Does structure matter? -

The influence of organizational structure on information overload

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ABSTRACT

Title Does structure matter? - The influence of organizational structure on information overload

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Background Providing further insights into the research gap that is defined through the connection of the literature streams on organization design, in particular organizational structure and coordination, and information overload.

Aim Investigating the role of organizational structure in information overload. More specifically, which elements of this structure can have an influence on information overload in an organization.

Methodology A qualitative study with seven middle managers working at companies in the software development/IT sector with a subsidiary in Linköping, Sweden was conducted. Semi-structured interviews were conducted to investigate how structure can lead to information overload.

Findings The Organizational Information Processing Theory (OIPT) was used as a tool to analyze the collected data. It was found that, when Information Processing Requirements (IPR) outweigh Information Processing Capacities (IPC), information overload can be the result. Organizational structure should be chosen to enable successful task execution, if that is the case information overload is unlikely to occur. Structural elements that were found to especially increase IPC and therefore reduce the likelihood of information overload are: clarity, transparency and adherence to definitions of job responsibilities or roles.

Keywords

Information Overload • Organization Design • Organizational Structure • Coordination

• Organizational Information Processing Theory
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Most importantly, we would like to say thank you to all the people that agreed to let us interview them in the process of writing this thesis. Without you this thesis simply would not exist in the way it does now.

We would also like to take this opportunity to thank our families and friends for believing in us and supporting us throughout the entire time of our studies.

We are grateful we got to share this experience with each other and feel proud to have gone through all the highs and lows together. Hopefully, this thesis embodies all the time, passion and effort we have put into it.

We hope you find this thesis enjoyable, interesting and insightful to read.
Linköping, 27th of May 2019
“What a culture we live in, we are swimming in an ocean of information, and drowning in ignorance.”

— Richard Paul Evan
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You might recognize the feeling of being bombarded with information whether or not you are actively seeking it. All of us are affected by the growing number of sources from which information derives (Edmunds and Morris, 2000). Who has not felt overwhelmed by the amount of e-mails received or frustrated when searching for required information in a huge pile of information? Between 2016 and 2018 alone, 90 percent of the data in the world has been created.\(^1\) Every minute, we sent 16 million text messages, 156 million e-mails and generate 154,200 Skype calls (Marr, 2018). These figures are worth reading again.

The described situation refers to the phenomenon of \textit{information overload} which most of us are probably familiar with. Information overload is experienced on an individual level, however, in this thesis the authors refer to the objective approach of information overload in an \textbf{organizational context} (see Appendix 1 for an overview of the definitions of information overload) which is also known as the information-processing view (Galbraith, 1974; Tushman and Nadler, 1978). The objective definition is a comprehensive approach towards information overload, looking at the big picture rather than the individual perspective. In an organizational context this means that information overload occurs as the sum of the experienced information overload of all individuals in the respective organization (Schick et al., 1990). In essence, information overload describes the situation where an organization has a higher demand to process information than the capacity to do so (Galbraith, 1974). For the purpose of this thesis, it is important to mention that information overload does not only refer to the amount of information but rather to the \textbf{combination of its quantity, ambiguity and variety} an organization needs to process (Eppler and Mengis, 2004).

In the workplace, information is considered “key to success” (Edmunds and Morris, 2000, p.18) where organizational members have to handle massive amounts of information from several sources as part of their daily work (Edmunds and Morris, 2000). One of the \textbf{main sources} of information...
of information overload are internal communication processes with colleagues (Klausegger et al., 2007). More specifically, meetings, telephone conversations (Schick et al., 1990), face-to-face discussions (Sparrow, 1999) and e-mails (Bawden, 2001) contribute to information overload situations (Eppler and Mengis, 2004).

