Towards the Development of Business Intelligence:

The Role of Business Intelligence in Managerial Decision Making - Evidence from the B2B Sector
Abstract

Information is the key for managers to make well-informed decisions. In recent years, technological advancements have been developed which made it possible for organizations to store and manage large quantities of data. Business intelligence is used to structure and narrow down data in order to acquire relevant information which could assist managers. BI is formed by a variety of systems and concepts which are interconnected and can work simultaneously. Furthermore, it was found that there are claims implying that BI can assist in the decision making of an organization.

The following research will focus on how does business intelligence does that, with a specific emphasis on marketing managers working on large business-to-business organizations. Following a qualitative research with an exploratory approach, comparing relevant literature with the results obtained from ten performed interviews. Where it was observed how BI helps managers through providing useful and selected information.

Keywords

Business Intelligence, Information Systems, Managerial Decision Making, Marketing, Internal Data, External Data, Knowledge management.

Acknowledgements

We would like to thank all the interviewees that agreed to participate in this project and provided us with the necessary empirical information for the deductions of our conclusions. Especially to interviewee number seven, who agreed to read and judge sections of our work before submitting it. Furthermore, we would also like to thank our tutor, Tatiana Anisimova for all the guidance and support provided.

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Abbreviations

Association of information systems – AIS
Business intelligence - BI
Business-to-business - B2B
Competitive intelligence - CI
Customer relationship management - CRM
Information systems - IS
Information technology - IT
Key performance indicator - KPI
Knowledge management - KM
Marketing information systems - MkIS
Mergers and Acquisitions - M&A
Research and development - R&D
Resource based view - RBV
Small and medium sized enterprise - SME
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1. Introduction

1.1 Background

Marketers rely on knowledge management and precise information concerning different aspects linked to the company/industry they work for (e.g., clients, market status, and performance of companies), in order to perform their work tasks (Du, 2014). The development of technology has made it possible for companies to use computerized data operations that would support their business activities (Glancy and Yadav, 2011; Holsapple, Lee-Post and Pakath, 2014). Managers with marketing responsibilities have focused on information technology (IT) to increment the returns of the marketing resources. Furthermore, studies have shown that the incorporation of IT in marketing activities can contribute to the customer retention and acquisition (Trainor et al., 2011). Luftman et al., (2013) led a study to measure the effect of IT trends on managers in United States, Europe, Asia, and Latin America. Based on responses from 787 organizations among various industries, it was found that the most significant technology was business intelligence. Business intelligence (BI) can be briefly described as a group of systems that store and use internal and external knowledge within an organization. Providing the figures that are needed in order for a company to make more informed decisions and prevent risks in the decision making process (Niu, Lu, Zhang and Wu, 2013). By using business intelligence, companies can provide and manage important information, in order to perform their operations and organize their structure more efficiently (İşik, Jones and Sidorova, 2013).

Most B2B companies depend on service-oriented and long-term partnerships in order to obtain an advantage over other organizations within the industry (Delen and Demirkan, 2013). The success of their partnerships and business activities will mostly rely on the relevant information enterprises can achieve regarding the state of their business performance and their organization, as well as, their competitors’ status (Niu, Lu, Zhang and Wu, 2013). Information systems (IS) can assist a company to accomplish a fast and constant information supply and data and analytics competencies as services (Delen and Demirkan, 2013). Furthermore, the systems can support companies with the task of obtaining unstructured data regarding a precise matter and convert it into knowledge that will be transmitted through the diverse departments of a company (Schryen, 2013). However, these large volumes of information provided need to be narrowed down and
analyzed in order to be valuable for a company and avoid information overflow. Therefore, it is recommended the use of subsystems of IS such as business intelligence, which focus on narrow the data flow and make it meaningful it in order to support the managerial decision-making process (Işık, Jones and Sidorova, 2013).

1.2 Problem Discussion

As it is stated by Wernerfelt (1984) and supported by Srivastava, Fahey and Christensen (2001), a company should be evaluated through its valuable resources. Valuable resources can be divided into two categories, namely, relational and intellectual. Relational meaning the rare and profitable customers a company can establish business relations with; and intellectual, focusing more towards the knowledge a company has access to in order to perform. Information has shown to be rather important within a company, influencing its strategic planning and supporting functional activities. Moreover, helping marketing related managers to take more rational decisions avoiding mistakes (Niu, Lu, Zhang and Wu, 2013). Information systems are a general applications of different systems with the aim of managing the information that flows within and around a company more resourcefully (Schryen, 2013). Within information systems, there are subsystems with more specific tasks that can be specially adapted to specific departments of a company (Rubin and Rubin, 2013). Marketing information systems (MkIS) is a classification of IS that encompasses bundles of systems specifically focused on marketing activities support (Talvinen, 1995; Amaravadi, Samaddar and Dutta, 1995; Ritchie and Ritchie, 2002). Stone and Woodcock (2013) argue that business intelligence would be a part of MkIS, a set of subsystems mostly used towards the marketing and sales department, used to structure data in order to acquire relevant information through analysis, storing it and making it available to different individuals in a company (Işık, Jones and Sidorova, 2013).

Although, BI has been criticized for being a broad/ non-defined concept (Grublješič and Jaklič, 2014), and for focusing too much on the value of IT concepts rather than utilizing a narrower approach to examine information systems (Fink, Yogev and Even, 2017). The knowledge related to business intelligence seems to be fragmented and its concept appear to be non-standardized. A large variety of recognized journals have issued a call for papers to cover the area (see Table 1). Therefore, this research will be directed towards how to use BI within decision making for managers with marketing responsibilities, in
order to focus on a more practical aspect of BI instead of only the technical aspects of it. Aiming to provide a better understanding of the subject.

### Table 1 - Identified Calls for Papers

<table>
<thead>
<tr>
<th>Author and Year</th>
<th>Journal</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Wang and Wang, 2018</td>
<td>Industrial Marketing Management</td>
<td>Big data analytics in marketing strategy and decision making.</td>
</tr>
<tr>
<td>Kunz et al., 2017</td>
<td>Journal of Services Marketing</td>
<td>Business Intelligence in decision making.</td>
</tr>
<tr>
<td>Lytras et al., 2018</td>
<td>Industrial Marketing Management</td>
<td>Cognitive Computing and Big Data Analytics for Data-Driven Marketing Decisions.</td>
</tr>
<tr>
<td>Baptista et al., 2017</td>
<td>The Journal of Strategic Information Systems</td>
<td>IT in organizational strategic decision making.</td>
</tr>
<tr>
<td>Liu et al., 2016 b</td>
<td>Industrial Management &amp; Data Systems</td>
<td>Knowledge-based decision support systems for business performance improvement in a real industrial environment.</td>
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</table>

#### 1.3 Purpose

The purpose of the study is to develop the concept of business intelligence through an investigation of how BI can be used to collect relevant data and how it can affect the managerial decision making of managers with marketing responsibilities.

#### 1.4 Delimitations

This study is delimited to examining business intelligence exclusively from a marketing perspective within B2B companies. The research will only focus on large corporations based on the definition of SME’s by the European Commission, according to the staff headcount of a company (European Commission, 2003). The European Commission...
(2003) defines Medium-sized enterprises as companies with less than 250 employees, which indicates that large enterprises are those with more than 250 employees; and this will be the standard used to select the studied companies. Moreover, the large company choices will be narrowed down to international Nordic-based organizations, due to the fact that they are easier to reach for the empirical collection of this thesis.

Another delimitation of this study is the choice of the authors to disregard the usage of a quantitative approach based on Recker’s (2013, p.88) suggestion that qualitative research is more focused on what individuals said, did, believed or experienced about an event or situation, which is more suitable for this research.

1.5 Outline of thesis

The thesis begins with an introduction of the topic that will be explored in this research, a brief description of how is knowledge and data important for a company/industry, more specifically to managers with marketing related responsibilities. Afterwards, a short definition of what business intelligence is in regards to information and decision making capabilities and how it derives from information systems. Furthermore, in this section there will be a presentation of the delimitations of this research, explaining the specific areas that the thesis will be focusing on. Chapter two will provide an in-depth explanation of the theories and models that derived from the empirical data collection and will later in the study be used to shape the results. Chapter three will present the research questions of this thesis and it will provide an explanation of why are they relevant in regards to the chosen topic. Subsequently, in chapter four, there will be an explanation of the selected methodology to approach the previously stated research questions of this study, as well as, the reasoning why it is believed that this approach will accomplish to reach the main goal of the thesis. In addition to that, the discussion of how the methodology and data collection would provide certainty of the quality of the data and research. Chapter five will present the information obtained through the process of conducting interviews with managers who have marketing related duties and the most relevant empirical data will be analysed in chapter six. Finally, in chapter seven, after analysing the obtained empirical data with the help of the literature review presented in chapter two, the conclusions of the authors will be disclosed and the answers to the research questions will be discussed. As well as, the proposition of further research for the BI topic.
2. Literature Review

In this section, already existing knowledge and possible unexplored areas of study will be presented. It covers how BI can be used to collect relevant information for organizations and how it may assist managers with marketing responsibilities in the decision-making process. The literature review resulted in four sub-chapters, each dealing with major research areas. In table 2 each field has been summarized to provide a condensed introduction to each stream of literature.

Table 2 - Summary of the Literature Review

<table>
<thead>
<tr>
<th>Theory/Concept/Model</th>
<th>Summary</th>
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<tbody>
<tr>
<td>2.1 Organisational Theory</td>
<td>It is a theory based on the resource based view model, which tries to explain why do companies fail or succeed, based on their valuable or rare intellectual and relational resources.</td>
</tr>
<tr>
<td>2.2 Knowledge Management</td>
<td>It is a multidimensional concept that explain how knowledge/intellectual resources can be managed. In order to provide competitive advantage and contribute to the performance of a firm.</td>
</tr>
<tr>
<td>2.3 Managerial Decision Making</td>
<td>Explains how managerial decision-making in a company is influenced by the available resources. More specifically intellectual resources.</td>
</tr>
<tr>
<td>2.4 Information Systems</td>
<td>Is a concept where workers, technology and structure within a company, are used to obtain and analyze intellectual resources. In order to bring benefits to a company.</td>
</tr>
<tr>
<td>2.4.1 The Updated D&amp;M IS Success Model</td>
<td>It is a model that describes how to implement an information system adequately in a company, bringing benefits to it.</td>
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2.4.2 The Concept of MkIS (Marketing Information Systems) and Business Intelligence

It is a concept that integrates business intelligence as a part of information systems, IS and Marketing. Shifting all the IS elements (E.g., Data, intellectual resources, resources.) towards the use of BI within a marketing perspective.

