an IS Strategy. They find that where a cost reduction strategy exists, a firm can generate more immediate benefits than where an IT alignment strategy exists focusing on bringing more revenue. This is an indication that further research is needed in order to better understand how to plan and implement IT systems (Oh & Pinsonneault, 2007).

Drawing on that conclusion, it will be assumed that it also would be motivated to further investigate IS strategies in how they replenish technologies that support Enterprise Search.

Furthermore, Chen et al. (2010) suggest that IS-Strategy needs to be investigated separately and apart from the Business Strategy but still from the organizational perspective rather than at the functional level. In addition, the governance of IT is acknowledged to be an essential organizational function that have a direct influence on the benefits generated by investment in IT (Weill, 2004).

2.4 Enterprise Search and its strategic value

In today´s information-rich environment it is essential to find information effectively and what tools to provide for enterprise search is thus a decision of strategic importance (Stenmark et al., 2015). Such corporate information is nowadays seen as vital organizational assets, valuable in decision making through adequate use of IT (Applegate et al., 2008). Enterprise Search is defined as search of electronic text in the possession of an organization in the form of email, database records, documents and the like (Hawking, 2004). Enterprise search is also defined as the managed search environment the enables an organization´s employees to find information they can rely on in making decisions that will achieve organizational and personal objectives (White, 2016). In regards to the latter form of definition, enterprise search is more than just the selection of search tools that enables employees to find all the information an organization possesses without any need of where the information actually is stored (White, 2016). Strategic management of enterprise search can therefore both create and capture business value through effectiveness and make the organization more efficient, following Drnevich and Corsons (2013) definition of strategy.

Research has shown that IT investments are associated in a positive way with profitability of a firm. Therefore, successful management efforts in regards to overall IT investments can be a vital intangible firm resource (Mithas et al., 2010). Since IT has become more closely tied to business objectives nowadays, such investments must consider the strategic objectives on all business levels. However, it is not always easy to create a traditional business case on IT investments since such investments can measure returns in many aspects (Ross & Beath, 2002). White (2016) argues that the biggest problem with business cases for enterprise search is that there is no standard process involved and therefore a solid return on investment cannot be made, which might be easier for other IT investments such as finance systems or similar (White, 2016). Instead, other benefits may appear such as more satis-

fied and productive employees (Stenmark et al., 2015; Ostroff, 1992; Miller & Monge, 1986). In addition, White (2016) suggests that investments in enterprise search also can give the organizations better relationships to their clients and customers through improved information management (White, 2016). A fact that can generate greater revenues and profits (Storbacka, et al., 1994)

Stenmark et al. (2015) show that search technology has become a significant strategic aspect and therefore it would be plausible to look at it as something that should be managed to some extent. The outcomes from having a central management function that have enterprise search on its agenda can be more productive employees. They argue that is has become more and more important for organizations, and especially larger ones, to address and engage in Enterprise Search to keep the employees productive. An established strategy in place regarding Enterprise Search indicates that the organization actively works with these types of questions and therefore are more likely to have a well thought-out search solution. The authors also showed regarding the satisfaction-level of employees and their search applications, it did not differ depending on what kind of strategy that was in place. The conclusion is therefore that the type of search strategy that exists within an organization, whether it is included in the business and/or in the IT strategy, does not matter as long as there is a strategy (Stenmark et al., 2015). Drawing on that conclusion, this study aims to focusing on what a strategy like that might look like regardless of what it is named or regardless of how organizations work with these issues.

To address enterprise search with a thought out road map that may or may not be called a strategy can have benefits for companies in the sense that they can respond to business opportunities in a much faster way because of a clarity in how the internal information can be found (White, 2016). Organizations today are under heavy regulatory pressure to create and handle digital communications and records under time constraints which make technologies like search application tools desirable. It has become more important to address issues regarding managing the growing risks of having unstructured information (Owens, 2008.)

However, Broder and Ciccolo (2004) argue that enterprise search tools are associated with complexity and also that they are large in scale making them hard for individuals to handle. They explain that to build search application tools that are to be used by consumers of information is hard. They highlight problems related to the lack of understanding about why the technology in itself cannot solve the problem of finding any given information that needs to be found. Often, enterprise search engines are compared the web search en-

gine but that simply is not parable. This is because an internal Enterprise environment lack the interlinked nature that the Web has (Broder & Ciccolo, 2004). Enterprise search is dissimilar to search of information in a digital library on the web. This is because the bulk of what is to be found are specific and centered around the very concepts of the business, for instance products and purchase orders (Brauer et al., 2010)

3 Theoretical framework

A theoretical framework was constructed in order to interpret the empirical data. The framework was built upon a Chen et al. (2010) broad definition of IS-strategies which suggest that IS-strategy should be a part of organization´s overall corporate strategy and should therefore be examined on an organizational level rather than on a functional level. They suggest that a strategy is shaped through three stages; a development process which has an outcome of a strategy when implemented has a strategic impact on the organization. Since it, to our knowledge at least, does not exist a conceptual framework for Enterprise Search strategies we assume that it is possible to apply the same stages and processes as for them regarding business and IS strategies developed by Chen et al. (2010). In figure 1 their conceptual framework is described, where they argue that the IS strategy is derived from the overall business strategy, and then iteratively aligned throughout the whole process.

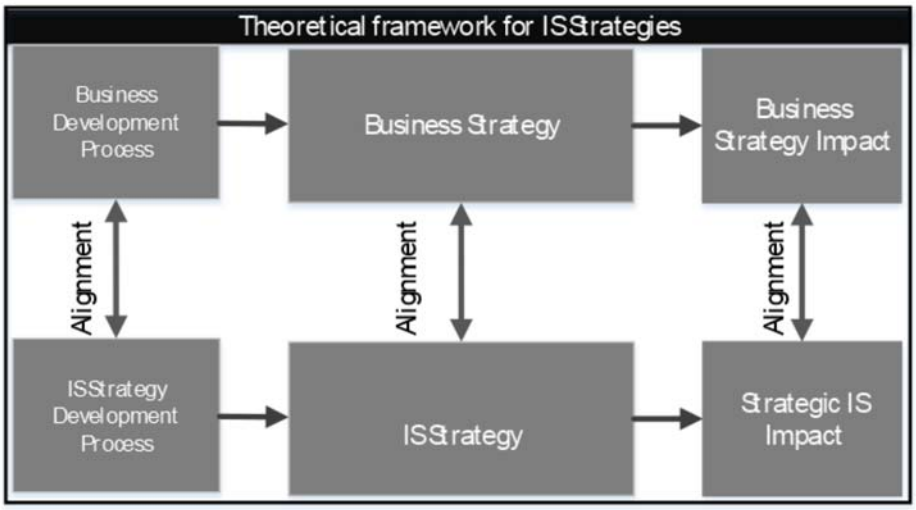

Figure 1 – Framework for IS strategies from Chen et al. (2010)

Chen et al. (2010) have identified three conceptions of IS-strategies from the IS literature, their third conception will be used as the basis in our theoretical framework. This conception is defined as the shared value view of IS role within the organization and is based on Minzbergs (1987) broad definition of organizational strategy as a perspective. According to Chen et al. (2010), this conception of IS-strategy is organizational-centric, which means that it falls in between the other two conceptions, business strategy driven logic and IS-function driven logic. This perspective reflects the top management's view on IS strategy and it strives for some sort of consensus in regards to the role of IS and that all employees of an organization strive in the same direction

(Chen et al., 2010). Luftman (2000) and Wegmann et al. (2007) highlight the importance of alignment between the business strategy and the IS Strategies, which means that IT is in harmony with business and vice versa. The framework of Chen et al. (2010) underlines a conception which provides a new way of looking at Enterprise Search in IS strategy as well as IS and Business strategy alignment through an altered lens.

Based on Chen et al. (2010) theories regarding IS-strategies, figure 2 illustrates our suggestion for how a strategy for Enterprise Search can be developed and implemented in an organization. An assumption is made that strategies for enterprise search go through the same three stages as for business strategies and IS-strategies which all are aligned to each other. Stenmark et al. (2015) found empirical evidences regarding the positive effects a strategy for enterprise search has on the perceived level of satisfaction among the employees within the organization but their study did not reveal what such a strategy actually consist of. Therefore, the main focus in this study will be on the second stage in the strategy development process, which is highlighted in figure 2. White (2016) presents a list of fifty elements every enterprise search should consider. In our theoretical framework, White's (2016) list of element has been compressed which resulted in four dimensions a strategy for enterprise search should consider; business, technology, user and information. Each of these topics will receive a deeper presentation as follows.

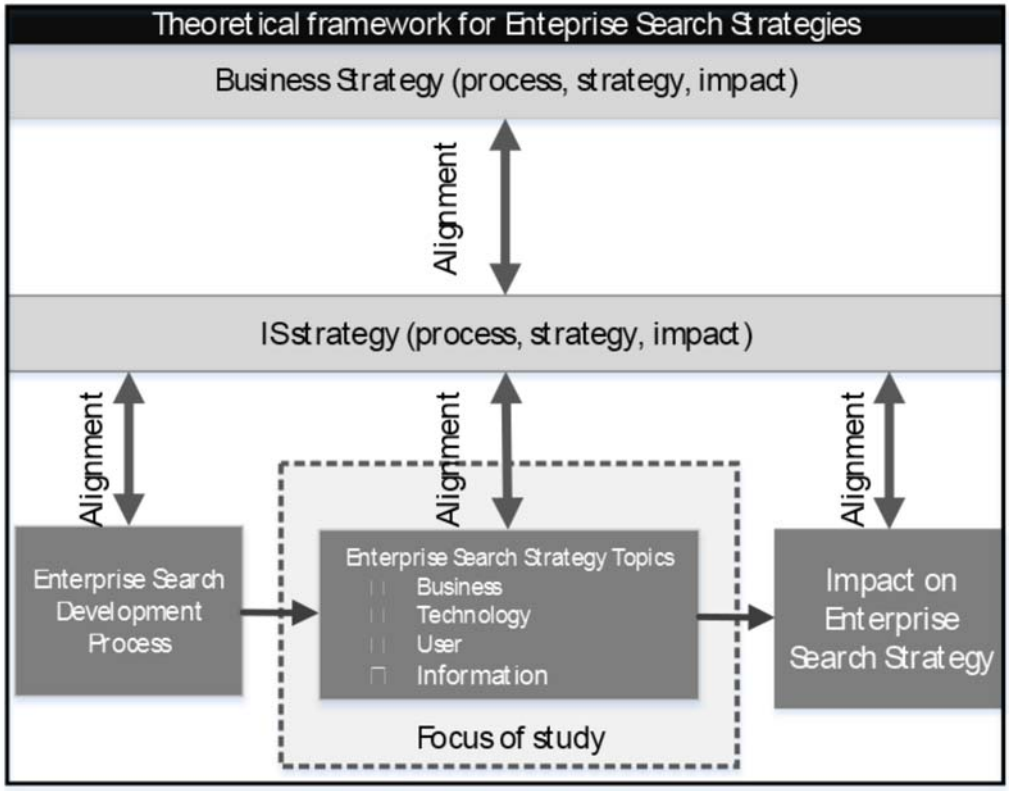

Figure 2- Theoretical framework for Enterprise Search Strategies based on Chen et al. (2010) and White (2016).