Once information overload occurs as described above, it is considered negative since the consequences are severe for both, the individual and the organization as whole (Bawden and Robinson, 2009). Effects of information overload can be decreased productivity (Farhoomand and Drury, 2002) and efficiency (Bawden and Robinson, 2009) due to a loss of perspective (Savolainen, 2007) and the inability to make decisions (O’Reilly, 1980; Bawden, 2001; Himma, 2007). For example, a study conducted at Intel showed that handling irrelevant e-mails costs the employees approximately eight hours per week which is equivalent to a cost of almost $1 billion a year (Hemp, 2009b). Moreover, information overload can lead to increased errors since important issues can be missed due to a lack of time (Sparrow, 1999; Bawden and Robinson, 2009). These mentioned effects re-emphasize the relevance of the issue of information overload in the workplace.

1.2 STARTING POINTS

For the research process of this thesis, several databases were used. Mainly, the library of Linköping University including UniSearch which is an all-in-one service library and is based on existing, secondary data. Moreover, Google Scholar was used. The literature types searched were academic journals, e-books, printed books as well as dissertations during the years of 1950 to 2019 in both, English and German language. The initial keyword searched for was ‘Information Overload’, where the authors focused on the most highly cited hits and on literature reviews in this matter in order to get a sufficient overview, which is also how the base article by Eppler and Mengis (2004) was found. This article provided an overview of the literature on information overload including main definitions, situations, causes, effects, and countermeasures. Moreover, many other useful sources were taken from this article, among those many previous quantitative and qualitative research studies. Further, the authors came across a more recent article from Antoni and Ellwart (2017) which analyzes the current research status of information overload and draws implications for further research. The latter article was used to continue the second part of the research process, namely organization design. The basis for this topic is mainly built on the literature of Galbraith (1974) and Tushman and Nadler (1978).
In addition, the book by Van de Ven and Ferry (1980) was used in order to understand how the design and the performance of an organization can be assessed.

1.3 MOTIVES AND RESEARCH QUESTION

When reviewing the literature of information overload, it became clear that much has been said about the coping strategies for managers and employees when the problem of information overload arises (Antoni and Ellwart, 2017). Moreover, a lot of research has been made in the discipline of cognitive psychology and on a more individual level (e.g. O’Reilly, 1980; Schneider, 1987; Herbig and Kramer, 1994). But not as much research has been focused on the causes of information overload on an organizational level. Several authors (e.g. Eppler and Mengis, 2004; Antoni and Ellwart, 2017) acknowledge that the root causes of information overload should be addressed in order to avoid parts of the problem instead of accepting its existence and dealing with the consequences. Eppler and Mengis (2004) and Antoni and Ellwart (2017) present a conceptual framework which discusses five causes of information overload: personal factors, information characteristics, information technology, task and process parameters and organization design (see Figure 1).

![Figure 1: Five Causes of Information Overload (Eppler and Mengis, 2004; Antoni and Ellwart, 2017)](image-url)
When looking at the five causes of information overload, the authors emphasize that the cause of organization design has mostly been neglected and that more empirical data is necessary. Organization design describes how organizations are managed and organized (Galbraith, 2014) and it is therefore concerned with choosing an efficient organizational structure in order to execute tasks and processes of an organization (Lawrence and Lorsch, 1967; Burton and Obel, 2018). The authors of this thesis address this gap between the connection of information overload and organization design, more specifically organizational structure, by exploring the following research question:

*What is the role of organizational structure in information overload and, in particular which elements of this structure influence information overload in an organization?*

### 1.4 CONTRIBUTION TO THE FIELD

#### 1.4.1 THEORETICAL CONTRIBUTION

The phenomenon of information overload is by no means new (Bawden and Robinson, 2009; Saxena and Lamest, 2018) but nonetheless highly relevant. The interest in information overload has increased in the last decades due to technological advancements which have led to a more valuable and complex information environment in combination with a greater amount of information available, increasing types of information resources and easier accessibility through increased communication channels (Edmunds and Morris, 2000; Bawden and Robinson, 2009). In this thesis, the authors will present organizational parameters, more specifically structural dimensions and their elements which can have an influence on information overload. With the findings of this thesis the authors will aim to contribute to the existing literature of information overload and add knowledge regarding the organizational structure and its role within information overload.