2.4.3 Business Intelligence

It is a concept and a tool used by companies, it explains the meaning a purpose of BI as a system. Focused on bringing value to managerial marketing decision-making activities, through the use of information/intellectual resources.

2.4.3.1 Competitive Intelligence

CI would mean the use of business intelligence for specifically managing information related to the external factors of a company within a market.

2.1 Organisational Theory

Wernerfelt (1984) developed a model for viewing firms from a resource-based view (RBV), which has also been referred to as an applying resource-based theory as a foundation (Kozlenkova, Samaha and Palmatier, 2014), rather than a product view named the resource-based view. The model is widely cited by scholars and it has been recognized in organisational theory (Lin and Wu, 2014; Shaw, Park and Kim, 2013) marketing (Kozlenkova, Samaha and Palmatier, 2014; Yu, Ramanathan and Nath, 2013) information systems and information technology literature (Benitez-Amado and Walczuch, 2012; Wiengarten et al., 2012). Kraaijenbrink, Spender and Groen (2009, p.350) go as far to state that “The resource-based view (RBV) has become one of the most influential and cited theories in the history of management theorizing”.

From a marketing point of view, Srivastava, Fahey and Christensen (2001) suggest that the resource-based view (RBV) is used to get a firm perspective on why companies succeed or fail. Essentially, RBV focus on resources which are valuable and rare and the resources are used by firms to develop competitive advantages and to increase their performance (i.e., organizational and financial performance) (Yu, Ramanathan and Nath, 2013). There assets or resources is defined as something an organization can;
“Acquire, develop, nurture, and leverage for both internal (organizational) and external (marketplace) purposes”. - Srivastava, Fahey and Christensen (2001, p.779)

However, Srivastava, Fahey and Christensen (2001) further explain that there is an important distinction to be made. Market assets are divided into two sub-categories, namely, relational and intellectual. Relational resources are relationships with customers which are based on factors such as trust and reputation. When the relationships have been developed to such an extent that it is difficult to rivals and competitors to replicate, it is considered to be a relational asset. However, the firms do not own the resource because it is intangible and external to the company, and it is hard to measure. Intellectual resources are the knowledge that a firm has about its competitive environment. However, it is not restricted to that particular environment, it includes knowledge about all the internal and external data of a market in which a firm operates in. Furthermore, it deals with the know-how of staff members (e.g., the skill of how to interact with customers to gather high-quality market data). However, others have suggested that resources should be classified according to the VRIN framework (valuable, rare, inimitable and nonsubstitutable) and non-VRIN resources (real estate and financial capital of an organization) (Lin and Wu, 2014). The authors argue that VRIN resources are the source of a company’s competitive advantage, which is related to its performance. Non-VRIN resources have a lesser effect on the firm's performance and are not the focus of the collection of RBV (ibid). Moveover, Pertusa-Ortega, Molina-Azorín and Claver-Cortés (2010) suggests that a firm’s capabilities should be included as a resource because an organization's competitive strategy is dependant on both the resources and capabilities.

Srivastava, Fahey and Christensen 2001 argues that RBV suggests that for companies to supply customers with a breakthrough or radical solutions derived from new insights, a lot of responsibility is placed on the managers since it requires a high amount of risk-taking. That is because the new insights might involve uncertainties and complicated marketing conditions. Furthermore, the models suggest that companies use their assets to guide strategy development and implementation, although, research has found that a fundamental problem in RBV is its inability to identify key resources and capabilities leading to a competitive advantage and superior profitability of a firm (Hinterhuber, 2013). (Additionally, RBV suggests converting the assets into product and solutions for
the customers through a variety of processes. The business assets such as intellectual resources, need to be absorbed by the organization if they are to be converted to any solutions that the customer desires, which would lead to a generation of economic value for the firm.

As the intellectual resources are absorbed and analyzed within a company they turn into useful knowledge that needs to be managed and allocated in the most profitable way.

2.2 Knowledge Management

“Nowadays, knowledge is the fundamental basis of competition [...] and, particularly tacit knowledge, can be a source of advantage because it is unique, imperfectly mobile, imperfectly imitable and non-substitutable”. - López-Nicolás and Merono-Cerdán (2011, p.502)

Gold, Malhotra and Segars (2001) proposed a model for viewing knowledge management which has been widely recognized (Mills and Smith, 2011). The model proposes that knowledge management should be seen as a multidimensional concept. First, of, resources are generated through two processes, namely: combination and exchange. However, it depends on the existence of social capital, which is defined as;

“The sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by a social unit.” - Gold, Malhotra and Segars (2001, p.187)

The social capital is enabled and further developed through three essential infrastructures, namely technical, structural and cultural. The technical aspect refers to the creation of new knowledge through information and communication systems within an organization. Furthermore, the systems eliminate barriers within an organization and permit communication between departments. Business intelligence systems would be such a system due to the fact that it enables companies to generate information about the competition and the economic environment. Additionally, it is essential that firms take steps to make sure that the information is not used in an inappropriate way, or that it is stolen (Gold, Malhotra and Segars, 2001).
The structural aspect refers to how an organization works (e.g., centralization and decentralization). It is vital that organizational structures are flexible for it to be possible to enable and promote the sharing of information and collaboration across the firm. It has been found that structural elements can prohibit that through individualistic approaches where employees hoard information rather than to share it with the organization. Furthermore, incentive systems could motivate staff to take the time to generate new knowledge i.e. learn, share already collected knowledge with others and assist colleagues across divisions and departments (ibid).

Gold, Malhotra and Segars, 2001 further explains that the cultural element refers to the present organizational culture. To achieve efficient knowledge management, the firm needs to shape the culture accordingly. It is important for individuals within an organization to be able to communicate with each other. The authors present evidence for the fact that dialogue on an individual and group level could have the potential to create new knowledge. Furthermore, the interaction is vital in the process of sharing information between staff members, but also in transforming the knowledge from an individual level to an organizational level. Ferraresi et al., (2012) found support in knowledge management literature for the belief that organisations are dependent on knowledge and that it can be used to improve the firm’s overall competitiveness, but also the firm performance (Mills and Smith, 2011), the financial, process and internal performance, which can be used by managers to convince stakeholders to implement KM projects (López-Nicolás and Merono-Cerdán, 2011).

Roberts et al. (2012) proposed a model (see Figure 1), originally created by (Cohen and Levinthal, 1990), for viewing knowledge management in information systems through the concept of absorptive capacity, which has started to be viewed as an essential part of a firm’s competitive advantage (Kostopoulos et al., 2011). The concept centres around:

“(…) the ability to identify, assimilate, transform, and apply external knowledge”. - Roberts et al. (2012, p.626)
More specifically, according to Roberts et al. (2012), it concerns the firm's ability to recognize valuable external information and transform it into the firm's knowledge which would then be applied in competitive actions in the market. Camisón and Forés (2010, p.707) state that “absorptive capacity is the dynamic capacity that allows firms to create value and to gain and sustain a competitive advantage through the management of the external knowledge”. Roberts et al. (2012) describe that the development of absorptive capacity is essential for an organization's long-term survival due to its effect on a company’s knowledge base. Developments in information systems have made it possible to improve firm’s absorptive capacity. Absorptive capacity has been applied in knowledge management for some time, however, there has not been a comprehensive assessment of it in (IS) literature. It has been found that absorptive capacity contributes to a firm’s performance both directly and indirectly. Although, it depends on the firm's ability to learn from the information and knowledge. In order for an organization to develop its knowledge base, a firm must have some prior knowledge about the topic of interest. Without that, it is difficult for companies to determine the value of external knowledge. Furthermore, it also depends on the individual staff member of a company. A firm’s absorptive capacity is formed by individual knowledge overlapping one another across the whole organizations (ibid).

Liu et al. (2013) suggest that firms can, with absorptive capacity, gather knowledge regarding their customer’s preferences, technological innovations in the industry and emerging markets. The information is gathered from a multitude of sources, some of which could be through customers, suppliers, competitors, and other channel partners.
The data could have an impact on the firm’s understanding of the environment in which they operate and market tendencies, but it may also improve the company’s possibilities to notice any potential opportunities in the market. This would then be critical for a firm to increase its market shares and profitability.

On the other hand, Blattberg, Kim and Neslin (2008, p.192) argue that organizations have a great amount of internal data. In some cases, a firm might even have more data that they believed they had. Walters, Jiang and Klein, (2003) proposes that internal data is composed by six dimensions market research function (i.e., customer database and tracking), product research and development, basic engineering, financial management, cost controls, and operational efficiency. Furthermore, Blattberg, Kim and Neslin (2008, p.192) proposes another interpretation of internal data and suggests that it is;

“Data located within the organization about order processing/fulfillment, inventory availability, delivery information, billing and accounting, pricing, sales volume, discounts, net price paid, customer transaction histories”.

2.3 Managerial Decision Making

Kunc and Morecroft (2010) presents a model on managerial decision making influenced by resource-based theory. The model consists of two steps, namely, resource conceptualization and resource development (See figure 2). Resource conceptualization is described as a cognitive process which strategically selects resources that are perceived to be of value and based on its effect on the firm performance. In other words, managers tend to choose resources they believe are a beneficial factor of the competitive advantage of the company which, in the end, would receive more attention. However, that does not mean that there is a cause and effect relationship between the selected resources and its role in the competitive advantage of the firm. Grant (1996) goes even further and states that managers and executives with marketing responsibilities have valuable insights about their field but they might just know a fraction of what their subordinates do. This view is shared by Kozlenkova, Samaha and Palmatier (2014) who states that some research explains that the reason of why managers might fail to optimize the assets is because they lack the capability and information.
The second step is resource development which Kunc and Morecroft (2010, p.1167) describe as the “implementation of strategies through resource accumulation”. Furthermore, it concerns the adjustment of resources by the use of information and feedback. In this stage, managers devote a number of assets to achieve the determined strategy. The process then ends when the manager receives data about any possible changes in firm performance which would either reinforce or modify the initial resource conceptualization of the chosen assets which were used to implement the strategy. From a marketing literature perspective, Wierenga (2011) argues that it is difficult for marketing managers to achieve objective rationality seeing as the number of alternatives are high and the quantity of information that would be needed to evaluate each alternative is too vast. Mintz and Currim (2013) found that some research suggests that a managers' characteristics can have an impact on their priorities abilities and use of information in decision making. Furthermore, Lilien (2011) outlines the traditional marketing decision modeling approach (See figure 3). It is defined as:

“A systematic approach to harness data and knowledge to drive marketing decision making and implementation through a technology-enabled and model-supported interactive decision process”. - Lilien (2011, p.197)
Furthermore, Lilien (2011) states that the model centres around the fact that managers try to source information (e.g sales and profit data) before making marketing decisions (e.g marketing campaign programmes). Together with the individual judgement, the manager uses it as decision support. Although, there are instances where the data is not available, which forces managers to act on their rules or principles. This might lead to situations where managers only see a limited number of aspects, instead of the holistic picture of a situation.