3.1 Business

Stenmark et al. (2015) discuss governance of IT in terms of how Enterprise Search should be governed. They emphasise that despite that IT investments are common feature in organizations, often there is a hardship in estimating in what way these investments benefit the organization. According to Khallaf (2012), organizations make investments in information technology because of the strategic advantage it may lead to. He talks about a sustainable competitive advantage in regards to quality of products and relations with customers in particular. But to establish what IT costs is easy, whilst to actually prove that the organization reaps large benefits is harder due to the fact that they are intangible. It is simply not obvious how IT contributes with financial value. This is further highlighted by Bocij et al. (2008). Melville et al. (2004) state that benefits associated with IT investments partly can be formulated as efficiency. Effectiveness refers to intangible aspects such as a better relation within the organizational environment (Melville et al.,2004). A better organizational environment could perhaps be an environment where employees to a higher extent would be able to find the information they are looking for, as suggested by Kuhlthau (1991).

Drnevich and Croson (2013) highligh the underestimated business-level role of IT and they suggest that previous research calls for a new way of looking at IT and how it should be incorporated in the overall strategy of an organization. White (2016) underlines the aspect of the need for an organization to decice who is responsible for search whenever an investment is about to be made. He argues that an organization should invest in employees capable of understanding both technology and the capabilities of the search application. Drawing on this work, we suggest a new perspective or lens through which Enterprise Search and the strategic work of ditto can be looked at.

3.2 Technology

Drnevich and Croson (2013) state that investments in technology can have influences on a firm's strategy in the sense that it can make it more efficient and effective (Drnevich & Croson, 2013). A framework that use nonfinancial measures to understand the link between IT investments and their intangible benefits is proposed by Khallaf (2012) Others suggest that such investments in IT may give an output in terms of a contribution of valuable information that can increase the value of making investments in different resources. Also, technology investments can make it easier for management in becoming more sharp in their decision-making (Drnevich & Croson, 2013). Yet, Nolan and Croson (1995) find that many business leaders don't have a full understanding regarding the interaction between the technology that is available within the company, nonetheless technology that is available on the market but not yet realized, and the proper organizational form. In the longer term, this leads to shortcomings from not showing enough engagement in the possibilities that an IT-enabled context provides (Nolan and Croson, 1995).

White (2016) argues that it is more to a successful Enterprise Search than just an advanced search engine. Mooney et al. (1996) conclude that many studies illustrate the role and benefit of IT in improvement effort of organizational design and processes by showing anecdotal evidence. In other studies, it is taken for granted that technology leads to success automatically. Furthermore, in the case of Enterprise Search, can notions in relation to that term be influenced by assumptions that the mere presence of technology, like a search engine, is the only thing that is required in order for the firm to be more successful?

3.3 User

There are only two important success metrics for enterprise search. One of them is that users trust the enterprise search to find all the information they need and the second is its impact on business performance (White, 2016). Information technology investments are often an organization wide investment that has an effect of a large number of its employees (Bocij, et al., 2008). According to White (2016), an investment in Enterprise Search is no different. They have a large impact on the organization and the employees become the prime users. Hence, they should therefore get the attention they deserve in the development process of a strategy for Enterprise Search (White, 2016). Furthermore, the same author suggests that searching is not as easy as many seem to think. Employees both need to be trained in how they search and their feedback of the Enterprise Search is valuable for development.

Gillespie (2014) writes about the public web and that modern search engines enables people to navigate through enormous databases of information and does so in a very efficient manner. Perhaps, this ability to find information privately has made people more expectant in how effective they can find information in an organizational context. Further, investments in Enterprise Search are done to make the employees more effective and thus create more value for the organization (White, 2016). With users' high expectations about finding information in a private context in mind and applying that to the context of Enterprise Search, it is possible that these users might play an important role in the development of a strategy for Enterprise Search and should therefore be considered to be involved in the process.

3.4 Information

Buckland (1991) defines three kinds of definitions in regards to the word information, one being information-as-thing. This means that the term information is used to refer to different objects such as data, spreadsheets, documents and the like. Case (2002) talks about an individual's information need and describes it as a recognition that your current level of knowledge is not enough to reach a certain goal you have. Further, White (2016) says that Information that cannot be found within an organization is, in effect, information that does not exist. Davenport and Prusak (2000) highlight the importance of a deeper reflection regarding the handling of internal information (Davenport & Prusak, 2000). Information should be seen as a corporate asset where its value highly depends on its quality and findability (White, 2016).

White (2012) argues that the value of a piece of information is hard to measure since it specific value always is unique to an employee at a particular part in time, and if the information cannot be found, it has no value at all (White, 2012). The underlying issue for many organizations is that they consistently do not see their information as a valuable asset. Most certainly they know how many desks they have, how much money is in the bank and the names of most employees and customers. However, they have no idea of how much information they actually have stored in their systems (White, 2016). In addition, organizations might fail to address the information need explained by Case (2002). All these aspects of information mentioned above are aspects that might influence organizations. Hence, the management of information should be seen as a strategic issue where the overall objective is to handle the information in ways that make it possible for employees to find it and thereby create future business value (Whittaker, 2011).

4 Method

In the following section, a presentation of the research method for this exploratory study will be described. It begins with a description of the scientific approach, followed by how the data was gathered and later analyzed.

Theories are complex perceptions or concepts of relations which are tested against real world problems (Holme & Solvang, 1997). The literature chosen for this study regarding existing theories was found through extensive searching in different databases containing scientific literature. Association for Information's System´s own e-library, google.schoolar.com and Gothenburg university´s own library are all examples of databases used. Word and phrases when searching have been formulated to closely match our keywords; enterprise search, organizations, strategy, search strategy and information. After analyzing the previous literature in our area of concern, some well-cited authors became pillars in the theoretical section of this study. Furthermore, this paper approach search from an organizational perspective and therefor, the literature regarding enterprise search was selected with this point of departure.

4.1 Study design

Figure 2 provides a brief overview for the study´s design. According to Silverman (2006), an inductive approach was taken due to the lack of existing theories to our area of research. An inductive research approach can be seen as an exploratory path which is characterized by a researcher that has formulated a theory without anchoring it in previous research (Patel & Davidsson, 2011).

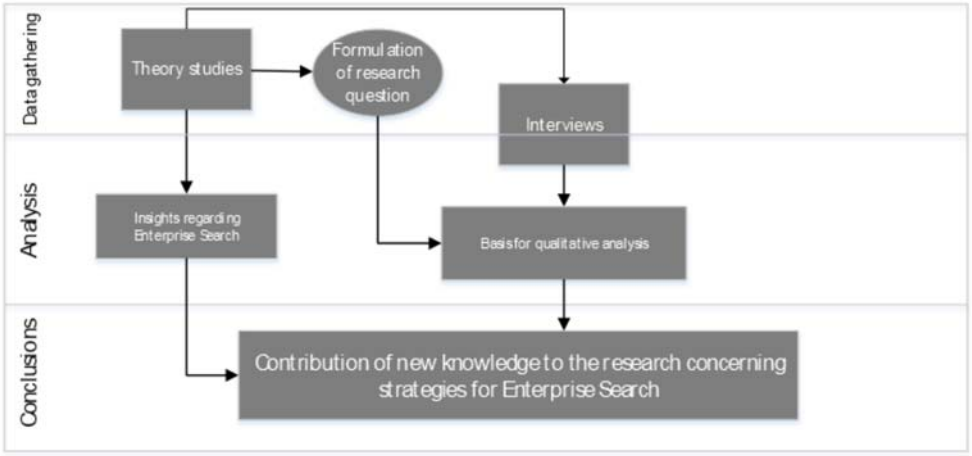

Figure 3- Design of study

4.2 Data collection

According to Patel and Davidsson (2011), the formulation of the research question is what determines and motivates the nature of the research approach. If a problem area comes down interpreting or understanding human beings and their experiences or to identifying underlying patters of a certain phenomenon, then verbal analytical methods of the qualitative kind should be used. Therefore, a qualitative approach was taken when gathering data for this study. Qualitative research focuses on "soft" data such as primary data gathered from interviews (Patel & Davidson, 2011). Initially, focus was laid upon studying the present literature within the area of Enterprise Search or similar areas. The purpose of this was to gain insights in the mapping of the aspects of the area which gradually have resulted in the theoretical framework.

This study comprises nine qualitative interviews in nine different organizations where the respondents have answered open semi -structured questions. Patel and Davidsson (2011) state that qualitative interviews are preferable as they allow the respondent to answer questions in their own words based on their own experiences. They also say that it is favorable that an interview in that sense is considered as a conversation between the interviewer and the respondent (Patel & Davidson, 2011). Furthermore, Merriam (2014) argues that semi-structured interviews reduces the impact of influence from the researchers and allows the interviewee to affect the development of the conversation. Therefore, this was an interview-technique appropriate for the study.