#### 1.4.2 PRACTICAL CONTRIBUTION

Farhoomand and Drury (2002) have argued that employees facing information overload “rely primarily on themselves to filter, delegate, and eliminate excess information, rather than seek out organizational solutions” (p.130). Revealing more on what organization design causes are, could imply that employees do not have to solve the issue entirely themselves but instead the design of an organizational structure can be a way to eliminate information overload to a certain
degree. Especially for employees in managerial positions, those insights could widen the possibilities for changes and adjustments and therefore the opportunity of decreasing the information load put on their employees and themselves, especially in knowledge-intensive organizations.

1.5 THESIS SCOPE

The analysis and discussion part of the thesis focuses on seven purposively-chosen companies from the software development/IT industry, due to its knowledge-intensive nature, with a subsidiary in Linköping, Sweden. To answer the research question, an explorative research study was carried out by conducting semi-structured interviews with one expert from each company representing the organization as a whole. Moreover, the authors chose to look at only one industry to be able to draw conclusions and see patterns reflected in this specific industry (Whelan and Teigland, 2013).

In addition, the information exchange considered in this thesis is only internal among the members of the organizations and builds the context for this thesis since internal communication is considered one of the major contributors to information overload (Klausegger et al., 2007). Since information is a very broad term, it will be distinguished “between information that is needed if certain work is to be done and information that is interesting” (Newman, 1973, p.24). The latter one might be useful and can enhance the understanding of a specific situation but is not necessarily relevant for executing the task. The former one, however, is necessary in order to complete a task within a specific time frame and will be the focus of the thesis (Newman, 1973). Finally, the authors of this thesis examine only parts of the organization design, more specifically, which structural elements and coordination mechanisms are necessary to enable the execution of the tasks an organization aims to accomplish.

1.6 SCHEMATIC OUTLINE OF STRUCTURE

The thesis is outlined as follows: After this chapter, the theoretical framework will be presented in chapter 2. It provides the background of this thesis and creates the base for a successful analysis of the collected data. More specifically, organization design with its parts, structure and coordination will be presented. Later, the organizational information processing theory (OIPT) including its elements, information processing requirements (IPR) and information processing capacities (IPC), will be explained. Chapter 3 describes the methodological reasoning.
and choices employed in this thesis. It contains the elements: research approach, research design, research strategy, data collection, operationalization of theory, data analysis, ethical considerations, and lastly validity. Chapter 4 starts with a short overview of all companies investigated and analyzes the empirical data for each company individually in accordance with the theoretical framework presented in chapter 2. In chapter 5, the main findings from all interviews are discussed and related to theory with the help of the theoretical framework (OIPT). Additional findings and other causes of information overload are discussed as well. In this chapter, the reader can expect an answer to the research question. Chapter 6, the conclusion, summarizes the key findings of the empirical research and draws back to the introduction of this thesis. Lastly, the limitations of the thesis are mentioned and suggestions for further research in the field of information overload are given.
2. THEORETICAL FRAMEWORK

As mentioned, the to-be-elaborated-on research gap has been found in the connection between organization design and information overload. Organization design will therefore describe the theoretical backbone of this thesis. In order to do this, the authors have deployed an existing model as a tool to better understand in what way structure can be a cause of information overload. Exactly this model was used since it connects the two topics information overload and organization design, more specifically structure and coordination (Schick at al., 1990) and can later be used for analyzing the data and discussing the findings. For the purpose of this thesis, adjustments have been made to the model. The described dimensions and elements in the model are based on literature but have to large degrees been put into this specific context by the authors in order for the model to serve the purpose of analyzing structure as a cause of information overload.