All of the previously described data and knowledge that can be very useful for a company to evolve in their business activities, can be stored in systems as part of the companies’ resources, that can help to store and manage the information. These systems are referred to as Information Systems.

2.4 Information Systems

Information systems’ operational and strategic value has been widely discussed and supported by most current research papers from empirical and theoretical points of view (e.g. Han, Chang and Hahn, 2011; Lee, Xiang and Kim, 2011; Schryen, 2013). Schryen (2013) points out that based on the review of more than 300 different research documents with a focus on IS, there has not been conceived a standard and acknowledged definition of what information systems means. However, there is a general understanding of what IS encompasses. It is comprised of workers, structure and technology that have an emphasis on obtaining and analyzing data. This data will be transformed into coherent information that will be distributed and used among the different departments of an organization. On the other hand, the definition given to the value of information systems is also very flexible and it changes depending on how the viewer delimit value and the needs of a company. The definition varies from financial to non-financial measures (e.g. ‘organizational performance’ ‘IS investment and productivity’ ‘return on sales’ ‘organizational capabilities’ ‘strategic position’ ‘competition knowledge’). Moreover, as explained by Kohli and Grover (2008) and Schryen (2013) value can also be based on an ‘ex-ante’ and ‘ex-post’ nature. Ex-ante meaning how does IS supports the decision making before an investment and Ex-post focusing on the return on investments originated by the utilization of information systems. This report will focus on the non-
financial measures, meaning the intangible assets of a company (e.g. Information) within an ex-ante scope.

2.4.1 The Updated D&M IS Success Model

DeLone and McLean (1992) described the measurement of success as a highly subjective term, it does not count with a homogeneous definition and it is dependent on the single opinion of a user or an organization and their particular needs and expectations. Based on Shannon Weaver’s article in 1949 named levels of information and Mason’s work in 1978 on expansion of effectiveness or influence levels, there were drawn six different aspects of information systems. The first two aspects which are; system quality and information quality, are related to the production and the product itself. The other four aspects which are; use, user satisfaction, individual impact and organizational impact, are more related to the actual usage of the system and its perception within their users. Grounded on these features, an interdependent model was conceived (see Figure 4), where system quality and information quality affect each other simultaneously at the same time they influence use and user satisfaction, which would influence each other either positively or negatively, as well as, individual impact which will also influence organizational impact.

Based on the DeLone and McLean model of information systems success, DeLone and McLean (2003) proposed an updated version, empirically and theoretically adoptable, based on a causal model explained as a process model that follows what specific aspects influences/causes the next feature in the information flow. However, this updated version quality has three major dimensions instead of two, including service quality. They will affect use and user satisfaction, however, in this new model it is suggested that intention of use replaces use in some cases, due to the fact that use implies a behaviour, more towards a mandatory action; while the intention of use implies an attitude, more willingness. Generating net benefits, either positive or negative ones, the negative benefits requiring either readjustment of the previously mentioned aspects within the system or to uninstall the system completely, having a direct impact on the intention to use it again and in user satisfaction, therefore, the arrows going back at those aspects of the model. In order to ensure the success each category and its impact on the flow, needs to be fulfilled and followed closely (DeLone and McLean, 2003). DeLone and McLean (2003) argue that the amount of usage of an Information System correlates to the amount of benefits it provides. However, it is also connected to why do they use the system for,
how many times, the quality and if the system fits its purpose. They also point out the fact that the less use of it could directly reflect on fewer benefits being delivered to the user.

**Figure 4 - The Updated D&M IS Success Model**

![Image of the updated D&M IS Success Model]

*Source: DeLone and McLean, (2003).*

### 2.4.2 The Concept of MkIS (Marketing Information Systems) and Business Intelligence

Marketing information systems is a concept based on information-technology, it originates from the need of organizations for having a better control of larger highly flexible and changing marketing and competitive environments. Information is one of the most important elements for effective marketing activities, therefore is imperative for companies to take advantage of information systems. Talvinen (1995, p.8) said that “Information systems allow dynamic marketing communication between personnel in corporate planning, accounting, advertising and sales promotion, product management, channels of distribution and direct sales.”. MkIS is described by different authors (e.g. Talvinen, 1995; Amaravadi, Samaddar and Dutta, 1995; Ritchie and Ritchie, 2002) as the direct use of information systems for gathering and managing marketing information that will be used in strategic and operational ways, going from helping with decision making process, competition analysis, to strategic customer relations establishment.

Information systems incorporate a wide variety of computerized systems such as; business intelligence, knowledge management, competitive intelligence, enterprise
information systems, inter-organizational information systems and many others, which focus on more specific areas of each organization’s department (Abbasi, Sarker, Chiang, 2016; Rajaguru and Matanda, 2013). Despite all the proven values that IS brings to an organization, this topic is still very hard to manage. A great part of the theories and basis of this discipline are not standardized and change from author to author, which gives origin to a highly fragmented understanding of the discipline and to various contradictions regarding the application and the post-implementation phases of IS. This could get very frustrating for operators and users of this systems, due to the fact that if the existing knowledge of this discipline is very abstract, then it can be difficult for users to understand it and how it works, simultaneously raising doubts regarding the endurance of this discipline (Liu et al., 2016a; Schryen, 2013).

Business intelligence is part of information systems and it can also be more specifically classified under the MkIS scope if explicitly applied towards marketing activities support (Stone and Woodcock, 2013).

2.4.3 Business Intelligence

Business intelligence has been a buzzword amongst researchers and managers for years. Liu et al., (2016a) performed an analysis of keywords used in 9551 articles published in top journals and conferences between 1993 - 2012. It was found that the topic of business intelligence and data mining could be an emerging field due to its low density and decentralization from other topics. BI has been described as a wide and abstract concept (Grublješič and Jaklič, 2014) as well as, claimed to have multiple definitions, depending on the discipline where it is used (Işık, Jones and Sidorova, 2013; Aruldoss, Lakshmi Travis, and Prasanna Venkatesan, 2014). Business intelligence is defined by Popović et al., (2012, p.729) as “the ability of an organization or business to reason, plan, predict, solve problems, think abstractly, comprehend, innovate and learn in ways that increase organizational knowledge, inform decision processes, enable effective actions, and help to establish and achieve business goals”. BI can be understood as a set of different systems that contribute to the storage and management of important data and figures. This information, either internal or external, can benefit companies with organizational and operational tasks (Niu, Lu, Zhang and Wu, 2013). According to Baars et al., (2014), from a more technology-related approach, BI is a compilation of systems aimed towards IT-
Based on management and decision support, in order to narrow down high waves of data available within an organization. BI has also been described as part of information systems with the purpose of improving companies’ flexibility, adaptation and performance (Işık, Jones and Sidorova, 2013). It can be applied in many fields, such as; education, healthcare, manufacturing industry, and others (Aruldoss, Lakshmi Travis, and Prasanna Venkatesan, 2014). Furthermore, it can be implemented within the different departments of a corporation. Helping individuals to perform tasks within a company accessing and gaining important knowledge instantly about a matter, more specifically supporting marketing managers with decision making and risk weighting, by providing condensed and accurate versions. Additionally, providing information to stakeholders about the company’s performance and flexibility and storing data regarding competitors within an industry, known as competitive intelligence, bringing competitive advantage (Rubin and Rubin, 2013; Işık, Jones and Sidorova, 2013; Niu, Lu, Zhang and Wu, 2013).

Due to all the support it can bring to an organization, business intelligence has become more and more popular (Chen, Chiang and Storey, 2012). On the other hand, in order for business intelligence to be highly successful within an organization, it should be integrated with other support systems (e.g., expert systems, executive information systems, decision support systems and management information systems) (Hosack et al., 2012), and the data stored in it, constantly up to date and should be of high quality, especially when using it for decision making (Işık, Jones and Sidorova, 2013).

As derived concepts with more specific uses from business intelligence, there is a very important and popular subsystem, which is competitive intelligence (Calof and Wright, 2008; Lilien, 2016). A concept highly associated with the management and filter of data.

2.4.3.1 Competitive Intelligence

The concept competitive intelligence started as a trend which derives from business intelligence (Zheng, Fader and Padmanabhan, 2012). Several efforts with varying success have been made to evaluate businesses competitive intelligence and its performance since pre-1970’s (Calof and Wright, 2008). It is widely recognized that the use and collection of information by competitive intelligence is a strong beneficial factor to successful
organizational decision making (Rapp et al., 2014). From an information systems point of view, Xu et al., (2011, p.743) describe CI as “competitive intelligence (CI) involves the early identification of potential risks and opportunities by gathering and analyzing information about the environment to support managers in making strategic decisions for an enterprise.”. However, from a marketing standpoint, Mariadoss et al., (2014, p.2) goes more into the specifics about the competitive environment and suggests that “in general, competitive intelligence (CI) includes information collected on many actors and situations relevant to a competitive landscape, such as information about competitors, customers, suppliers, and relevant technologies.”.