Patel and Davidsson (2011) say that the questions asked in an interview can have a certain degree of standardization and structuring. A certain degree of standardization is determined by how much of the responsibility that is upon the interviewer when it comes to the design of the questions. Also, to determine a certain degree of structuring, it is worth considering to what extent the questions are open for interpretation by the respondent. Patel and Davidsson (2011) establish a model describing different techniques in order to collect data for a study. Using that model as a point of reference, this study positions itself as a study with questions having a low degree of structuring and a low degree of standardization. The interviews are conducted in order to perform a qualitative analysis of the findings.

In order to gather empirical data from respondents chosen, an interview guide was designed. The interviews were structured as follows. Firstly, a number of demographical questions were asked in order to better understand the working context of the respondent. Secondly, the interview was divided into four different themes/areas drafted from the theoretical framework (business,

technology, information and users). A number of open questions were asked in each of these four areas and the respondent was encouraged to speak openly. Supplementary questions were asked when deemed necessary to get a richer and clearer understanding of the respondent's anwers. When each of the four areas had been covered to a satisfying degree, a set of open questions regarding Enterprise Search were asked. The interviews lasted on average for about 60 minutes. Seven of the interviews were performed on site at each company whereas the remaining two was performed using Skype.

4.2.1 Selection of respondents

Respondents were found using the internet and particularly the professional network LinkedIn. The large network of people provided by LinkedIn enabled efforts to be made in finding the right kind of respondent. The respondents were contacted by email and a template was prepared and sent out describing the purpose of the study as well as practical aspects.

Respondents for the study should be chosen based upon the knowledge they possess in regards to the investigated phenomenon (Jacobsen, 2002). Respondents in each organization were chosen because of their specific roles. CIOs, IT managers, IS/IT- Directors and the like were targeted in larger organizations. Whenever that role could not be found at a chosen company, the customer service or info service was contacted. The aim was to investigate organizations employing a thousand people or more. The assessment was that people in these positions held knowledge, experience and competence enough to cover the area of Enterprise Search in their organization and how this area is handled and has been handled in the past. A study of this character could be industry-specific but as Enterprise Search is a fairly widespread and common aspect of organizations in general, an industry-specific study might end up showing non-general findings. Therefore, no consideration was taken in regards to industry belonging of the organizations in this study. However, efforts were made in trying to include organizations of various sizes to make the findings as general as possible.

4.2.2 Presentation of the respondents and their organizations

In the invitation-email that was sent out, respondents were given the opportunity to become anonymous both as a person and as an organization. Not every organization demanded full anonymity but because their identification does not have any extra effect on the study, a decision was made to anonymize every interviewee and their organization. However, since it is of relevance for the study to present the engaged interviewees and organizations in a

larger context, a short presentation of their current role, experiences and organizational information will follow.

A: *Current job role:* Director IS/IT
Experiences: Has been working for the same firm since 1986 and has had several different roles within the firm.
*Organization: A private firm with a*pproximately 1 500 employees.

B: *Current job role:* Head of IT and projects
Experiences: Has worked as a CIO or similar in several different firms for the last fifteen years.
Organization: A public firm with approximately 750 employees.

C: *Current job role:* Manager productivity and Identity Services
Experiences: Has been working for the same company since 1996 and has had several different roles within the firm. Among others, Head of IT for a ten year period.
Organization: A private firm with approximately 11 500 employees..

D: *Current job role:* Chief Information Officer
Experiences: Background as an IT Management consultant and has worked in his current role for three years
Organization: A private firm with approximately 1 900 employees.

E: *Current job role: ICT consultant – Information Manager*
Experiences: Has worked for the firm since 2001 and has been involved with search issues for the last nine years
Organization: A private firm with approximately 120 000 employees. Active in the communication industry.

F: *Current job role:* Information architect within IT
Experiences: Has been working for the firm since 2001 in different roles related to digital information issues.
Organization: A private firm with approximately 61 500 employees..

G: *Current job role:* Business Sub-portfolio Manager: Enterprise Content Management and Risk Control & Strategy
Experiences: Has been working for the firm since 2006 and has had several different roles in the area of information and content management
Organization: A private firm with approximately 100 000 employees.

H: *Current job role:* Finance director
Experiences: Has been working for the firm for three years with the same role. Background as a consultant.
Organization: Public firm with approximately 53 000 employees.

I: *Current job role:* IT-application Portfolio Manager
Experiences: Has been working for the firm since 1995 in several different roles. Among others, system developer, IT project leader and SharePoint expert.
Organization: A private firm with approximately 1 500 employees.

4.3 Data analysis

Transcriptions of the interviews were done after each interview session. The data collected was analyzed as follows. Firstly, the authors sat down together and started to read through the transcriptions of each and every interview. Drawing on the Enterprise Search Strategy topics from the theoretical framework of the study, the texts where initially elaborated through color-coding. A certain color corresponded to one of the four topics; business, technology, information and user (Patel & Davidson, 2011).

As the work with color-coding proceeded, a set of sub-themes started to be seen. These sub-themes were highlighted and written down in a document of its own. This document grew over time as it was assessed that interesting findings should be written down in the same document. The purpose of this was to ease the process of presenting the findings. As soon as the fifth interview had been completed in terms of color-coding, the authors discussed whether or not theoretical saturation had been reached (Silverman, 2006). This was done jointly. At this point, it was considered not to be the case and more interviews were initiated. After the ninth interview, the authors repeated the same procedure with color-coding, sub-theme categorization and evaluation. This time, theoretical saturation deemed to be reached. Table 1 presents our main themes derived from our theoretical framework and the sub-themes that appeared when analyzing the data.These sub-themes grew and could be seen under each of the four main topics business, user, technology and information. These sub-themes were used in the analytical process and it became clear that the different sub-themes had associations with each other.

Table 1. Summary of themes and sub-themes				
Themes	**Business**	**Information**	**Technology**	**Users**
Sub-themes	*Ownership*	*Information quality*	*Over-reliance in technology*	*Navigations thinking*
	Investments	*Metadata*	*Technlogy sets the agenda*	*User input*
	Business-cases	*Storage*	*A myriad of systems*	*Evaluation*
	Role based search	*Workarounds*	*Technology requirements*	*User interest*

Table 1. Summary of themes and sub-themes

4.4 Reliabilty & validity

Bryman (2008) argues that a qualitative approach exposes for the risk of being subjective due to the fact that the researchers have to interpret the collected data. According to Patel and Davidsson (2011), the only occasion where an outright measure of the reliability can be obtained is when an instrument is used, an instrument that results in that each and every individual is given a score on a scale. In such a case, a measure of reliability is used that determines the stability of the instrument. These measures are expressions of connection (Patel & Davidsson, 2011). They also say that in cases where a measure of the reliability cannot be obtained, like in the case of this study, it is important to make sure that the study is trustworthy in other ways. To control the reliability of for instance an interview, the reality can be "stored" by recording the interview session. Given that the reality in a sense is "stored", it enables the reality to be repeated as many times as necessary in order to establish that everything has been understood correctly (Patel and Davidsson, 2011).

Further, according to Patel and Davidsson (2011), the validity of a study associated with the researcher's ability to obtain basis for a credible interpretation of the world of the studied. Also, the validity is associated with the ability of the researcher to capture what is ambiguous (Patel & Davidson, 2011). In this case, the term Enterprise Search could be ambigious for the respondent and that needed to be accounted for.

It is hard to translate gathered data correctly (Harrington & Turner, 2001). According to Bogusia and Young (2004), there is always a dilemma when data is collected in one language and later translated into another language in qualitative research. The problem with translation is often semantic loss and the inherent difficulties to rehearse the cultural meaning embedded in linguistics expressions (Bogusia & Young, 2004). Since all of the interviews in this study were performed in Swedish, and the thesis later written in English, a translation between the languages had to be made. Great care was taken in order to create as fair, accurate and correct translations as possible from the collected data.

5 Findings

In the following section, the results from our empirical studies will be presented. The section is divided into the four topics stated in our theoretical framework for enterprise search strategies in order to make it clear for how the studied organizations reason about each of them.

5.1 The business perspective

All of our nine interviewees consider enterprise search as an important business area for the future and a subject that only gets more important as the amount of internal information is constantly increasing. They believe that a strategy for enterprise search soon is necessary in order to be able to stay competitive within their industry. However, we have noticed that the maturity level for enterprise search differs greatly among our respondents. Two interviewees, F and G, say that they have an enterprise search strategy already in place, while two interviewees argue that such a strategy is under development at the moment, resulting in five respondents having no strategy in place or under development at all.

All of the respondents who do not have a strategy for enterprise search, A, B, C, D and H, mean that their maturity-level is low and well below average in comparison with their peers for their specific industry. Respondent A describes his organization´s current search environment as chaos, while B states that their search and information situation is bad with an extremely fragmented information environment, resulting in poor search. Respondent H argues that they are positioned at least ten to fifteen years behind their peers. Generally applicable for all the organizations saying that they totally lack any strategy for enterprise search is that they seem to be well aware of it and also fully understood with the thought that something has to been done in the future.

> "*We do not have a strategy for search and our current search environment looks accordingly. Our search can* be described as stone age… We have a lot to do in this area, and we are aware of it" *Respondent C*

Those respondents already having a strategy in place for enterprise search are in general more satisfied with their information and search situation. All of these organizations believe that they have a high, or at least above average, maturity level regarding enterprise search, in comparison to their peers. In general, these organizations have employees working actively with their enterprise search, where the number of employees working with these questions

tends to be correlated to the size of the organization. These organizations having a strategy or at least having one under development also have in common that they have worked with these issues for quite some time already. Respondent E says that she has been working with her organization's enterprise search for the last eight or nine years and respondent respondent G states that his organization have been working with these issues for over ten years.