This chapter will provide overall context to the reader and define the terms organization design as well as structure and coordination as a first step. From this, the chapter moves on to the model used, described as the organizational information processing theory (OIP) as first established by Galbraith (1974) which represents the base of the theoretical framework of this thesis. As part of the OIPT, the dimensions of the information processing requirements (IPR) as well as of the information processing capacities (IPC) and their belonging elements will be examined.

2.1 ORGANIZATION DESIGN: STRUCTURE AND COORDINATION

The purpose of organization design is “to create a fit between structure and coordination” (Burton and Obel, 2018, p.2). The organization design describes how an organization should be structured and coordinated in order to achieve its mission. The mission is the basic goal of strategy and strategy determines the organizations’ long-term goals (Chandler, 1962). It is therefore what ultimately defines how the organization design should look like (Galbraith, 2014). There is no unique way how to successfully structure and coordinate a company. Contingency theory describes this phenomenon and therefore states that “the organization should be designed to fit the particular circumstance” (Burton and Obel, 2018, p.3).

Structure breaks down the overall goal of the organization into smaller parts and therefore enables the establishment of organizational units and the definition, division and assignment
of tasks (Englmaier et al., 2019). The established units and tasks then need to be **coordinated** successfully “into a whole so that they fit together to achieve an overall purpose” (Burton and Obel, 2018, p.2). According to Hage et al. (1971), coordination within organizations is defined as the “degree to which there are adequate linkages among organizational parts, i.e. specific task roles as well as subunits of the organization so that organizational objectives can be accomplished” (p.860). According to Burton and Obel (2018), communication plays a large part in the **coordination process** and hence, the organization’s choice of coordination affects the volume and the direction of communication and therefore the information flow between organizational members. **Information flows play a major role within organization design** as it “is to investigate the information flows that are essential for accomplishing the organization’s objectives” (Simon, 1967, p.1). The information flow patterns can reflect the organization structure since “communication [can] […] take place on the basis of organizational structure [and] […] contribute to the development of structuring” (Tolbert and Hall, 2009, p.133). The choice of how to organize the information processing is an important strategic decision (Schneider, 1987). By implication, this means that if information does not flow properly or provide the right information at the right place, this can indicate that adjustments of the structure are necessary. One way this can become apparent in the organization is through the occurrence of information overload (Schick et al, 1990).

### 2.2 ORGANIZATIONAL INFORMATION PROCESSING THEORY (OIPT)

The **organizational information processing theory (OIPT)**, which was first described by Galbraith (1974) and later further developed by other authors such as Tushman and Nadler (1978), defines how the structure of an organization should answer to uncertainty in order to achieve optimal performance. As previously established, **structure** describes the arrangement of units and linkages between those, which need to be **coordinated** (Tushman and Nadler, 1978). **Uncertainty**, in this context, describes **task uncertainty**. It can have several sources, which will be described in more detail in the following paragraphs, and is defined as the information that is missing in order to execute a task (Galbraith, 1974). As mentioned, this specific model was chosen since it has been connected to the topic of information overload in previous research. Schick et al. (1990) recognize that “information overload has organizational structure determinants” (p.208). Picot et al. (2008) pose the theory that the “choice of an organizational form may be interpreted as an attempt to manage the scarce resource information as efficiently
as possible” (p.62). According to the OIPT, every company has unique information processing requirements (IPR) defined by the tasks a company aims to execute, while information processing capacities (IPC) are determined by a company’s structure and corresponding coordination mechanisms (see Figure 2).

![Figure 2: Organizational Information Processing Theory (adjusted from Galbraith (1974) and Tushman and Nadler (1978))](image)

Concretely, this means that organizations and their members are required to process certain volumes and varieties of information to be able to complete tasks while they have limited capacities to process the communicated information (Schick et al., 1990). Depending on how well aligned the information processing requirements and information processing capacities are, the model can have different outcomes. The two relevant outcomes will be examined in the following paragraphs.