Managers are constantly evaluating the firm performance to its competitors in the market (Zheng, Fader and Padmanabhan, 2012). Technologies like competitive intelligence systems are primarily used to collect real-time and historical information regarding competitors through a multitude of sources (Competitor’s websites, third-party sites and systematic intelligence gathering). However, it is not limited to a competitors marketing mix, but also underlying motivations, human and capital resources, partnerships and sourcing arrangements (Kumar et al., 2015). Evidence suggests that CI systems support the decision making through multiple channels (corporate or business strategy, sales or business development, market entry decisions, product development, R&D/technology decisions, M&A decisions, due diligence, joint venture decisions and regulatory/legal responses) (Calof and Wright, 2008). Xu et al., (2011) further explain that CI is used to gather and analyze data regarding the organization's environments, which can support managers in the decision making process. However, Dishman and Calof, (2008) suggest that a firm’s environmental scanning and information processing in marketing is correlated with an organization’s environmental uncertainty. Moreover, it can assist decision makers to make informed strategic decisions and operational decisions, and it has been recognized that CI can assist firms in realizing its strengths and weaknesses, enhance business effectiveness and improve customer satisfaction (He, Zha and Li, 2013). Zheng, Fader and Padmanabhan (2012) suggests that current BI systems tend to fall short of collecting external information (i.e. information located outside of the organization), particularly in CI primary areas. This indicates that there might be a need for BI system which includes CI capabilities, or a separate CI system which complements the already existing BI infrastructure.
Kumar et al., (2015) propose that information collected by a CI system should be divided into categories;

- Marketing Mix (e.g. pricing, promotion, product features, design, and patents).
- Competitor Internal (e.g. sales statistics, cost data, manufacturing facilities and capacity, research and development, and financing).
- Competitor Strategic (e.g. expansion plans, key executives, and sourcing strategies).

3. Research Questions

- RQ1: How can business intelligence be used to collect relevant information for organizations?
- RQ2: How does business intelligence assist managers with marketing responsibilities in the decision making process?

3.1 Research problem and research discussion

By adopting an interdisciplinary view, consistent with organizational theory, strategic management, knowledge management and information systems literature, on the concept of business intelligence, the purpose and the usefulness of the systems becomes apparent. From a knowledge management perspective researchers have described how technical aspects, in the form of IS, can enable communication of data within an organization and from organizational point of view (i.e., RBV) scholars have that intellectual and relational resources could be used in marketing.

More specifically, what could a BI system provide for managers with marketing responsibilities in large organizations. The research about what type of data a BI system can provide has been studied before, but not in relation to what organizations find relevant. Furthermore, BI effect on the decision making of managers with marketing responsibilities seems to have been neglected by high-ranked journals. Between 2010 -
2018, a total of 296 articles were published in relevant fields according to Web of Science’s library. The mean h-index of the articles were 23, which suggests that high ranked journals might have neglected the area of study (Web of Science, 2018b; Appendix 1).

3.2 Operationalization

**Table 3 - Concept Overview**

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Concept</th>
<th>Author and year</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational</td>
<td>Usage of Resources in RBV</td>
<td>Srivastava, Fahey and Christensen, 2001</td>
<td>“Acquire, develop, nurture, and leverage for both internal (organizational) and external (marketplace) purposes.”</td>
</tr>
<tr>
<td>Theory</td>
<td>Intellectual Resources</td>
<td>Srivastava, Fahey and Christensen, 2001</td>
<td>Intellectual resources are the knowledge that a firm has about its competitive environment. Including knowledge about all the internal and external data of a market in which a firm operates in</td>
</tr>
<tr>
<td></td>
<td>Internal Data</td>
<td>Blattberg, Kim and Neslin, 2008, p.192</td>
<td>Data located within the organization about order processing/fulfillment, inventory availability, delivery information, billing and accounting, pricing, sales volume, discounts, net price paid, customer transaction histories.</td>
</tr>
<tr>
<td></td>
<td>External Data</td>
<td>Zaraté et al., 2008, p. 247</td>
<td>External data is compiled by data collected from institutes (statistics about trade, labour and population) industry organizations (Data about average sale amongst companies and market performance) internet (competitors websites and planned marketing events) and business partners.</td>
</tr>
<tr>
<td>Knowledge Management</td>
<td>A Firm's Competitive Advantage</td>
<td>Roberts et al., 2012</td>
<td>“The ability to identify, assimilate, transform, and apply external knowledge.”</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------</td>
<td>---------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Marketing</td>
<td>Marketing activities</td>
<td>Webb et al., 2011</td>
<td>“A set of means that facilitate firms’ ability to exploit opportunities and satisfy customer needs.”</td>
</tr>
<tr>
<td>Marketing</td>
<td>Marketing orientation</td>
<td>Gounaris, Vassilikopoulou and Chatzipanagiotou, 2010</td>
<td>“Allows the company to align with the needs of the customer by developing the necessary knowledge, skills and procedures that are required to serve these needs.”</td>
</tr>
<tr>
<td>Business Intelligence</td>
<td>Business Intelligence</td>
<td>Popovič et al., 2012</td>
<td>“the ability of an organization or business to reason, plan, predict, solve problems, think abstractly, comprehend, innovate and learn in ways that increase organizational knowledge, inform decision processes, enable effective actions, and help to establish and achieve business goals.”</td>
</tr>
<tr>
<td>Information Systems</td>
<td>Information Systems in Marketing</td>
<td>Talvinen, 1995</td>
<td>“Information systems allow dynamic marketing communication between personnel in corporate planning, accounting, advertising and sales promotion, product management, channels of distribution and direct sales.”</td>
</tr>
</tbody>
</table>

To answer our research questions a semi-structured interview guide was created. The opening questions (3 & 10) in the first and second topic is used to obtain data about the usage of resources according to the RBV. In order to be able to make a distinction between intellectual and relational resources, multiple questions were asked (8, 8.1, 9, 9.1, 15, 15.1, 16, 16.1, 22 and 28). To develop data about the firm's competitive advantage three questions were used (14, 22, 28, 28.1). On the topic of marketing, there are two separated areas (i.e., marketing activities and marketing orientation). To gather data about the four questions were asked (9, 9.1, 16 and 16.1). To collect data about business intelligence and information systems a large number of questions were used (17, 17.1, 18, 19, 20, 21 and
Furthermore, to gain an insight into the two main sources of data collection (i.e., internal and external) several questions were asked to the interviewees (3, 4, 5, 10, 11, 12). However, it was not possible to locate any definition as to what a centralized or decentralized IT system is. An extensive search was conducted without any success.

4. Methodology

Several searches for literature was conducted between the 25th of March and the 2nd of May. Literature searches were conducted in the Association of Information Systems basket of eight, which represents the top journals in the field and are recommended by the senior scholars' consortium of the AIS (Aisnet.org, n.d.). It is a private organization operating in the Americas, Europe and Africa, and Asia-Pacific formed by researchers, students and professionals that specializes in information systems and promotes its development. The choice to include the basket of eight is supported by the methodology used by Bernroider, Pilkington and Córdoba (2013) and the investigation of the AIS journals conducted by Lowry et al. (2013). Additional searches were performed in the most prestigious publications based on a journal quality review (Harzing, 2017). The quality list compiled by Harzing (2017) sets out to collect a body of rankings for different journals made by different parties in order to provide a holistic picture of its standard. It encloses journals from various subjects (e.g. economics, finance & accounting, marketing, psychology and management science). Moreover, additional searches for relevant peer-reviewed journals were conducted and selected based on their respective h-index when compared to others (Webofscience.com, 2018b). Briefly, the h-index can be described as a measurement for evaluating the impact of a journal or a publication in relation to how many times each publication has been referenced to (Hirsch, 2005). In the case of Web of Science h-index, it looks at each publication and how many times it was referred on a one-year basis (Webofscience.com, 2018a). The information was used to evaluate and get a sense of the impact of the journal. In table 4 the top ten journals are ranked according to their respective index (i.e., h-index, h5-index and h5-median).
### Table 4 - Journal Ranking Overview

<table>
<thead>
<tr>
<th>Journal</th>
<th>Frequency</th>
<th>H-index</th>
<th>H5-index</th>
<th>H5-median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal of Marketing</td>
<td>6</td>
<td>64</td>
<td>106</td>
<td>264</td>
</tr>
<tr>
<td>Decision Support Systems</td>
<td>6</td>
<td>70</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td>Information &amp; Management</td>
<td>5</td>
<td>49</td>
<td>68</td>
<td>112</td>
</tr>
<tr>
<td>Strategic Management Journal</td>
<td>4</td>
<td>76</td>
<td>110</td>
<td>272</td>
</tr>
<tr>
<td>Journal of the Academy of Marketing Science</td>
<td>4</td>
<td>48</td>
<td>81</td>
<td>125</td>
</tr>
<tr>
<td>European Journal of Marketing</td>
<td>4</td>
<td>42</td>
<td>57</td>
<td>68</td>
</tr>
<tr>
<td>Industrial Marketing Management Journal</td>
<td>4</td>
<td>58</td>
<td>81</td>
<td>95</td>
</tr>
<tr>
<td>Journal of Management Information Systems</td>
<td>3</td>
<td>90</td>
<td>40</td>
<td>59</td>
</tr>
<tr>
<td>European Journal of Information Systems</td>
<td>3</td>
<td>43</td>
<td>67</td>
<td>71</td>
</tr>
<tr>
<td>Journal of Business Research</td>
<td>3</td>
<td>139</td>
<td>81</td>
<td>120</td>
</tr>
</tbody>
</table>

- **Frequency**: the amount of articles used from that specific journal.
- **H-index**: means that there are \( h \) papers that have each been cited at least \( h \) times (Web of Science, 2018b).
- **H5-index**: is the \( h \)-index for articles published in the last 5 complete years. It is the largest number \( h \) such that \( h \) articles published in 2012-2016 have at least \( h \) citations each (Google Scholar, 2018).
- **H5-median**: for a publication is the median number of citations for the articles that make up its h5-index (Google Scholar, 2018).

#### 4.1. Research purpose

The study takes advantage of using an exploratory approach. The reasoning behind that decision lies in the outline of the research questions. RQ1 has received some attention from scholars and a variety of studies has been conducted, but the experiences and beliefs
of managers have been overlooked. However, RQ2 has received little attention and seems to have been neglected in IS and marketing literature. An exploratory approach was used to study business intelligence effect on decision making in organizations due to it being somewhat unexplored. Corbin and Strauss (2014, p.85) provides a quote, originally stated by Herbert Blumer in 1969, which explains the reasoning behind exploratory research as:

“The purpose of an exploratory investigation is to move toward a clearer understanding of how one’s problem is to be posed, to learn what are the appropriate data, to develop ideas of what are significant lines of relation and to evolve one’s conceptual tools in the light of what one is learning about the area of life”.