> "*I would say that enteprise search has been on our agenda for at least ten years. However, I still think these questions do not get enough focus*" Respondent I

When discussing enterprise in a broader perspective with our respondents, they discussed initiatives going on in some of the organizations. For instance, respondent I describes a collaboration network initiative for enterprise search which she co-founded some years ago. This collaboration network consists of ten relatively large organizations who meet a couple of times each year where they discuss issues around SharePoint, information management and enterprise search. Respondent I believes this is a great way to develop their search environment and learn from others without incurring more costs due to consultancy firms or similar. The majority of our respondents have, in various extents, been in contact with consultancy firms in order to enhance their information environment. For instance, respondent E admits that her organization had several full time consultants hired to improve their enterprise search where others, for example respondents A, B and C, only have had some discussions with consultant regarding these issues.

We received a lot of different answers when asking our respondents about ownership of their enterprise search. Some answers were quite obvious since they did not have an enterprise search solution in place and hence they did neither have a person nor department who owned it. However, almost every single system has its own search tool and for that specific tool the overall system owner had the responsibility, but that cannot be seen as something called enterprise search since it only search data within its own limited boundaries. In general, for these organizations not having an enterprise search solution in place, is that search seems to be a secondary priority and something just included when investing in a new system. These respondents said that the search was usually not even considered when discussing IT investments and the ownership for the integrated search solution always ends up on the system owner for that specific system.

When talking about the number of systems used in each and every organization it become obvious that there in many cases are a large quantity of them. Respondent H says that they tried to count the number of systems in their current digital environment but that they lost the count when passing 3500 different systems. He goes on and states that they do not even have an organization-wide agreement regarding what information actually is and consequently it is impossible to search for information between all those systems. He winds up this discussion and concludes that in most cases, the systems do not even talk to each other. Similar situations appear in several of our respondents. Respondent E says that they have around 900 different systems and respondent F state that they have so many that she does not even dare to take a guess on the number. However, on their internal collaboration platform a user once asked an question explaining the situation quite good:

> "*Where can I find the search engine to search for the right search engine*?" Respondent F

Although, what is common for all the respondents, whether they have an enterprise search or not, is that the organizations IT department always is involved in some way. Among the respondents actually having something they referred to as an enterprise search, the IT department usually played an important role. The IT departments are seen as the component where the competence is at and usually those who see the biggest possibilities with enterprise search.

> "*Our technical competence is found at the IT department. Those are the ones who realises our strategies regarding Enterprise Search*." Respondent E

Respondent E declares that the effectiveness of enterprise search highly depends on the information available. Further, many of the respondents answered that the department who had the responsibility for the content on their intranet usually was seen as a part-owner for the enterprise search. However, the responsible department for the intranet varied a bit among our respondents and stretched from communication-, HR. to collaboration departments.

When our respondents were asked about their driving forces regarding their enterprise search initiative, it became clear that those initiatives often were highly dependent on dedicated and driven individuals. For some of our respondents, their historic search initiative have totally ceased when such an individual has left the organization. Respondent G exemplifies with their work with an engineering-based search portal. The whole search project were

brought in by one enthusiast and was later driven forward by the same individual. After a reorganization he was placed in another department and the search projects suddenly died with his disappearance. Respondent I also highlight the importance, and problem with enthusiast, as drivers for search project. In contrast to respondent G, they put a lot of responsibilities on one individual and it turned out that this person did not have that drive these search issues need which led to a failing project. She was not that enthusiastic person they thought she was, and without the necessary energy it is hard to succeed.

Respondent E fully agrees with the other respondents when discussing importance of enthusiastic individuals. She means that their work with enterprise search got a real boost when one dedicated person was assigned a role where he could work with these search issues on full time. However, respondent E also suggest that it is important to collect all good ideas and initiative among the other driven individuals.

> "To have a person working with these issues on full time is great, but I think we have to do more. Maybe something community-driven where enthusiastic employees can share ideas with each other's." Respondent E

We asked our interviewees about the creation of business-cases regarding Enteprise Search. All of our interviewees argued that it is really hard, or even impossible, to set up a good business case concerning enterprise search that the management would understand. Our respondents argue that the biggest problem with these business-cases is to make them monetary quantifiable. Respondent D means that this creates problems when trying to present incentives for investing in enterprise search since it is hard to see the return on investment, and therefore difficult to present to management. Even in those cases where it becomes quite obvious that an investment in enterprise search would increase the effectiveness when searching for information among the employees, it still encounter resistance.

> "*To create a business case stating that the users save this amount of time each day leads nowhere. They [the management] just say that the employees will do something other unnecessary with this saved time instead*" Respondent G

When respondent I got the question regarding business-cases, she also confirmed that business-cases for enterprise search are hopeless tasks. She suggests that we have to lose our focus on monetary values and instead look at how investments

in enterprise search can create value for the business in other ways. For instance, establishing better customer relations thorough improved handling of the internal information or a better digital working environment for the employees. Respondent C have similar thoughts and arguing that regular business-cases, trying to show the return on investments, does not work when it comes to enterprise search. There has to be something else motivating why an investment is worth doing or not.

The development of good enterprise search has its challenges. When asking our respondents about these a majority of them see employees' permissions as one of the major ones. Respondent C exemplifies with a project a couple of years ago with the purpose of making some internal information more accessible on their intranet. The project in itself did quite good but soon it was discovered that information with restricted access became visible for unauthorized employees.

> "When the data got indexed there was a backlash. Some data people thought were invisible, now got accessible for all employees. There was a big issue with the permissions" Respondent C

Despite the challenges of a role based search, it is also seen as a great opportunity and something they strive for in their work with enterprise search. Respondent E argues that they do not believe in one organization-wide index, open for all employees anymore. She thinks that it is necessary to divide it into different parts and create an overlap between them with different search entries dependent on a number of parameters, where the employees' current role within the organization is one of them. Respondent G also believes that their focus has shifted from an enterprise search equal for every employee to a more role based search. He says that they are trying to find what kind of information that is important for a specific role and later ensure that the employee can find it with ease when searching.

Respondent I says that the business side of her organization tend to have great expectations in regards to what a good Enterprise Search should be. In her organization, management has good knowledge in what kind of requirements they can have on Enterprise Search. In that way. Respondent I beleieves that the business side is more perceptive in their view of Enterprise Search which differs from what Respondent A says. Nonetheless, respondent I believes that the business side in her organization lack an understanding of what is required from a technological perspective which is distinguishably in other organiza-

tions as well. Respondent A represents the IT-side of his organization but says explicitly that all that is needed is a search engine which will solve all problems of not finding information in a desirable way.

5.2 Information

We asked the interviewees how the ways of working in regards to information-seeking has changed over the last decade. Respondent G explained that at the beginning of this period, users had to navigate themselves based on what container the information was located in order to find it. After that, the same firm started to lay a foundation to find an entrance where users could search for information from the biggest sources at hand. It was called Enterprise Search, version 0.1 Respondent G declares that the journey throughout the years has been all about adding more and more data sources of a certain kind in the search tool Enterprise Search.

Respondent E says that their general principle is to store information in a way that makes it findable at a later occasion. However, E declares that the firm has a lot of information that only exists in one single application which only a few employees can get access to. Further, E says that another general principle is that employees should have access to information in order for them to perform their job, which means that every individual needs to take responsibility and save information in a place where others have access. According to respondent E, most likely there are loads of information that lands on a hard drive somewhere, making it rather inaccessible.

> "There are billons of places where the information and *documents are very much alive and are growing at a* rapid rate" Respondent B

The overall picture that information exists in many different places and environment is confirmed by all respondents. Furthermore, they all confirm that the information volume within the organizations is very large but it lacks accessibility to a high extent. Islands of information are present in general and in some cases, as indicated by respondent B, a user have to be acquainted and eager in order to find the information that he or she wants to find. Other respondents are able to see upsides with the fact that big chunks of information are located on different islands. Respondent G says that he is not against the arrangement of different information islands, it is a necessity of some sorts. However, somewhere there has to be an entrance to these islands so that employees can take part in important information. G also establish that every is-

land should adapted for the purpose it supports. This way of thinking is also expressed by respondent E who says that different information environments are inevitable.

We asked the respondents about the storage of information in non-supervised spaces such as Dropbox, Google Drive and the like. Respondent B declared that it is handled and controlled by the IT department in his organization. He states that employees are prohibited to download software like Dropbox and Google Drive on their own, thereby regulating in what way information can be stored in an unsupervised way. Respondent B says that it is highly important that the organization stays on top of this given that there are laws to be followed, The Swedish law of Personal Data (PUL) being one example. However, B says that the fact that people are starting to take own initiatives in self storing information at work using cloud solutions like the ones mentioned above indicates that some kind of change is in happening. The other respondents are all fairly similar in their thoughts. They all declare a belief that employees in their organization use cloud solutions to store information in some way. Respondent F tells us about a cloud solution called Box which is in a way a dropbox-similar solution for companies. However, F also admits that employees are not supposed to store and work with information from there. It is more of a preliminary way like a shovel box to keep information from being lost but at a later occasion being transferred to something more permanent.

We asked the interviewees how their organizations reason when it comes to making their information searchable. The respondents were unified in the sense that they all saw challenges in forcing the users to fill in data about for example documents, i.e. metadata. The general reflection is that if users are forced to contribute with metadata, they find ways to work around it, avoiding having to do it. According to the respondents, this is rooted in the frustration that users feel in being forced to do something. It also reflects a shortcut-mentality that can be found from every single one of the respondents, users are keen to get their job done but not so much in terms of doing that extra piece of work. Respondent E is working for one of the larger organizations interviewed. Respondent E declares that metadata is a really good thing to have, if it is filled. She underlines that information needs to be tagged better and a collaborative thinking in regards to how tagging is done must be in place. E also says that her organization utilize metadata better than in the past and that the maturity-level of her organization has been raised in that matter in the last decade. In terms of metadata-talk, respondent A takes it a bit fur-

ther by saying that if he were to set up a strategy for Enterprise Search, classification and metadata would be on the top of the agenda.

On the contrary, respondent F says something completely different. Instead of suggesting that thorough metadata is the only thing keeping the organization from operating in a friction-free environment, the following quote indicates otherwise:

> "It is fairly easy for executives to conclude that people are foolish not tagging their own information, that being the reason for information not to be found. One should ask them; how often do you tag your own personal information?" Respondent F

This is an opinion that stands out from the rest of them. F establishes that it is not as simple as just saying that metadata will solve all problems. Tagging of information is something that executives love to address. Just make sure that you tag your information and it will solve everything. That is some mentality executives often have, according to respondent F.