---

### 2.2.1 Outcomes of OIPT

The optimal outcome would be a match between IPR and IPC. More specific, the organizational aim should be to balance the IPR and the IPC as this means that the requirements which are given in this organization are successfully matched by the structure in place (see Figure 3). Indicating that the way the units are defined, linked and coordinated in a way that enables the organization to cope with the specific task uncertainty. This outcome implies that no information overload exists. However, it has to be considered that if information overload does exist in such a case, any of the other four established causes of information overload as mentioned in chapter 1.3, namely personal factors, information characteristics, information technology or task and process parameters, or a combination of those, could be the reason for it (Eppler and Mengis, 2004).
Another possible outcome would be a more negative one. “The combination of [large amounts of] information and limited information processing capacities has led to the phenomenon called information overload” (Schick et al., 1990, p.199). The occurrence of information overload indicates a mismatch between information processing requirements and capacities (see Figure 4). Here, the structure is not capable of enabling the organization to successfully cope with the task uncertainty in place. Besides any of the other four possible causes mentioned by Eppler and Mengis (2004), the structure can be considered a reason why information overload exists.

2.2.2 ELEMENTS OF OIPT

What exactly determines the outcomes of the OIPT are the respective elements contained in the IPR and IPC of an organization. The IPR part of the model contains two dimensions, namely task characteristics and task interdependence with several elements in each of the dimensions. Regarding the IPC, three dimensions, namely Structural Configuration Factors, definitions and coordination with several elements in each of them, contribute to an increase or decrease in information processing capacities. A detailed overview of the organizational information processing theory (OIPT) as applied in this thesis can be seen in Figure 5 below. The terms IPR and IPC and what each of them entails will be explained in more detail in the following paragraphs.
FIGURE 5: DETAILED OVERVIEW OF OIPT AS ADJUSTED FOR THESIS
The requirements, visualized on the left side of Figure 5, depend on the existing uncertainty in the organization (Galbraith, 1974). Internally, this uncertainty is caused by two dimensions, first subunits task characteristics and second inter-units task interdependence (Tushman and Nadler, 1978). Task characteristics describe two elements, the task difficulty indicating how easily tasks can be completed and the task variability describing how similar tasks usually are (Van de Ven and Ferry, 1980). High difficulty of task as well as the constant occurrence of task exceptions, meaning less routine-based tasks, increase the uncertainty the unit is facing and hence also increases requirements (Van de Ven and Ferry, 1980). The dimension of task interdependence indicates how interdependent units or subunits are when solving tasks. Subunits in this thesis can also be individual members within a team. Higher interdependence brings along more complications, for example in case of an exception, more factors need to be taken into account (Galbraith, 1974). Therefore, high interdependence indicates high uncertainty and hence increased requirements. According to Picot et al. (2008), communication becomes even more important “for complex and highly variable tasks that need to be divided among members of the organization” (p.402-403). With greater uncertainty, more information is required and when uncertainty increases organizations must adjust their information processing capacities (Galbraith, 1974).

Schick at al. (1990) argue that organizational IPC, as seen on the right side of Figure 5, are “determined largely by that organization’s structure” (p.203-204). Based on Tushman and Nadler (1978) and Galbraith (1974) the authors of this thesis have defined three different dimensions of structure and coordination which together build the frame that can define an organization’s IPC. First, Structural Configuration Factors, second definitions and third coordination itself. These three dimensions entail several elements each. The first dimension is described through the Structural Configuration Factors as taken from Van de Ven and Ferry (1980) where each of these six Structural Configuration Factors describe one element. The second dimension, definitions, entails the elements of clarity, transparency and adherence. While the third dimension, coordination includes two elements, task procedures and nature of information exchange.
2.2.4.1 STRUCTURAL CONFIGURATION FACTORS

For the **first dimension**, which defines the basic ‘skeleton’ of the structure, the authors have decided to use the **Structural Configuration Factors** as established by Van de Ven and Ferry (1980, p.89) as a frame of reference since they enable the assessment of organizations. Van de Ven and Ferry (1980) give indications how each of the six factors can be measured. The six different Structural Configuration Factors, or in this case also referred to as elements, are:

1. **Vertical Differentiation**, indicated through the number of supervisory levels
2. **Horizontal Differentiation**, described through the number of divisions/units and job titles
3. **Spatial Differentiation**, meaning number of geographically operating sites

Factor one to three can give an indication of the specialization or also called **complexity** in the unit or organization (Tolbert and Hall, 2009). Vertically, the focus lies on “division of decision-making tasks and supervisory responsibilities” (Van de Ven and Ferry, 1980, p.29). Horizontally, the specialization is dependent on the required specializations in skills and knowledge among the members (Hage and Aiken, 1967). What also plays a role in the organization’s complexity is the geographical dispersion within the company (Tolbert and Hall, 2009). Overall, it can be seen that specialization is highly connected to the interdependence between units in the organization. Depending on the number of job titles and how interchangeable individual units are, the specialization is more likely to increase. Depending on the tasks and hence the requirements, more or less specialization among the members in an organization can be necessary to solve tasks.

4. **Administrative Intensity**, seen in the manager’s span of control (amount of people a manager is usually responsible for)
5. **Distribution of Power and Authority**, described through the “relative amount of influence on making specific decisions [as held by] different supervisory levels, organizational units, and other interest groups” (Van de Ven and Ferry, 1980, p.89)

Factor four and five can describe the **centralization** which is defined through administrative intensity as well as distribution of power and authority in an organization (Tolbert and Hall, 2009; Galbraith, 2014). Centralization and decentralization define whether decision-making power is held by a few people or distributed among several organizational members.
(Mintzberg, 2009). For example, the wider the manager’s span of control is, and the more power is distributed, the flatter the organization is considered. Remenova et al. (2018) acknowledge that there is no exact rule for defining the span of control. However, in their paper they refer to Henri Fayol who argued that the appropriate number of subordinates per manager should be 10 to 30, 15 on average, for the middle management. For higher levels of management, a smaller number is recommended. Depending on the tasks, different distributions of power and authority as well as administrative intensities might be more or less suitable to enable optimal performance.

6. **Forms of Departmentation**, defines the overall organizational form such as functional, divisional, matrix or hybrids of such (Tolbert and Hall, 2009).

The terms functional, divisional and matrix, related to factor six – Forms of Departmentation will be explained in more detail in the following paragraphs. According to literature, depending on the form of departmentation, information overload can occur at different parts in the organization (Peters, 1979; Mintzberg, 2009).

A **functional organization** is organized in main divisions which are “defined by the major areas of skills and knowledge that the organization requires to accomplish its tasks” (Tolbert and Hall, 2009, p.54). According to Galbraith (2014), this division of labor is based on functional specialization and results in a hierarchy of authority. In a centralized organizational structure, decision rights are located high in the hierarchy, therefore information from the individual units needs to flow upwards to the decision makers. In reverse, the decision makers need to communicate instructions down to the units (Galbraith, 1974; Tushman and Nadler, 1978; Mahr, 2010). Literature suggests that in functional organizations information overload can be found at the top in the organization since information is aggregated up the hierarchy. Moreover, since information can get lost, especially on the way up to the top, information can become ambiguous as well and contribute to the problem of information overload (Mintzberg, 2009).

**Divisionalized organizations** are loosely coupled entities, therefore quasi-autonomous, with each having essential functions. The divisions are held together through the headquarters as the central administration and the power flows according to a top-down approach. Division

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2 In practice, organizations often combine several forms into hybrids (Galbraith, 2014). Moreover, more kinds of organizational forms exist, but have been disregarded in this thesis.
heads have high authority and decision-making power while still being dependent on the highest entity. Moreover, each division can have its own internal structure with the purpose of serving markets and having sufficient “control over the operating functions required to serve these markets” (Mintzberg, 2009, p.216) without the need to coordinate with other divisions. Communication is mainly formal and interchanges between managers are limited (Mintzberg, 2009) which could indicate a lower likelihood of information overload.