Attride-Stirling (2001, p.403) argues that “The value of qualitative research lies in its exploratory and explanatory power [...]”. Malhorta (2010, p.41) seems to share the same perception and suggests that qualitative research is exploratory in nature and through the usage of a multitude of techniques (e.g focus groups and in-depth interviews) will provide detailed information based on the interviewees' thoughts. Cooper and Schindler (2013, p.94) suggest that “Exploration is particularly useful when researchers lack a clear idea of the problems they will meet during the study”. By making use of exploration the authors developed concepts and operational definitions to learn something about a vague or new phenomenon facing managers in the industry (Cooper and Schindler, 2013, p.94). Furthermore, exploratory work might generate ideas for new theory (Bell and Bryman, 2011, p.35).

4.2. Research approach

Qualitative research aims at creating an understanding of a particular problem. It has been argued that qualitative research is more suitable when questions are sensitive and when it might reflect badly on the interviewee (Malhotra, 2010, p.140). Golafshani (2003) describes that qualitative research seeks to understand something in a real-world setting without any manipulation of it. Moreover, it is any research which does not arrive to any conclusion by the use of quantifiable data.

The study is following the suggestion of adopting a constructivist approach based on the grounded theory which is widely used by researchers to analyze qualitative data (Bell and
Moreover, the authors suggest that grounded theory centres around the fact that the theory is derived from the collected data. More specifically, the information was categorized and labelled. The data was collected through qualitative in-depth interviews conducted until theoretical saturation was reached, which refers to a state where no new insights or information are obtained from conducting more interviews.

Corbin and Strauss (2007) argue that in the use of grounded theory, it is common to review some literature prior to conducting the data collection. The authors suggest that a researcher should review the literature to find concepts that can be used to make comparisons, provide questions for interviews or observations and to confirm and to spot where the literature is incorrect. However, there is a distinction between reviewing some literature and initiating the data collection with an entire list of concepts. The latter will have an adverse effect on the interpretation of the data sample because it might lead the researcher to think that the concepts are derived from the data when it is not.

4.3. Data collection method

A semi-structured interview (see Appendix 2) approach was used to create areas which were of interest and questions to the study. The questions asked to the interviewee included a limited variation depending on the interest and willingness to disclose sensitive and detailed information. The interviews provided the study with in-depth information regarding their individual view and perception. Furthermore, the study used an indirect, as opposed to a direct approach, when interviewing. An indirect approach refers to the non-disclosure of the true purpose of the project (Malhotra, 2010, p.141). This method was chosen due to the fact that complete transparency might have a serious impact on the answers the interviewees provided.

4.4. Sample selection

The study is following the methodological suggestions made by Boddy (2016) regarding the importance of justifying sample sizes. 11 individuals were interviewed between the 26th of February and 2nd of May, with each interview having a duration between 40 minutes and one hour. The interviewees were representing five companies active in the B2B, and in some cases, the B2C sector as well. All of the organizations are Nordic and the average number of employees was 12,512. The interviewees had varying positions
(See Table 5) which provided the study with multiple perspectives on the same topic. However, it was ensured that each individual had marketing responsibilities and was involved in the discussions regarding collecting information at their respective organization prior to being chosen for an interview. In a sense, the authors of the study adopted a purposive aspect in the selection of candidates.

When conducting each interview, one of the researchers made the interview while the other took notes about what was said. Moreover, the researchers had discussions about the notes after every single interview, which was complemented with writing individual notes of around 600 words each to make sure that nothing was overlooked or missed. It has been recognized that gaining access to managers, especially at senior level, can be problematic (Bell and Bryman, 2011, p.472).

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Position in the Organization</th>
<th>Years of Experience</th>
<th>Type of Interview</th>
<th>Quotation/Opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewee 1</td>
<td>Business Development Manager</td>
<td>7 Years</td>
<td>Telephone</td>
<td>“The information which we collect in the BI system is essential for us to be able to make informed decisions.”</td>
</tr>
<tr>
<td>Interviewee 2</td>
<td>Market Research Manager</td>
<td>20 Years</td>
<td>Skype</td>
<td>Information from their different information systems has a significant impact of the decision making of the firm. It is of great use when creating activity plans and long term strategies.</td>
</tr>
<tr>
<td>Interviewee 3</td>
<td>Project Manager for Marketing Communications</td>
<td>12 Years</td>
<td>Skype</td>
<td>Knowledge provides them with flexibility, allowing them to make unstructured changes in any case if it is needed, depending also on the situation and it helps them establish marketing campaigns and marketing strategies.</td>
</tr>
<tr>
<td>Interviewee 4</td>
<td>Marketing Manager</td>
<td>7 Years</td>
<td>Skype</td>
<td>“Many companies take their decisions without...”</td>
</tr>
<tr>
<td>Interviewee</td>
<td>Position / Role</td>
<td>Years Experience</td>
<td>Communication Method</td>
<td>Quote</td>
</tr>
<tr>
<td>-------------</td>
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<td>------------------</td>
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<td>-------</td>
</tr>
<tr>
<td>5</td>
<td>Head of Planning, Coordination and Communications.</td>
<td>10 Years</td>
<td>Skype</td>
<td>“Business Intelligence makes it possible for us to track the customer journey and to measure customer satisfaction. However, it collects a large amount of data which can become difficult to analyze.”</td>
</tr>
<tr>
<td>6</td>
<td>CFO Strategy and Commercial Excellence</td>
<td>5 Years</td>
<td>Telephone</td>
<td>“The data that is derived from BI needs to be categorized through the usage of segmentation models in order for it to be useful for the organization.”</td>
</tr>
<tr>
<td>7</td>
<td>Market Intelligence Manager</td>
<td>4 Years</td>
<td>Skype</td>
<td>What they are actually looking for is how the data correlates, not just the data but what is indicating. It is seen as a piece in a puzzle, comparing internal indicators with external indicators.</td>
</tr>
<tr>
<td>8</td>
<td>Business analyst</td>
<td>25 Years</td>
<td>Skype</td>
<td>“External data is very important, it needs to be obtained faster than before and as fresh as possible[...] When we connect it with internal data then we can develop marketing programs, provide customers with other products, and create reports that later on will be used for decision making and management.”</td>
</tr>
<tr>
<td>9</td>
<td>Business Intelligence Manager</td>
<td>20 Years</td>
<td>Telephone</td>
<td>“We focus on conclusions we can get from our own data. When looking at internal data we look at something that we can actually change. Instead, when it is external data we cannot change it but just observe it and learn from it.”</td>
</tr>
<tr>
<td>Interviewee</td>
<td>Business Intelligence Manager</td>
<td>12 Years</td>
<td>Skype</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------</td>
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<td></td>
</tr>
</tbody>
</table>

“We often see when we talk to employees, the answer to their needs is not very complex, they need a set of information that is accessible and intuitively to understand [...] They just need specific information to answer their questions. Simple BI tools can provide solutions to BI needs. Our approach to information is to encourage business/information discovery. To give the employee the power to explore the information.”

Furthermore, three managers were interested to participate in the study but were unable to due to the current time restraints. This had a negative effect on the sample size of the study. The managers were selected based on recommendations from the organizations respective HR-managers and in some cases, student coordinators. After each interview had been conducted, the managers were asked if they knew someone, based on the criteria, who would be willing to participate. This is referred to as the snowball strategy (Bell and Bryman, 2011, p.192) which centres around contacting a small group of people which are then used to get in contact with others.

4.5. Data analysis

As a contrast to the measures taken in quantitative research to evaluate findings (i.e., internal validity, external validity, reliability and objectivity (Bell and Bryman, 2011, p.43) Lincoln and Guba (1985, p.301) proposed a set of techniques, namely, credibility, transferability, dependability and confirmability to establish trustworthiness in qualitative research. In a later article, Lincoln and Guba (1986) suggested that there are multiple methods a researcher can use to increase the trustworthiness of a study (See Table 6).
### Table 6 - Increased Trustworthiness of a Study

*Techniques and methods used to increase the trustworthiness of a study*

<table>
<thead>
<tr>
<th>Credibility</th>
<th>Title</th>
<th>Execution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prolonged Engagement</td>
<td>Long term and in depth contact with a phenomena or interviewees to be able to identify what is salient.</td>
</tr>
<tr>
<td></td>
<td>Persistent Observation</td>
<td>Pursuing what has been identified as salient in depth.</td>
</tr>
<tr>
<td></td>
<td>Triangulation</td>
<td>Using multiple sources and methods and different point of time to assess the data.</td>
</tr>
<tr>
<td></td>
<td>Peer Debriefing</td>
<td>Introducing the study to a non-engaged and disinterested academic professional to obtain assistance in the development of the research.</td>
</tr>
<tr>
<td></td>
<td>Negative Case Analysis</td>
<td>Searching for deviant data to develop insights.</td>
</tr>
<tr>
<td></td>
<td>Member Checks</td>
<td>Showing a portion of the report to informants to get feedback about interpretations that have been made.</td>
</tr>
</tbody>
</table>

| Transferability | Thick Descriptive Data | By taking advantage of thick descriptions others will be able to make their own judgements of the fit and similarities. |

| Dependability and Confirmability | External Audit | An audit performed by a competent external and disinterested author. |

*Based on; Lincoln, Guba, (1985)*

Hammersley (1992, p.68-72) builds on the work of Lincoln and Guba and suggests that relevance and truth (or validity) should be added. In validity, the author suggests that the evidence of the most central claims of a study needs to be compared so that the arguments plausibility and credibility can be judged. However, claims that are considered to be beyond reasonable doubt can be judged without a need for evidence.

As for the relevance measure, Hammersley (1992, p.72) said that:

> *Sometimes research seems to be presented as if the discovery of truth were sufficient justification in itself. In practice, though, most researchers recognize that their work must also be judged in terms of its relevance.*

The relevance of a study is measured through several aspects (See table 7)
Table 7 - The Relevance of a Study

<table>
<thead>
<tr>
<th>Type of Field</th>
<th>Subject</th>
<th>Questions to be Answered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>Importance of the topic</td>
<td>Is the research considered to be valuable to the field of study?</td>
</tr>
<tr>
<td></td>
<td>Contribution to the literature</td>
<td>Does the research bring something new to the table?</td>
</tr>
<tr>
<td>Practitioner</td>
<td>Importance of the topic</td>
<td>Is the research important to practitioners and is it related to any problems that practitioners face when pursuing goals?</td>
</tr>
<tr>
<td></td>
<td>Contribution of findings</td>
<td>Does the research provide practitioners with any new information?</td>
</tr>
</tbody>
</table>

Based on; Hammersley, (1992)

4.6 Quality criteria

In accordance with the recommendations by Lincoln and Guba (1986), the authors took multiple steps to sufficiently met the requirements of credibility, transferability, dependability and confirmability (as seen in table 6).