When discussion the future of enterprise search in general all our respondent emphasize that it is an issue of great importance, especially when looking forward in time. For instance, respondent H says that it is impossible to ignore these issues if you to remain competitive where respondent C mean that enterprise search will become a necessity in the new digital workspace. However, what became obvious is that there exist a discrepancy in opinions regarding key focus areas between those having a strategy for enterprise search and those who do not when discussing the future of enterprise search and information management. Those respondents saying that their organization have a strategy in place all agree that the focus in the future is about increasing the quality of the internal information and less focus will be put on the actual technical search solutions. In contrast, those lacking any kind of strategy for enterprise search seems to put great reliance on the futures technical search solutions and do not highlight the importance of information quality in the same manner.

> "*At the end of the day, there are already great technical search solutions out there, but I am fairly certain that these will get better and continue to evolve. I hope and I think that within this period of time [the coming ten*

years], we will invest in something that can be equated with a powerful Google-search engine for internal use" Respondent A

5.3 Technology

We asked the respondents some questions regarding what kind of search tools/search applications the users have at their disposal in each organization. In addition, we asked how the user's competence and knowledge regarding the same applications is addressed. The following quote can be highlighted:

> "*I mean, Google Search is a pretty decent algorithm and* I'm quite sure it'll work for us as well" Respondent A

Respondent A shows true confidence in that once a search engine with the capacity of Google is a fact in the organization, the challenge of having everyone finding information everywhere all the time will be solved. This statement reflects how a larger portion of the respondents look at this particular aspect. Beyond that way of thinking, what is also shared by this portion of respondents is an expressed strategy for Enterprise Search. It is expressed by several respondents that users are starting to look at search at a different way, and respondent B says that new user patterns emerge in the organization. Employees want to be able to find information quick and easy, regardless of the context they are in right now. Other respondents declare that the current search environment is useless in every way, and not at all in Google-style. At the same time, they are willing to admit that they lack competence in that matter in order to see technological solutions.

Given that we asked various questions about search applications in the organizations, they were interpreted by the respondents in various ways. Respondent C showed real hesitation in that the employees in his organization ever thought about having something looking like Google internally, referring to the maturity-level of IT in general to be reasonably low. All in all, through the respondents acting as representatives, these organizations indicated an attitude that a decent search engine is the answer to every search-related issue.
However, a smaller portion of the respondents expressed a different view on the eventuality of a Google Search engine internally. The following statement captures this quite well:

> "Users cannot see the difference between searching *Google privately and search internally at a firm. At Google, you reach the broad range of information and you*

> are satisfied with that because you don't *know what you are looking for. The same does not apply to Enterprise* Search" Respondent I

Respondent I declares that there is a need to understand the difference between looking for information privately and in a professional context. In a private context, you have less knowledge about exactly what you are looking for as long as it has some relevancy to what your initial thought was. In Enterprise Search however, Respondent I suggests that when you search for information internally, more often than not you are looking for a particular document or file. Whenever our search application cannot reach that particular document, the overall search experience is expressed as poor from the users. They are not aware of the fact that you can use certain techniques to reach better search results, for example by typing a star after a search phrase. Respondent I finds it hard to see that we can get proper results just through a google search within an internal context. She believes that the area of metadata must be addressed in some way first.

As mentioned earlier, we asked the respondents what kind of search applications that are in use in their organizations today. Not all of the respondents declared that they have an application dedicated to address search in particular. Seven out of nine interviewees explained that in some way or another, they use Microsoft Sharepoint to address collaboration between employees within the firm. Respondent I says that the installation of Sharepoint has set the standard in terms of search application tools within the company. She says that as of the situation today, the search only exists in Sharepoint 2010 which enables the organization to index other sources. She declares that they haven't invested in an additional search tool. Respondent I tells us that the plan is to rely on Sharepoint in future endeavors as well. She mentions Sharepoint as the only actual search tool that cover several different sources. Beyound Sharepoint, users are only able to search content in each application.

What is also established by respondent I is that the investment in Sharepoint is not based on its search functionality. Rather, an investment in such a comprehensive application is derived from its usefulness in other major areas. Respondent I mentions collaboration, the creation of team places for different work teams and the ability to build an intranet as major drivers for these investments. This type of reasoning can be seen among several of the respondents, whom declare that investments in technology not primarily has been done with the search agenda in mind. This is mainly something that is said by

respondents active in organizations not declaring to have an Enterprise Search Strategy. Respondent G on the other hand answers for one of the organizations declaring that they have a strategy for search. He says that the IT department makes the decisions regarding what kind of platform should be used whereas the business side of the organization is in charge of the money. According to respondent G, what kind of investment decisions that are to be made very much depends on business cases.

When asking our respondents how and why they are where they are with their enterprise search it seems like earlier decisions regarding intranets or similar have influenced their current situation. For instance, Respondent I says that their investment in Sharepoint did not consider enterprise search to a higher extent when the investment was done, but it highly influences their current work with enterprise search. The same goes for respondent C. Even though they have not developed any strategy for enterprise search yet and that he believes they have a low maturity level, he still thinks that future investment in enterprise search will be highly based on their earlier decisions concerning intranet platforms and similar.

> "*Our intranet is built entirely on SharePoint and therefore our investment in search is also highly dependent on it. It does not matter how good search solutions you create unless they can be integrated under the umbrella [intranet platform]. They must federate to create value*" Respondent H

5.4 Users

We asked the respondents various questions about the general attitude among users in regards to how they normally proceed trying to find the right information. Respondent C stated that users in his organization show a tendency of relying on experience and knowledge, i.e. they know where to find the information whereupon they navigate themselves to it. For a person with a limited mindset in regards to IT in general and search in particular, that is a way of working that is totally fine, C explains. At the same time, the IT maturity-level in this organization was said to be rather low. Respondent D works in the same kind of organization and he declares that users lack the understanding of what an internal search engine is for. On one hand, he admits that Sharepoint has a built-in search tool. On the other hand, it is hardly used at all. Here too do users navigate themselves through fileshares to the right place and D says that this is a strongly associated with a habit of doing things in a certain way.

> "Lots of our users have issues with the regular stuff like working in a system. They haven't even reached the *search-part of it, they just want basic things to work*" Respondent H

In other organizations, citations like the one above reflects the maturity-level in regards to IT. Respondent H explains that many of the 53000 users in his organization have problems in understanding how to work with fundamental and basic aspects of the systems they have at hand. They have not even reached a conclusion in regards to whether or not their search-situation is good or bad, they just want the basic things to work. H also estimates a total number of systems to be around 3500 and he states that it is impossible to make them talk to each other at all at the moment.
In other organizations, the situation is completely different. As has been described earlier in this chapter, users tend to glance towards Google when focusing on the ideal search situation. That is something that has been described by all of the respondents. The following quote gives a glimpse of the dissimilar situations in the organizations:

> "*Our users have complained about the relevancy of the search results for a while now. We want to be able to steer over relevancy, but it has been hard achieving that*" Respondent E

Respondent E says that her organization to a high extent have listened to the users. The IT maturity-level in this organization is higher in every way. It is reflected in quotes like the one above. It will also be even more visible in the next section.

We asked the respondents some questions about how they evaluate the user's opinions about the current search situation in each organization. As it turned out, the answers differed quite a bit. A certain aspect that could be distinguished was super users and their inputs, acting as representatives for the larger number of employees.

> "We want to have innovative super *users with elaborated ideas*" Respondent G

Respondent G explains that they put in some efforts trying to fetch employees with thought through ideas about the current search situation and how to make it better. In the past, surveys have been sent out for evaluation purposes. However, according to respondent G, surveys are often sent out for the wrong reasons just to justify the very existence of a department addressing the area of search. G says that they now have a communication network that aims to fetch employee opinions regarding several different areas, including search. It is through this communication network that workers engaged in search issues are targeted and cared for.

Respondent E declares that her organization has similar ways of working in regards to super users. Furthermore, they address behavior of users. They have a group of people that actually sits down with users and observe. The users then a provided with a task whereupon the search team observe and evaluates behavior. Respondent E says that it is beneficial using this method instead of asking people in an interview-situation. In an interview session, employees tend to say one thing that differs from what they do in reality. To actually observe a certain behavior foregoes this problem.

Respondent I says that it would be highly effective to have a dedicated internal resource that solely worked on matters regarding search, something that cannot be seen in her organization today. This is to a high extent interlinked with organizational priorities, something that is presented in the section *Business*.

5.5 Summary of respondents

Table 2 presents a summary of our respondents and their organizations in regards to their current situation concerning a strategy for enterprise search.

Table 2. Current Enterprise Search Strategy situation among our respondents			
Respondent	**Have a strategy for Enteprise Search**	**Have a strategy for enterprise search under development**	**Do not have a strategy for Enteprise Search**
Respondent A			X
Respondent B			X
Respondent C			X
Respondent D			X
Respondent E		X	
Respondent F	X		
Respondent G	X		
Respondent H			X
Respondent I		X	

Table 2 – Summary of current situation regarding Enterprise Search among our respondents

6 Discussion

In this section we will discuss the overall findings of this study. Results are built upon the answers from respondents. Furthermore, we aim at giving our own view and to explain to the reader how the different themes from our theoretical framework serves a purpose in the interpretation of our findings and additionally how they have influence on each other.

The contribution with this study is a broader knowledge regarding how organizations work with enterprise search from a strategic perspective. To fulfill our purpose, the following research question was formulated:

> "*How do organizations strategically work with Enterprise Search?*"

As mentioned before, this study can be considered as an exploratory study since no earlier research has been done, to our knowledge. Therefore, no applicable theories could be used from the beginning which had us to create a theoretical framework concerning strategies for enterprise search, derived from related research areas. It has been used as a lens when our empirical results were analysed in this study, and we also consider our theoretical framework on its own as a contribution to research area of enterprise search. However, with the benefit of hindsight, we can conclude that the four topics in our framework are all of importance, although to variant degrees.

The diffuse term of strategy

Chen et al. (2010) highlight that the concept of strategies is vague and that there is still no consensus regarding its definitive meaning, neither between practitioners or scholars. Hardly surprising, it did not exist any clear definition among our respondents either. Due to this fact, we have found that it can be hard to distinguish whether or not a strategy for enterprise search is established within an organization. What in one organization can be considered as a strategy may not be considered as a strategy in another organization, which also, among others, Markides (1999) and Chen et al. (2010) emphasize. Therefore, we found that the term may give rise to a discrepancy between our respondents depending on how they perceive what a strategy really is and when you can say that you actually have such a strategy developed for enterprise search. We found that this seems to be true based on our empirical results.

Respondent E argues that her organization does not have an outlined strategy for enterprise search even though they have been working actively with these issues for more than ten years. She admits that they have a strategy under development but that it is not clear when and how it will be implemented. However, we found it interesting that she talked about her organization's enterprise search in terms of strategic matters already even though they have no such. According to us, this exemplifies the fuzzy boundaries regarding when a strategy is in place or not. Similarities can also be found at respondent I and her organization where enterprise search also has been on their agenda for the last ten years. She describes that they have some interesting initiatives, including the collaboration with other firms, going on with their enterprise search but that they still no strategy in place. To us, this is just another example of diffuseness of strategies. It seems like many organizations tend to include their work with enterprise search in their overall IS strategies instead of dedicating Enterprise Search a strategy of its own.

Can the term of strategy be even more diffuse than what other theories earlier have shown? We argue that it can. Chen et al. (2010) put some light on strategic decisions and non-strategic decisions. Wheelen and Hunger (2012) suggest that a strategic decision has an impact on the organization as a whole and that these decisions are characterized by three characteristics. They are not taken on a regular basis, they are consequential and they have a major impact on future decisions throughout the whole organization (Wheelen & Hunger, 2012). Based on these characteristics we argue that strategy work with enterprise search can exist in some of our respondents' organizations event though they are not aware of it themselves. For instance, respondent E talks about their work with enterprise search and that they a while ago decided to invest in a new search platform. To us, this investment decision fulfills all the characteristics for a strategic decision by definition and had taken our topics in our theoretical framework at consideration. Although, as mentioned before, she still argues that they do not have an outlined strategy for enterprise search.

In sum, we can see that to strategically address enterprise search is more important than to have a strategy fully written down in print. Accordingly, an enterprise search-strategy does not have to be an artefact in order to generate positive benefits for an organization.

Business context

What can be seen among the findings obtained is that there is an underlying opinion about what search should be like within a company. We can distin-

guish that there is a certain difference between how the organizations reason when it comes to search environments. On the one hand, several of the respondents express their admiration for Google as a search engine and refer to usage of a search engine in a private context. On the other hand, another opinion among the respondents emerges and it becomes quite clear to us that the respondents are on different levels in terms of how perceptive and experienced they are in the matter.

Brauer et al. (2010) say that when you searching for information in an enterprise-context, it is dissimilar to traditional web search. Most of what is to be found in enterprise search will be centered around the concepts of the business. This is recognized in thoughts from Respondent I. She says that this is all a matter of search environment and context. These differences in how different search environments are understood and interpreted seems to originate from the knowledge and experience from the respondent as an individual. A well informed and interested employee within a certain area of expertise possesses valuable insights. This kind of knowledge and expertise might be missing in other organizations where these aspects are extraneous.

Parallels can be drawn to the conceptions of Drnevich and Croson (2013), who point at the importance of an organizations' ability to actually implement and utilize technology as a main factor for an IT investment to be successful. The same can be distuingished in our study. From our findings, we can see a tendency among the respondents that employees in their organization think that once management has made investments in a certain technology, everything will work out for the best. These tendencies became obvious when the respondents were asked questions about how they involve users in that IT investment decisions. The respondents all shared the notion users should be involved in some way. Respondents answers differed in regards to what extent users should be involved. As it turned out, one orgainsation barely cared for user opinions regarding search. Respondent C spoke about the unawareness among the users when it came to IT in general. This was reflected in the opinion respondent C had about the general search environment, stating that the users in his organization probably never had reflected on an internal search engine and what it would be like to have one installed. Same respondent declared his organization not to have an explicit strategy for search. We considered the IT maturity-level in this organization to be substantially lower than that for organization G where a strategy for search was said to be in place. To us, this is the diffuse term of strategy discernible again.

The broad variations of definitions regarding what a strategy is and the insight that there is a lack of consensus for the term (Markides, 1999) gave us the starting point for how we should relate to the concept. When looking at the findings, it became quite apperent which of the organizations that had some kind of coordination and consistency about how to relate to search and also how to handle information. Respondent G refered to an explicit strategy for search and even though he gave the impression of being very dedicated to the subject himself, his organization seemed to be convinced that search is something to be taken seriously. That was reflected in how organization G had chosen to incorporate their users through an active network.

Weill (2004) suggest that IT governance is acknowledged to be an essential organizational function that have a direct influence on the benefits generated by investment in IT (Weill, 2004). Stenmark et al. (2015) argue that search is someting that should be governed and not just managed in order for an organization to have more satisfied and productive employees. Organization G governs search in a higher extent than other organizations in this study in that they have an explicit strategy for search. The way users are involved and incorporated and the way users are encouraged to take part in what happens on the search agenda can make them more satisfied and bring a sense of achievement. Our findings show that this is something that in Organization G seems to be acknowledged and adressed by management executives.

Information

White (2016) says that information that cannot be found within an organization is an unexisting ditto with no value. Prior to our data collection, we had that statement in mind. That statement turned out to have support based on our findings. We found that it was a rather common thing to use so called shovel boxes where information could be stored temporarily when respondents were asked about unstructured information. This is to us a clear tendency of not following through on handling the information in possesion well which is precisely what White (2016) explains. With the findings obtained, we can conclude that organizations can survive without knowing exacly how their own information is located. However, due to the lack of a coordinated mindset among top management within the organizations in regards to how this unstructured information should be taken care of, we can assume that a lot of organizational value is lost, drawing on the works of Stenmark et al. (2015) and White (2016).

White (2016) is thorough in his explanations about organisatons in general not being able to see their information as a valuable asset. This study sheds light on that exact problem. One of the respondents actually stood out from the others, saying that his organization merely is interested in the most updated information and not so much in information from the past. To us, this is a clear tendency of what White (2016) tries to address when he underlines that organizations in general fail to appreciate the value in locating and finding information. Even more so, our findings show that some organizations fail to understand why they should store and keep information in the first place. With this kind of attitude, it becomes rather clear to us that some of the organizations in this study have a long way to go before reaching their true potential in handling information, nonetheless making it findable so that the employees in the organization can make use of it. Stenmark et al. (2015) state, as earlier mentioned, that an employee able to find information is a more productive employee. This is clearly not on top of the agenda in some of the organizations in this study.

The standpoint in this thesis is to assume that information growth is a reailty in most organizations today. Beath et al. (2012) declare that the information growth is immense. Given this amount of information, we wanted to explore what kind of a role a strategic approach on finding information, i.e. Enterprise Search, has on the organization. Among the organizations in this study, we found that the ones declaring to have a strategy for search were the ones who had an understanding of the importance of information quality. They have realised that it is not the lack of a technological solution or the realisation of ditto that is the main challenge, according to her it is fairly easy to get different systems to communicate with each other. The main challenge is the information layer, meaning that information needs to appear the same in every internal organizational context in order for it to be findable. Organizations not declaring to have a strategy for Search or to actively work on Enterprise Search at a strategic level fail to realise this, according to our findings. They still believe that technology solves everyting. Hence, there is an apparent discrepancy between organizations declaring to have a strategy and organizations not declaring to have a strategy. This tendency of over-reliance on technology is highlighted by Drnnevich and Croson (2013). An Enterprise Strategy in organizations today can take on an important role as it works as a guideline for how the internal information is handled. This has been apparent in four of the nine organizations in the study saying that they have a strategy for search.

Technology

The bulk of the literature discuss the importance of aligning IT with the business side of the organization and has been doing that for decades (Luftman et al., 1993; Luftman, 2000; Henderson & Venkatraman, 1999). In accordance to these studies, the respondents in our study confirm that it is still estimated to be of great importance. In addition to being consistent in their opinions regarding IT -business alignment, the respondents are all of the same understating when it comes to Enterprise Search as well. This study specifically takes the area of search under consideration and the respondents were asked questions angled towards search, and we found a consistency in the opinions that were shared by them. With or without a declared strategy for search in place, the organizations expressed that the IT department and the overall management must be in agreement in regards to what search is or should be in the organization.

We can also distinguish a tendency that the IT-side of the organizations tend to see the opportunities with search clearer and in a more nuanced way than the business side of ditto. Since the niched competence of what search is or can be is gathered in the IT department in the organizations studied, this does not strike us a surprise. In some cases, this niched competence is in fact a single individual with a true interest in search. To communicate competence like that to the organization as a whole is far too comprehensive. The fact that competence is centralized to one single or sometimes a few individuals is problematic, according to respondents G. He represents an organization where an explicit strategy for search exists.

As declared before, Stenmark et al. (2015) show that search technology has become a strategic aspect of which to count on and thus it should be managed. Our study shows us that Enterprise Search in many cases is not managed enough by the "right" part in the organizations. According to our findings, management executives need to be more aware of the opportunities that Search contributes with. Overall, it needs to be placed at the management agenda to a higher extent if to be taken seriously. Our findings show that the organization in general has expectations when it comes to what a search solution should be. There expectations come with a lack of knowledge and insight in regards to the complexity of search, which is a problem in itself since it illustrates the gap in knowledge between the current situations in the organization compared to what should be the knowledge-level in the organization if it is to be successful in the area of Enterprise Search.