In regards to increase the credibility, the authors took several steps. The authors have studied the topic of interest over the course of three months and have been interacting with the respondents since the beginning of February. Through active engagement with three interviewees a depth perception of the phenomenon was achieved. Moreover, interviewee seven agreed to read through a small portion of the report to provide feedback regarding the empirical data. The interviewee stated that:

“I think you've done a really good and thought out job with the interviews for a Bachelor level thesis”. - Interviewee seven

In addition to that, a disinterested and non-engaged professional peer agreed to provide feedback on the all the parts of the thesis to ensure that the collected material was presented in an honest way and that it was in line with the theory.
As for the transferability, in depth descriptions of the empirical data for each topic of interest was provided which allows for interpretations and judgements to be made by others. As for the dependability and confirmability an external audit of the entire study was performed the 25th of May by a professional and disinterested individual to assure the alignment of the results.

To ensure the relevance of the study, based on the framework seen in table 5, one professional agreed to read the relevant parts of the study to give their opinion on the importance of the topic and its contributions to the perception and use business intelligence systems. The respondent provided the following answers to the questions:

**Do you think that our research is important to practitioners and is it related to any problems that practitioners face when pursuing goals?**

“I think work like this can actually make people think about their goals, what the actual goals of the business are and if it is the same as the KPI’s defined by the business intelligence in the dashboards etc (What gets measured gets improved). This is because the problems that practitioners should be facing should be the same than what the business is facing, as Business Intelligence is about business (that's why it's called Business Intelligence), the data is flowing from business processes and that is to which the decisions and goals should mostly be bound to”.

**Do you think that our research might provide practitioners with any new information?**

“To be honest, I think Bachelor/Master-level theses are mostly learning experiences for the people conducting the research as they learn a lot while doing it, and one has to go to the doctoral level "deep" to actually to derive some new information and insight”.
5. Empirical data

Collected information

When asked what kind of information the interviewees collect through business intelligence systems the answers were varied. Interviewees one and four were mainly focused on data about technological developments and emerging/strong trends in their particular industry. Moreover, interviewee one was also interested in the knowledge of staff members within the organization, with an emphasis on knowledge that does not end up in the BI system. An example of that is;

“Sometimes, salespeople in the organization pick up on rumours, about what is happening in the industry, when they are meeting with customers or talking with colleagues. If they information holds any truth to it, it can provide valuable insights about the competition”. - Interviewee one

In contrast, interviewees two and six have a strong focus on collecting data about their existing and potential customers through the use of CRM systems. Very similar to interviewee eight, who expressed an important focus on data regarding customers, sales and potential business opportunities. Interviewee six specified and said that they collect everything from what revenues they make of the customer to what has been said during meetings from the CRM systems. In line with the results provided by interviewee six, interviewee seven said that they are collecting data about operating costs, margins and other financial indicators located within the organization. They were also reviewing historical financial data and looked closely at certain economic indicators which they believe correlate with the increase in the customers’ business, which in the end, would increase the need of their products. Interviewee three was particularly focused on the value of information about their products and product needs current and potentially new markets present. Similarly to interviewee seven, interviewee ten stated that their data collection focuses on financial information, regarding safety, risks, and which opportunities to devote their resources to.
Interviewee eight expressed that they focus on collecting data regarding customers and sales from their business units. They also used to focus on data regarding competitors, but not anymore. Moreover, interviewee eight said;

“Now it is more data-driven, when we buy information from companies, information about competitors is there as well. But we didn't think competitors information was valuable for the money we spent on it”. - Interviewee eight.

On the topic of collecting data about competitors, interviewees six, seven and nine had different views. Interviewee seven stated that the organization is tracking its competition closely by looking at their product launches, what they talking about and what they are planning. Interviewee nine pointed out the importance of collecting data from competition in order to keep themselves updated within their market. They observed and studied, competitors’ products, prices and technological advances, as well as their growth in specific markets. However, interviewee six had another mindset. They looked at every company and customer within the industry and treated them as equal when collecting data, rather than focusing on competitors. Additionally, they collect data about the industry which translated to a set of KPI:s which are being used in the organization. Interviewee five was interested in detailed data regarding how their services are perceived by the customers. More specifically, the candidate wanted to collect data about their quality of service, customer complains, company image and the correlations with other indicators. It is important to highlight that when asked regarding the relevant data the interviewees collect/store through business intelligence. They all seemed to answer with a mixture of internal and external data simultaneously.

“We do reports every month around the data we obtain, we take decisions based on this reports. But is mostly when external and internal data is connected that you can see patterns and act on them”. - Interviewee eight

Internal data usage

When the interviewees were asked to describe what main use did they give to the internal data they collected from their respective organizations. Their answers were varied, however, many interviewees described similar uses for the information. Interviewees two,
five, six, seven and ten used their internal data to customer-related activities. Such as interviewees two and six, utilize it to make contact and keep themselves updated on the status of their customers. Interviewee five concentrates on measuring their image perception and their customer satisfaction. Interviewees seven and ten focused on determining which current/prospect customers were considered profitable to establish business deals with, and which business opportunities were available in the market. Interviewees three and four described that they utilize the internal data (e.g., product information) for communication purposes. Interviewees two and five dedicate their data to CRM systems goals. Singularly, interviewee eight used the internal data for general decision making and management. Interviewee nine focuses on strategic internal changes derived from their gathered data. Interviewee ten, besides concentrating on their possible business deals, also focus on using internal data to establish their marketing mix, geographical mix, product portfolio and others.

External data usage

Regarding external data and the use of it by the interviewees in their companies, the results were less varied than with internal data. Interviewees one, two, three, four, seven and ten use the collected external data to increase their knowledge about the different markets, either if they are present or not in them. Keeping themselves updated with the market changes and upcoming business prospects. Interviewees five, eight and nine utilize external data to point out areas of improvement, based on changes on customers and changes on markets. Interviewee six, on the other hand, was focusing their external data on what kind of customers they needed to approach, and which ones would be more profitable for the company.

Business intelligence definition and perception

Interviewees two, five and six focused around the idea that business intelligence can help them relate to their customers and their needs in different ways, such as: understanding the customer journey, how to make business with them and how to fulfill the customers’ needs in a more effective way. Interviewee eight’s opinion had a similar focus on interviewees two, five and six, which is customer oriented. However, interviewee eight’s customer focus centered more on classify their different current and potential customers
into target groups and based on their information to create more relatable business proposals, marketing campaigns and products. On the other hand, interviewees one, two and nine both agreed that within the concept of business intelligence there was also a focus on obtaining knowledge about their current and prospect competitors. In order to be able to keep up with the constant evolution of a market. Interviewee seven, even though it was not mentioned when asked to provide a definition of business intelligence, provided an example that highly relates on how to use business intelligence in relation to competitors. The interviewee stated;

“We need to be aware of the new products and developments made by our competitors. If they launch a new product, then it is very probable that the same product will be requested to our company by our current/prospect customers. And in this scenario, we need to be able to keep up with their demands/needs”. - Interviewee seven.

Interviewees six, seven, eight and ten provided a more technical approach when asked for their understanding of what BI was. Their definitions were more centred towards business intelligence being a tool focused or used for data analysis, which later on would be used based on the needs that arise in different situations (e.g. customer satisfaction and company image data extractions). However, despite the different perceptions given to business intelligence, all of the candidates that were able to provide a definition, agreed that BI centres around the importance of knowledge, data and information. And how it can be applied to bring value to the company. Showing patterns and aspects to keep in mind when taking an important decision.

“In some of the cases, we keep track of the decision that has been made about certain assignments. That means that it is possible to look at past outcomes which can be used to make new informed decisions”. - Interviewee six

A clear majority of the interviewees stated that they were using business intelligence systems (See Table 8). Although, two of the interviewees claimed that they were not using any business intelligence systems, besides, they did not consider themselves able to provide a clear definition of what business intelligence is. The third interviewee stated that they do not have a business intelligence system per say. Systems like that are too
expensive and it is not common to use those types of systems in our industry. However, we do collect information by the usage of CRM systems extract information about customers. We are also looking at data regarding product features and needs of our product in both existing and potential markets. During the discussions with the fourth interviewee, the person stated that they are not using a business intelligence system right now. But they are collecting information through other methods, mainly looking at industry trends and innovations in the market, but also at their main competitors within or outside where they operate.

Table 8 - Perception of Business Intelligence by Practitioners

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Interviewee 1</td>
<td>“Business intelligence is a method of obtaining crucial information about your own organisation, the industry, competitors and trends. With that information you can see how well you are performing in certain markets and what the potential needs there might be.”</td>
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<tr>
<td>Interviewee 2</td>
<td>“Business intelligence and market research activities are vital for a company to understand the market and the competition. But most importantly it can be used to understand your customers, by looking at the customer journey, and how you can conduct business with them.”</td>
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<tr>
<td>Interviewee 3</td>
<td>Not-given.</td>
</tr>
<tr>
<td>Interviewee 4</td>
<td>Not-given</td>
</tr>
<tr>
<td>Interviewee 5</td>
<td>“Business intelligence is a way of looking at understanding the customers and their operations in both B2B and B2C segments. Furthermore, it provides them with a knowledge of how they are perceived by their customers and helps them identify important areas to work with, in order to keep a continuous improvement within their organization.”</td>
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<tr>
<td>Interviewee 6</td>
<td>“Business intelligence is an essential part of operating a business. It is a manner of knowing your own business as well as the customer’s. It also included knowing the industry and the companies who are a part of it. Through BI, you combine internal and external data which is deeply analysed and used to inform stakeholders within the organisation.”</td>
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“BI is basically data analysis. It is an umbrella term including tools, processes, systems and data gathered and stored in internal systems of an organisation. For instance, a CRM system would fall under that term. Through business intelligence, you focus on data which you use to form the business processes of a company.”

“Is the way of collecting data and with this data to provide information to different decision makers in a way that works for them to perform their tasks.”

“The definition of BI can change depending on the company or on the different type of industry [...] It is the influence by our own industry and by the problem solving of getting data. It is also about products, market share and people interaction. You can get a lot of information just getting to know people.”

“Business intelligence has nothing to do with being bright or smart, it is all about information. It is about obtaining information and understanding it. BI does not need to be very smart or clever to provide usefulness, it is not that kind of intelligence.”

**Decision making**

When asked if BI can assist managers, marketing managers in particular, in the decision-making process the managers had different perceptions. Interviewee one said that;

“BI system is essential for us to be able to make informed decisions. We use the information to make our long-term plan stretches over a period of four years. Most of the information is used to make long-term decisions about our way of marketing and how we should formulate strategies. There are instances where we can make short-term decisions based on it”. - Interviewee one

Interviewee two stated that the information they collect from BI systems has a big impact on their decision making. In most cases, the data is used to make activity plans which are used to improve the image and customer satisfaction. Interviewee three are in the process of implementing a BI system and said that it has some impact on their work with marketing strategies. Interviewee four was not using any BI system in the everyday work with marketing. However, the organization does collect data and it did have an effect on the decision-making capabilities. For instance, if the interviewee received information
about certain efforts made by a competitor in one of their markets, they will be aware of it and act on it accordingly. Interviewee five stated that they use the data in when the interviewee is in the regular management meetings, especially in planning and coordination on a corporate level. Furthermore, they are also using the data to get information about which areas they are lacking in (company image/perception and service/product quality). Interviewee six mentioned that internal, together with external data, has a significant impact on the decision-making capabilities. An example of that is how they use the data to determine if a customer is profitable for the organization. By doing that, the firm will know whether to contact the customer or not which saves them money, and ensure that they become more profitable. Interviewee seven stated that the data provides them with the possibilities too;

“For example, to know what is good business and what is not and what certain customers are worth. Especially in cases where they are developing something new. We need to know that we are in a market with a lot of customers It is important in the sense that we are a business and our aim is to make profit”.

Interviewee seven

Interviewee eight described that the data provides them with the several opportunities. Some of them are to see exactly how many tenders they have, assisting them, and certain customers, in the creation of marketing programmes and knowledge about changes in the customers business (warehouse locations and if they are hiring or not). All of this has an impact on the decision making of the organization. Interviewee nine said that most of the data they collect helps them in the process of making decisions. In most cases, it helps them indirectly. It makes it possible to make decisions faster. However, there have been situations where it has had a direct impact. For example, it came to their attention that competitors had been copying our products which made it clear for us that we need to keep a closer eye at them. Finally, interviewee ten is currently making big changes to their BI system. Although, the interviewee stated the data they collect affect their decision-making capabilities to a large extent. It helps them to coordinate activities (sales and production).

Regarding the level of usage given to the business intelligence systems by the interviewees in order to perform their activities, Interviewees one and seven stated that
they use their systems weekly, at least once a week. Interviewees two, six, eight, nine and ten expressed that it is essential for them to use it at least once a day. Interviewees three and Regarding the level of usage given to the business intelligence systems by the interviewees in order to perform their activities, Interviewees one and seven stated that they use their systems weekly, at least once a week. Interviewees two, six, eight, nine and ten expressed that it is essential for them to use it at least once a day. Interviewees three and five pointed out that they use it when they need it, therefore, they are not able to point out how much do they use it, and finally interviewee four was not a big fan of the system and did not use them that often.

**Changes interviewees would like to implement to their BI systems:**

In the final stages of the conducted interviews, the interviewees were asked if they counted with an information/business intelligence system within their organization and if they would characterize it/them as decentralized or centralized. All interviewees, excluding interviewee seven, agreed that the companies where they work, are utilizing decentralized systems. Belonging to their specific units of work, branches of a company or departments. Furthermore, interviewees two, six and nine expressed that it could be beneficial if all the information would flow towards the different departments. On the other hand, all interviewees agreed on the fact that another beneficial change to be implemented to the systems they are using, would be better organization and categorization of information, in order to avoid the overflow of data or to go through irrelevant information in order to obtain what it is needed for their work tasks. Interviewee seven, was the only one that claimed to have a centralized system, and his major focus point of improvement for the system was the quality of data. Moreover, in regards to information sharing it was accepted by all the interviewees that even if their companies were not able to convinced every person part of the organization to be transparent and share all the information they have. The adoption of these systems was the first step and considered as an encouragement to do so. Five pointed out that they use it when they need it, therefore, they are not able to point out how much do they use it, and finally, interviewee four was not a big fan of the system and did not use them that often.
6. Analysis

RQ1:

All of the interviewees mentioned that they had an interest in data already available within the organization (i.e., internal data), although the interest varied. Furthermore, it was found that all interviewees actively collect internal data e.g., data about sales and customers located in CRM systems, current and historical financial data (operating costs, margins, and other financial indicators) information about the organization's product offering and potential risks.

Walters, Jiang and Klein, (2003) suggests, based on the work of Porter, that internal data is composed by six dimensions market research function (i.e., customer database and tracking), product research and development, basic engineering, financial management, cost controls, and operational efficiency. However, Blattberg, Kim and Neslin (2008, p.192) proposes another interpretation of internal data and suggests that it is;

“Data located within the organization about order processing/fulfillment, inventory availability, delivery information, billing and accounting, pricing, sales volume, discounts, net price paid, customer transaction histories”.

The results from interviewees two, six and eight described that they were collecting data about customers. More specifically, interviewee two and six stated that they conducted it through their respective CRM system. Moreover, interviewees six, seven and ten gathered financial data (e.g., historical data/essential economical indicators). Interviewee three described that they were collecting data about their product portfolio. Although, it does not seem as if the interviewees were conducting an internal data collection of the extent described by Walters, Jiang and Klein (2003) and Blattberg, Kim and Neslin (2008, p.192).

The same goes for external data, all of the interviewees stated that they have an interest in that particular kind of data and that they are actively collecting data e.g., about competitors, their products and the prices, demand and needs of their product portfolio, market risks and the quality of the business opportunities. More specifically, interviewee
seven said that they were actively tracking their competition by looking at what they were planning and interviewee nine said that they were interested in competitors’ products, prices, technological advances and growth. Kunc and Morecroft (2010) suggests that managers tend to direct a certain focus towards resources they subjectively find beneficial for a firm’s competitive advantage. That might become problematic for the organization based on the findings by Grant (1996), which argues that managers and executives with marketing responsibilities could provide valuable insights about their professional field, but they might just know a fraction of what their employees do. Kozlenkova, Samaha and Palmatier (2014) share the view of Grant and further suggests that the reason of why managers might fail to optimize some of the assets is because they are in lack of information and capacity.

On the other hand, Zheng, Fader and Padmanabhan (2012) suggest that managers are constantly evaluating their own organizations business performance to the competitors in the market. That seems to be in line with the results, however, interviewee six stated that they take on a broader approach which centers around looking at every company, instead of just looking at the competitors. Kumar et al., (2015) argue that companies tend to collect historical and real-time external data about their competitors by the use of CI systems, primarily through multiple sources (competitor’s websites, third-party sites and systematic intelligence gathering). Although, the data is not limited to competitors, but also about the underlying motivations, human and capital resources, partnerships and sourcing arrangements. Our results show that none of the interviewees have systems capable of collecting external data on a real-time basis. Although, two of the interviewees (seven & nine) were watching the competition closely, but not the same extent as suggested by Kumar et al., (2015). However, that could be explained by Zheng, Fader and Padmanabhan (2012)’s observations. The authors described that current BI systems tend to fall short of collecting external information, particularly in CI primary areas.

Xu et al., (2011) is of another opinion and describes that CI tends to be used to gather and analyze data regarding the organization's environments. Interviewee six seems to be following the same mindset and stated that instead of looking solely at competitors, they are looking at every company operating in their markets. However, Dishman and Calof, (2008) suggest that a firm’s environmental scanning and information processing in marketing is correlated with an organization’s environmental uncertainty. It is possible
that the, in general, are perceiving a low level of environmental uncertainty, which might explain some the lack of adaptation of competitive intelligence to a certain extent.

In table 8, eight out of ten interviewees managed to provide an answer as to what business intelligence constitutes. It was identified that the interviewees had varied answers and one main category, and three smaller groups of answers appeared. Interviewees one, two and ten described that BI mainly centers around information and the understanding of the organization and customers. It can be argued that information and knowledge are connected to one another. Interviewee two, five and six focused more on the knowledge that a BI system brings. Interviewee seven took a rather technical approach to defining business intelligence and described the tools, processes and systems to a large extent. Interviewee eight provided a concise perception of the concept decision making as the main aspect. Interviewee nine were particularly focused on the variation of the definitions, depending on the organization and industry and highlighted the importance of information you can get from people. It is quite evident that BI as a concept has different meanings which seems to be in line with Grublješič and Jaklič (2014) claim that BI is a wide and abstract concept and that it does have several definitions. Furthermore, the authors state that the definition changes, depending on the discipline, which seems to be the case. It is possible that it might be the case for organizations and industries as well, judging by the statement made by interviewee nine.

RQ2

A clear majority of the interviewees stated that their business intelligence system assists them in various tasks (e.g., marketing programmes, customer evaluations, financial data plotting) which has a large impact on their decision-making capabilities. However, there were some variations. Interviewee three did not share the perception of the majority and described that they are in the process of implementing a BI system, but that the data they collect in other ways have some impacts on the ability to make decisions. Furthermore, interviewee four did not use any BI systems in the everyday work and pointed out that the data the organization collect have a small effect on the decision making. Niu, Lu, Zhang and Wu (2013) argue that BI systems provide figures that are needed for an organization to make a more informed decision, and to prevent risks in the process of making a decision. However, Mintz and Currim (2013) describe it is possible that a
manager's characteristics could have an impact on the use of information in the decision making processes.

Popovič et al., (2012, p.729) further explain that BI is centered around a firm's ability to;

“(…) plan, predict, solve problems, think abstractly, comprehend, innovate and learn in ways that increase organizational knowledge, inform decision processes, enable effective actions, and help to establish and achieve business goals”.