User

Due to the majority of our respondents, they suggest that the users should be involved in the development process for a strategy regarding enterprise search of many reasons. We do not necessarily fully agree upon that. As White (2016) states, investments in enterprise search are done in order to generate a more effective employee within the organization which also Stenmark et al. (2015) argue that they become. Every day, most employees will have spent time on creating information which is stored internally. The same information can, and often will, be of importance for other employees and if it's not saved in a way that make it searchable, valuable time will be spent trying to find it. Thus, the user is both the creator and searcher of the organizations information and is of that particular reason important to include in the development of a strategy for enterprise search (White, 2016). However, simply because the employees are the end-users of any investments done in enterprise search, they do not automatically know what a god enterprise search look like. Therefore, we conclude that users, in this particular stage in the development of a strategy for enterprise search, should be considered but not involved to any greater extent. The implementation of this is that the dimension of users in our theoretical framework might play a slighter less role in this particular stage than what we, and the related theories the framework is based on, suggested. According to us, the users will be more important in the third stage in the strategy work, thus when the strategy gets implemented.

Strategies and Enterprise Search

Who owns search is a somewhat complex question as it seems, given the situations explained by each and every respondent. There are a myriad of informaton systems at hand in most of the organizations. Therefore, the responsibility for development often lies at the system owner, making collaborative search efforts harder to realise or find. With multiple thousands of systems in one of the studied organizations, the number of system owners grows high. Often, the system owners are the ones dedicated to educate employees in their system. The respondents not having an explicit strategy for search inform us that no direct effors have been made in regards to make search a special aspect of employee training of the systems. White (2016) says that given that information is not seen as an asset and that strategies addressing the management of information are rare in organizations, the result is that no one is taking ownership of search since it is not seen as a problem at all. These tendencies are discernable in the organizations in lack of declared Enterprise Search-strategy.

In contrary, the respondents saying that they have a strategy for search have overcome the system owner-thinking and have realised that a centralized function is vital in order for Enterprise Search to develop. Stenmark et al. (2015) show that having an appointed owner of the search solution is of significant value. They show that the involvement of a CIO resulted in a search strategy and suggest that a centralized IT governance strategy is recommendable when it comes to Enterprise Search.

Of those respondents having a strategy in place or under direct development regarding enterprise search agrees upon the fact that user play an important role. However, based on our empirical results, even though the user should be involved does it not mean that they actually know what the best search solution might be. Due to our empirical evidence, it is rather clear that user tend to strive after a Google-replica for their enterprise search when they get the opportunity to wish for the future. A Google-replica does not necessarily have to be wrong, but all of our four respondents having a strategy for enterprise search in place or under development state that Google is not applicable for enterprise search. These thoughts are also supported by White (2016) who suggests that Google does not fit internally in an organization for many reasons (White, 2016). What is interesting here is that this also strengthens Stenmark et al. (2015) conclusion which says that the organizations working actively with enterprise search and have a strategy in place tend to have more satisfied and productive employees.

What can be distinguished about respondents not having a strategy for search is that it is somewhat paradoxical. Overall, they express certainty about how a potential Google-replica is the cure that helps them find information that in the past have been hard or impossible to reach. However, the more confident they sound in that opinion, the less they seem to know about what is the real problem. And it works both ways as it seems. The respondents declaring to have a strategy for Enterprise Search or clearly work strategically with ditto tend to not overestimating their knowledge in the area. In fact, it is the opposite as they express a notion of that there is still so much work to do before they can be satisfied with Enterprise Search. Again, this is expressed by an organization that has worked with Enterprise Search for a decade. This is reflected in a statement from respondent E who when asked about enterprise search maturity-level says that they are mature enough to have realized that a Google-replica is not the solution.

Luftman et al. (1993) argue that there often exists an over-reliance on the technology when in investing in IT and Stenmark et al. (2015) mean that an

IT investment in itself never sustains competitive advantages. In addition, Ross and Beath (2002) emphasize that it can be hard to set up business cases in order to convince the leading management to carry out IT investment (Ross & Beath, 2002). Even though it seems like that there has been problematic to set up business cases for general IT related investment before, we found, due to our empirical, that investment in enterprise search seems to be even harder to motivate by traditional business cases. In general, all of our respondents believe that these business cases is hard to motivate with traditional business cases since it is, more or less, impossible to show the monetary gains and returns the investment in enterprise search actually gives. Therefore, these issues often encounter resistance from the management.

We suggest that it is time to leave the traditional business cases when looking at enterprise search. According to us, these issues have to be viewed from another perspective. As already stated by White (2016), the main problem is that searching does not involve any standard process and thus make it hard to measure when return on investments is considered, which got support from our respondents. We think that instead of just looking on direct monetary gains related to search investment, today's organization have to open up their mind and see beyond them. Information seeking is a daily routine for most employees in the modern organization and by improving this process, we believe benefits on many different levels will be achieved. For instance, Stenmark et al. (2015) highlighted that those organization working actively with enterprise search tend to have more satisfied employees, which according to Ostroff (1992) leads to a greater level of satisfaction among the employees. Furthermore, according to White (2016) investments in search also bring some other soft, intangible values, such as improved reuse of information and knowledge and improved relations with customers and clients. These improved relationships can, according to Storbacka et al. (1994), generate greater revenues and profits through more satisfied customers and thus an indirect positive effect on the return on investment.

7 Conclusions

Due to the absence of earlier research exploring this problem area, the aim of this study was to bring new knowledge through an investigation of how organizations work strategically with enterprise search and what such a strategy might look like or concist of. The literature is not entirely clear on the definition of the word strategy, nonetheless on search strategy, and this is important to have in mind when looking at the empirical findings of the study. A contribution of this study is the theoretical framework for enterprise search strategies that can be utlizied as a starting point for further research in the area.

We would like to highlight two things from this study. Firstly, we can conclude that the different topics chosen in our theoretical framework all are of importance in the strategic context of enterprise search. We suggest that all of these should be considered in further research looking at how to best manage strategic efforts with enterprise search, although to some variant extent. The topic regarding information has an important role today and our study shows that it will be even more important in the future. Furthermore, the topics of business and technology are also of great relevance in the strategic work regarding enterprise search. However, we suggest that a little less focus can be put on the user in this stage of the strategic work. Instead, they can be involved to a higher extent in the third stage in our theoretical framework. We thus conclude that the topics regarding business, information and technology are of significant importance in this particular strategic stage and that the user should be considered but not highly involved in these decisions.

Finally, we can conclude that a strategy regarding enterprise search not even has to be written down in print in order to redeem its proved associated benefits. What is important is to work strategically with enterprise search. However, we can establish that the term of strategy for enterprise search is vague in itself and that there is no real consensus for the term. Organizations do not agree upon what a strategy really is but come to an agreement upon the fact that it is important to have on a future agenda regarding these issues. Our study shows that having a strategy or to strategically work with Enterprise search has significant positive effects. We thus conclude that working with enterprise search in a strategic manner is of greater importance than having an explicit and written one for these issues.

8 References

Applegate, L., Austin, R. & Soule, D., 2008. *Corporate Information Strategy and Management: Text and Cases*. 8th ed. Boston: McGraw-Hill Education.

Barua, A., Kriebel, C. & Mukhopadhyay, T., 1995. Information Technologies and Business Value: An analytical and Empirical Investigation. *Information Systems Research (6:1),* pp. 3-23.

Beath, C., Fernandez, I. B., Ross, J. & Short, J., 2012. Finding value in the informations explosion. *MIT Sloan Management Review,* 53(4), pp. 17-22.

Bocij, P., Greasley, A. & Hickie, S., 2008. *Business Information Systems*. 4:e ed. Edinburgh Gate: Pearson Education.

Bogusia, T. & Young, A., 2004. Qualitative Research and Translation Dilemmas. *Qualitative Research,* 4(2), pp. 161 - 178.

Brauer, F. et al., 2010. *Graph-Based Concept Identification and Disambiguation for Enterprise Search*. Raleigh, NC, USA, s.n.

Broder, A. Z. & Ciccolo, A. C., 2004. Towards the next generation of enterprise search technology. *IBM Systems Journal (43:3),* pp. 451-454.

Bryman, A., 2008. *Social Research Methods*. 3:rd ed. Oxford: Oxford University Press.

Brynjolfsson, E. & Hitt, L. M., 1998. Beyond the Productivity Paradox. *Communcations of the ACM (41:8),* pp. 49-55.

Buckland, K. M., 1991. Information as Thing. *Journal of the American Society for Information Science ,* 42(5), pp. 351-360.

Case, D. O., 2002. *Looking for Information: A Survey of Research on Information Seeking, Needs, and Behavior*. San Diego: Academic Press, Elsevier Science.

Chen, D. Q., Mocker, M., Preston, D. S. & Teubner, A., 2010. Information Systems Strategy: Reconceptualization, Measurement, and Implications. *MIS Quarterly: (34:2),* pp. 233-259.

Cummings, S. & Wilson, D., 2003. *Images of Strategy*. 1 ed. s.l.:Wiley-Blackwell.

Davenport, T. & Prusak, L., 2000. Working Knowledge: How Orgniations Manage What They Know. *ACM: Ubiquity,* pp. 1 - 15.

Drnevich, P. L. & Croson, D. C., 2013. Information Technology and Business-Level Strategy: Toward an Integrated Theoretical Perspective. *MIS Quarterly (37:2),* pp. 483-509.

Edmunds, A. & Morris, A., 2000. The problem of information overload in business organzations: a review of the litterature. *International Journal of Information Management,* Volume 20, pp. 17-28.

Fischer, K., Erdelez & McKechnie, L., 2005. *Theories of Information Behaviour*. 1 ed. New Jersey, US: American Society for Information and Technology.

Francalanci, C. & Galal, H., 1998. Information Technology and Worker Composition: Determinants of Productivity in the Life Insurance Industry. *MIS Quarterly (22:2),* pp. 227-241.

Gillespie, T., 2014. *The relevance of algorithms*. Cambridge, MA: MIT Press .

Halavais, A., 2009. *Search Engine Society*. 1 ed. Cambridge, United Kingdom: Polity Press.

Harrington, F. & Turner, G., 2001. *Interpreting Interpreting: Studies and Reflections on Sign Language Interpreting.* Gloucestershire: Douglas McLean Publishing.