Interviewee one stated that their BI system is essential to be able to make informed decisions. Most of the data was used in long term decision making, usually over a period of four years. Although, there has been instances when the data was used to make short term decisions. The statements are in line with the findings of Lilien (2011), which suggests that managers tends to source information before making decisions in marketing. However, Lilien (2011) further explains that the individual judgement of a manager plays a role in the decision making, which is in line with the empirical results from interviewee four. Some research have found that BI systems provide information (e.g., performance figures and its flexibility) to decision makers (Rubin and Rubin, 2013; Işık, Jones and Sidorova, 2013; Niu, Lu, Zhang and Wu, 2013) which could allow managers to make informed decisions based on the stored data. Interviewee two seems to argue in favour of that and described that the information they have in their BI systems have a big impact on their decision making capabilities. Interviewee six said that it had a significant impact which was shared by interviewee seven. Additionally, interviewee five used the data in corporate management meetings, which might indicate that the data is valued by the organisation as a whole.

Based on the empirical results, it does seem as if the majority of the interviewees are in line with some of the outcomes suggested by Niu, Lu, Zhang and Wu (2013) and Popovič et al., (2012, p.729). Most notably, the interviewees were using the data to plan, predict, solve problems, to comprehend, innovate and organizational learning. Moreover, the data enabled them, in variating degrees, to make informed decisions. It might be argued that it would help them establish and achieve business goals. However, that falls out of the scope of the study.
Regarding the amount of use the interviewees gave to their different business intelligence systems, we are suspecting a correlation to the benefits they found by using those systems. The interviewees that pointed out that used business intelligence at least once a day had an easier time providing a definition for what business intelligence was and also listed a more varied list of what information collected from it they could use for daily tasks. As well as they had an easier time providing examples to when using this information and or this system where helpful to solve different challenges that their jobs presented for them. This seems to be in line with what DeLone and McLean (2003) claimed regarding the more significant use of a system the more benefits it can bring and the less use then the fewer level of assistance it provides.

7. Conclusions and implications

7.1 Discussions

The findings of the study proved to be quite interesting. Firstly, when the interviewees explained what kind of information they considered relevant and actively collected, their answers turned out to be a mix of internal and external data. Based on the collected literature that points out the importance of both types of data in information systems, there seems to be an implication that for managers with marketing related responsibilities. It is evident that a business intelligence system which offers an assortment of both can be very beneficial for the execution of their day-to-day activities, including decision-making activities.

However, the overall interest in external data, specifically concerning the competitors in the market was low. Only two interviewees openly specified that they are gathering data about them. It is possible that other departments/employees within the organization are responsible for observing the competitors or that their respective companies were not interested in the particular set of data. Although, six out of ten interviewees expressed that the most important external data they focus on was knowledge on different markets. On the other hand, the level of interest in the collection of internal data is very diverse. The interviewees did not agree to what extent do they use this kind of data. However, five
interviewees out of ten mentioned that the most important factor in internal data was information about customers.

The findings our the study is quite significant seeing as few studies have applied an interdisciplinary approach. Furthermore, the study achieved its purpose by successfully obtaining results which can be used as a piece in the puzzle of the explanation as to what BI systems are able to collect, and how that will affect the decision making of managers with marketing responsibilities.

All of the interviewees thought that the information had a positive effect on their decision making. However, there was also a reinforced the statement that suggests the direct relationship between the level of significant use of an information system influences directly to the amount of benefits it brings to the users. Could be indicated by the fact that the interviewees that claimed to use the BI system every day found more decision making benefits for the obtained data. It could be that the more the usage of BI systems could train managers to be more efficient with information and therefore make better decisions.

Additionally, it was found that some of the interviewees perceived the information derived from the BI system had a significant impact, with some exceptions, on their decision making capabilities. However, the view was not shared by all of the interviewees which could be explained by their company’s overall knowledge/utilization of the systems.

7.2 Theoretical and Managerial Implications

7.2.1 Theoretical implications

This study tried to close some of the gaps (Wang and Wang, 2018; Kunz et al., 2017; Wamba, 2016; Baptista et al., 2017) presented in table 1.

On the topic of internal data, Walters, Jiang and Klein’s (2003) six dimensions, describe what internal data consists of. It is quite extensive and the results do not match the extent of its definition. However, that does not mean that the definition is inaccurate in any sense. It was noted that the body of research in competitive intelligence (e.g., Kumar et al., 2015) was not consistent with the findings of this study. More specifically, the
interviewees were not collecting the type of diversified data nor did they use the described channels (e.g., competitors websites and systematic data gathering) when collecting data. However, the findings of Zheng, Fader and Padmanabhan (2012) described how BI systems tend to fall short of collecting CI data, which in our case, seems to be confirmed. Additionally, Dishman and Calof’s (2008) findings of a correlation between environmental scanning and information processing in marketing are correlated with an organization’s environmental uncertainty might be an explanation as to why the interviewees were uninterested in CI data.

The research presented by Kunc and Morecroft (2010) concerning managers subjectivity when focusing on resources was quite interesting, and it seemed as if it holds true. The interviewees had a rationale behind the reasoning of choosing certain resources, but the selection process was in most cases made by themselves. Although that is not to say that purely subjective, the managers usually had teams or colleagues they worked closely with which might have had an impact on the selection process.

### 7.2.2 Managerial Implications

All of the interviewees stated that they had an interest, although varied, in internal data stored in the organizations. Moreover, all of the interviewees stated that they were actively collecting the internal data. Based on the results, we would suggest that managers try to get an overview of what type of internal data the organization possesses and how it can be gathered in an efficient way.

Furthermore, every interviewee described that they were collecting external data located outside of the firm. Similar to the gathering of internal data, the overall interest and the degree of data collection varied between the interviewees. It is safe to say that it would be beneficial for managers to get an overview and carefully look at what data the decision makers of the organizations are interested in.

A clear majority of the interviewees suggested that a BI system in tasks (e.g., marketing programmes, customer evaluations, financial data plotting) which would have a large effect on their decision-making capabilities. Furthermore, all of the interviewees stated that the information they collect, have a positive effect on their decision-making
capabilities. It does seem as if BI could assist the decision making through the collection of data. However, as two of the interviewees are not using any BI systems, either because they do not have one or because they are not using one in their daily work, it seems as if it is possible to satisfy the need for information through other information solutions as well.

7.3 Limitations

Originally, the author's intended to apply a probability sampling approach. However, it became rather obvious that interviewees, in general, were reluctant to discuss the topic of business intelligence. In some cases, the interviewees found it problematic to go into the details the findings in the data due to the sensitivity and regulations within the organization. That might have created some flaws in our data findings. Furthermore, the authors opted for convenience sampling were each and every interviewee was asked in they knew anyone who would be willing to participate in an interview. In addition to that, it was noticeable that interviewing managers required some relationship building to gain the trust of the interviewer. The time restraints of the thesis make it difficult to gain access to the managers which had an adverse effect on the sample size of the study. Additionally, all the interviews were conducted in English, rather than Swedish which was the mother tongue of all the 10 interviewees. This might have made it troublesome to express certain opinions or points of view due to language barriers and limited vocabulary. Moreover, the number of articles published on the topic of how business intelligence can be used as support in the decision making of managers with marketing responsibilities is limited. The lack of prior studies make it problematic to lay a foundation for the study which forced the authors to take a more explanatory approach.

Furthermore, the authors were unable to find the definitions of what a centralized and decentralized IT system constitutes. This made it impossible to measure the structure of the organization’s IT.

7.4 Further Research

It is apparent that more research concerning, on an interdisciplinary level, business intelligence effect on the decision-making capabilities needs to be conducted with a particular focus on managers with marketing responsibilities. It does seem as if most of
the research is rather narrow and have a scope on a particular field of study (i.e., marketing, information systems, organizational theory).

Furthermore, it could also be interesting to look at how recent legal changes in Europe (i.e., General Data Protection Regulation [GDRP]) could affect the framework of what data can be collected and how it might implicate organizations involved in multi-layered data collection.
References


Appendices

Appendix 1

Source: Web of Science, (2018b)
Appendix 2

Opening Questions (5 minutes):

A brief description of the study we are conducting

- Research questions

Describe briefly how we work with the confidentiality

Background (5-10 minutes):

1. Can you tell me about yourself? (Position in the company, number of years employed)
2. Can you tell me some about your current job at (Insert organization)
  2.1 What title do you have?
  2.2 What duties are you performing at your work?
  2.3 What duties are you performing at your work in relation to business intelligence?

Topic #1 Internal collection of data (10-15 minutes):

3. Does your organization collect data about etc. sales figures/ operating costs/margins/
   number of active markets/ or other internal information right now?
4. Do you feel as if the internal data is important?
5. How is it important?
6. Can you describe a situation where it was important to have that kind of data?
7. What particular data located within the organization do other marketers or managers in the firm regard as important to make decisions?
8. Does the internal data support your decision-making capabilities?
  8.1 If yes: How does it affect it?
9. Does the organization utilize the data to provide any solutions/products or improvements to the customers?
  9.1 Does it provide any new insights about the customer?
Topic #2 External collection of data (10-15 minutes):

10. Does your organization collect data about etc. competitors and their products/potentially new markets/the global and country-specific economic environment?
11. Do you feel as if that kind of data is important?
12. How is it important?
13. Can you describe a situation where it was important to have that kind of data?
14. What particular data, available in active or potentially interesting markets, do other marketers or managers in the organization usually ask for?
15. Does that support your decision-making capabilities?
15.1 If yes: How does it affect it?
16. Does the organization utilize the data to provide anything for the already available or potential customers?
16.1 Does it provide any new insights into the already available or potential customer?

Topic #3 Business Intelligence (20-30 minutes):

17. Have you heard about the concept business intelligence?
17.1 What is business intelligence to you?
18. Do you have an information system/business intelligence system in the organization?
19. Is it decentralized or centralized within the whole company?
20. How often do you use it?
21. Who has access to the system?
22. Does the organization promote information sharing?
21.1. If yes: How does the organization do that?
21.2. If no: What is the reasoning behind it?
22. What kind of data (etc. data about competitors’ active markets and products/available or potential customers) do you have in that/these system(s)?
23. How do you use that system to collect that data?
24. Is there a standardized process of collecting that information?
25. How do you measure the quality of the information?
26. Do you categorize the data based on topics or areas?
27. If yes: How do you do that?
28. Does the mentioned data have any impact on your view of a market/product or scenario?
28.1 If yes: How?
29. What kind of improvements/features would you add to the information system?