Hawking, D., 2004. *Challenges in Enterprise Search, In Proceedings of the 15th Australasian database conference*. Dunedin, New Zealand, Vol. 27 pp.15-24.

Henderson, C. & Venkatraman, N., 1999. Strategic Alignment: Leveraging information technology for transforming organizations. *IBM Systems Journal,* 32(1), pp. 472-484.

Holme, I. M. & Solvang, B. K., 1997. *Forskningsmetodik: om kvalitativa kvantitativa metoder*. Lund: Studentlitteratur.

Jacobsen, D., 2002. *Vad, hur och varför? Om metodval i företagsekonmi och andra samhällsvetenskapliga ämnen*. Lund: Studenlitteratur.

Khallaf, A., 2012. Information technology investments and nonfinancial measures: A research framework. *Elsevier,* 36(2), pp. 109-121.

Kuhlthau, C. C., 1997. Learning in Digital Libraries: An information Serach Process Approach. *Library Trends,* 45(4), pp. 708-724.

Luftman, J., 2000. Assessing Business Alignment Maturity. *Communications of the Association for Information Systems,* 4(14), pp. 1 - 51.

Luftman, J. N., Lewis, P. R. & Oldach, S. H., 1993. Transforming the enterprise: The alignment of business and information technology strategies. *IBM Systems Journal (32:1),* pp. 198-221.

Marchionini, G., 2006. Exploratory Search: From Finding to Understanding. *Communication of the ACM,* 49(4), pp. 41-46.

Markides, C. C., 1999. In Search of Strategy. *Sloan Management Review,* 40(3), pp. 6-7.

McAfee, A. & Brynjolfsson, E., 2008. Investing in the IT That Makes a Competitive Difference. *Harvard Business Review (86/7-8),* pp. 98-107.

Melville, N., Kraemer, K. & Gurbaxani, V., 2004. Review: Information Technology and Organizational Performance: An integrative Model of IT Business Value. *MIS Quarterly ,* 28(2), pp. 283-322.

Merriam, S., 2014. *Qualitative Research: A Guide to Design and Implementation*. 3rd ed. Somerset, New Jersey: Wiley.

Miller, K. .. I. & Monge, P., 1986. Participation, Satisfaction and Productivity: A meta-Analytic Review. *Academy of Management,* 29(4), pp. 727-753.

Mintzberg, H., 1987. The Strategy Concept: Five Ps for Strategy. *California Management Review,* 30(1), pp. 11-24.

Mithas, S., Tafti, A., Bardhan, I. & Goh, J. M., 2012. Information Technology and Firm Profitability: Mechanisms and Empirical Evidence. *MIS Quarterly (36: 1),* pp. 205-224.

Mooney, J., Gurbaxani, V. & Kraemer, K., 1996. A Process Oriented Framework for Assessing the Business Value of Information Technology. *DATABASE for Advances in Information System (27:2) ,* pp. 68-81.

Nolan, R. L. & Croson, D. C., 1995. *Creative destruction: A Six-Stage Process for Transforming the Organization.* Boston, Massachusetts: Harvard Business School Press .

Oh, W. & Pinsonneault, A., 2007. On the Assessment of the Strategic Value of Information Technologies: Conceptual and Analytical Approaches. *MIS Quarterly (31: 2),* pp. 239-265.

Ostroff, C., 1992. The Relationship Between Satisfaction, Attitudes and Performance: An Organisational Level Analysis. *Journal of Applied Psychology,,* 77(6), pp. 963 - 974.

Owens, L., 2008. *The Forrester Wave: Enterprise Search,* s.l.: The Forrester Wave: For Information & Knowledge Management Professionals.

Patel, R. & Davidson, B., 2011. *Forskningsmetodikens grunder: Att planera, genomföra och rapportera en undersökning.* Lund: Studentlitteratur.

Porter, M. E., 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors,* New York: Free Press.

Porter, M. E., 1985. *Competitive Advantage,* London: London Free Press.

Porter, M. E., 1996. What is Strategy. *Harvard business Review,* 74(6), pp. 61-78.

Ross, J. & Beath, C., 2002. Beoynd the Business Case: New Approaches to IT Investment. *MIT Sloan Management Review,* pp. 51 - 59.

Silverman, D., 2006. *Interpreteing qualitative data: Third Edition*. Third ed. California, Thousand Oaks : SAGE Publications .

Spink, A. & Cole, C., 2006. Human Information Behavior: Integrating Diverse Approaches and Information Use. *Journal of the American Society for Information Science and Technology,* 57(1), pp. 25-35.

Stenmark, D., Gårdelöv, F. & Larsson, V., August 13-15 2015. *Why Should Organisations Govern Enterprise Search?.* Puerto Rico, Americas Conference on Information Systems, pp. 1-12.

Storbacka, K., Strandvik, T. & Grönroos, C., 1994. Managing Customer Relationsships for Profit: The Dynamics of Relationsship. *International Journal of Service Industry Management,* 5(5), pp. 21 - 38.

Wegmann, A. et al., 2007. Business and IT Alignment with SEAM for Enterprise Architecture. *IEEE International Enterprise Distributed Object Computing Conference,* Issue 10, pp. 111 - 121.

Weill, P., 2004. Don't Just Lead, Govern: How Top Performing Firms Govern IT".. *MIS Quarterly Executive,* 3(1), pp. 1 - 17.

Wheelen, T. L. & Hunger, D., 2012. *Strategic Management and Business Policy: toward global sustainability*. 13th ed. Boston: Pearson Educations Inc..

White, M., 2012. *Enteprise Search - enhancing business performance.* 1 ed. Sebastopol, CA, US: O´Reilly Media Inc..

White, M., 2016. *Enterprise Search: Enhancing Business Performance 2nd edition*. Sebastopol, California: O'Reilly Media Inc..

Whittaker, S., 2011. *Personal Information Management: From Information Consumption to Curation*, Almaden, California: American society for Information Science and Technology.

Appendix A: Letter to respondents

Hej,

Vi är två masterstudenter vid Institutionen för tillämpad IT på Göteborgs universitet som för tillfället arbetar på vårt examensarbete. Vi är intresserade av hur företagsintern information eftersöks och hanteras, så kallad Enterprise Search. Av denna anledning är vi intresserade av att genomföra en intervju med en person på XX som kan anses vara ägare av den typen av strategiska frågor kring intern sökhantering.

Uppskattningsvis tar intervjun ungefär en timme med frågor som är förhållandevis öppna. Eventuellt kommer någon följdfråga att ställas om vi upplever att ett förtydligande eller fördjupning behövs. Intervjun kommer att spelas in för att materialet vid senare tillfälle skall kunna transkriberas. Ni som företag och personen som ställer upp och svarar på våra frågor kommer givetvis att förbli anonyma om så önskas.

Tack på förhand, vi ser fram emot att höra ifrån er.

Med Vänliga Hälsningar
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Appendix B: Interview guide

Demografiska bakrundsfrågor:

- *Hur länge har du arbetat här?*
- *Skulle du kunna berätta lite om din roll i företaget?*
- *Har din roll alltid varit samma?*
- *Vilka är dina huvudsakliga ansvarsområden inom företaget?*
- *Hur många anställda finns på företaget?*
- *Finns det fler än du som arbetar med frågor gällande sökbarheten av er interna information?*
- *Då ni är ett internationellt företag, arbetar ni gränsöverskidande med frågor kring Enterprise Search?*

Organization:

Hur har arbetssättet kring intern informationssökning förändrats (under de senaste 10 åren)?

Hur väl anser du att ni hanterar informationssökning internt här på XX?

Vem äger söktjänsterna? Och hur har ägandet hamnat där det ligger?

Finns det en grupp inom organizationen som ansvarar för att utveckla er interna sök?

Teknologi

Vilka sökverktyg använder ni er av i dagsläget för interninformationssökning?

Hur fattades besluten för investeringar i dessa teknologier?

Finns det en gemensam syn eller samordning gällande era sökverktyg? Var ligger i så fall denna samordning?

Information

Hur ser det övergripande tänket gällande hantering av information hos er på XX? (Exempelvis på vilka platser lagras den? Har ni flera olika system/databaser? Är all intern information sökbar från samma sökapplikation?

Hur stor del av er interna information anser du är sökbar I dagsläget?

Hur anser du att ni arbetar för att göra er informations sökbar? Klassificering, metadata osv.

User

På vilket sätt arbetar ni på XX med användarnas utnyttjade av sökverktyg/sökapplikationer?

Hur arbetar ni med användares (såväl nya som äldres) kompetens gällande de sökapplikationer som finns inom företaget?

Hur arbetar ni för att utvärdera användarnas intryck/synpunkter beträffande sökverktyg/sökapplikationer?

(På vilket sätt tas användarna i beaktning vid beslut gällande investeringar i nya sökapplikationer?)

Mjukare frågor kring strategi och Enterprise Search

- *Tror du att Enterprise Search kommer att hamna högre upp på ledningens agenda i framtiden och få en högre prioritet inom företaget?*
- *På vilka grunder tror du att beslut i framtiden kommer att fattas gällande investeringar i Enterprise Search?*
- *Skulle du generellt sätt säga att frågor kring sök- och informationshantering prioriterats eller inte prioriterats av ledningen jämfört med en CIO eller IT-ägaren?*
- *Om du skulle få spåna fritt, hur skulle du vilja förbättra er Enterprise Search? Låtsas att det är julafton och budgeten är obegränsad*
- *En sista, något spekulativ fråga kanske. Vi har ju pratat lite om hur Enterprise Search har utvecklats under de senaste tio åren men hur tror du att det kommer att utveckla sig under de kommande tio åren?*
- *(Hur skulle du beskriva er mognadsgrad kring Enterprise Search)?*

Strategi

- *Anser du att ni har en strategi för Enterprise Search?*
- *Vilka delar anser du en strategi för Enterprise Search borde innehålla?*
- *Skulle du säga att strategien i så fall ligger på IT, Organization eller både och?*
- *Hur (tror) du att utveckling av en strategi för Enterprise Search går till hos er på XX?*