A matrix organization is organized around two main dimensions, namely the functional units and the profit centers (Galbraith, 2014) and evolved in an industry with highly intense competition where technical knowledge and skills are required (Tolbert and Hall, 2009). Matrix organizations have a dual-authority structure which means that “some of the organizational members report to and are evaluated by two separate supervisors or managers” (Tolbert and Hall, 2009, p.56). Moreover, a matrix has a decentralized organizational structure, where decision rights are located low in the hierarchy and the individual units communicate directly with each other and can make decisions independently (Mahr, 2010). One challenge of matrix organizations is that this dual-authority structure might require a high amount of interactions and collaboration (Tolbert and Hall, 2009) due to “too many connections and interdependencies among all line and staff executives” (Sayles, 1976, p.3) involving an increased need of communication which can lead to information overload (Cross and Gray, 2013). Literature suggests that in matrix style organizations especially managers are expected to respond to many different signals which can increase the probability of information overload (Peters, 1979).

2.2.4.2 DEFINITIONS

The second dimension is concerned with the degree of given definitions in the organization, for example concerning given definitions of job responsibilities or roles. This dimension includes the elements of clarity, transparency and adherence. Regarding the element of clarity, Tushman and Nadler (1978) argue that structure should include clear definitions of departments, units and roles and linkages or relations through which information can be exchanged. Since structure describes “patterned arrangements of the units in a system [it can indicate] regularity and stability to human behavior” (Rogers, 2003, p. 24) and further enable predictions of behavior and indicate how information will be exchanged within an organization. Further regarding the element of transparency, Galbraith (1974) and Tushman and Nadler (1978) emphasize the introduction of a clear hierarchy. Even though, how hierarchy is built, is already included in the Structural Configuration Factors (see chapter 2.2.4.1), hierarchy will be mentioned again due to the different interpretations Tushman and Nadler (1978) and Galbraith
(1974) put towards its role in the IPC. They argue that through a hierarchy, roles, units and rules are defined and become transparent which makes it easier for employees to understand connections and how to act in certain situations (Galbraith, 1974). This clearly implies the importance of clear roles in organizations. However, other authors are discussing if hierarchy is actually improving the information processing capacities (Cukrowski and Baniak, 1999). Nevertheless, Kennedy (1994) argues that there are clear differences in how information flows depending on whether the hierarchy is flat or steep. To further increase clarity and transparency, organizations take efforts towards formalization or standardization which focus on the degree of codification of organizational operations. For example, this can include task assignments, procedures or rules made permanent in form of a written record (Tolbert and Hall, 2009). Finally, regarding adherence, Galbraith (1974) and Tushman and Nadler (1978) introduce the use of rules and programs which implies that “every member simply executes the behavior which is appropriate for the task-related situation with which [she/] he is faced [indicating] routine predictable tasks” (Galbraith, 1974, p.29). This implies that roles and responsibilities are not only clearly defined but also adhered to.

2.2.4.3 COORDINATION

The third dimension is concerned with coordination which contains the elements of task procedures and the nature of information exchange. As mentioned before, structure and coordination need to be considered together since solely the structure is not enough, it matters also, how the parts of the structure are coordinated. For this dimension, it has to be taken into consideration that certain factors within the requirements demand specific responses in order to balance the IPR and the IPC. First, concerning the element of task procedures, it should be clear that it is important to respond appropriately in terms of dividing and coordinating tasks depending on the characteristics of those (Tushman and Nadler, 1978). Concretely, this can be observed when looking at how tasks are solved, which can be team-based, individually or sequentially. It is key to ensure that tasks are solved in a way that reflect the task characteristics and interdependences (Van de Ven and Ferry, 1980; Kennedy, 1994). This part of coordination largely depends on other structural decisions such as division of labor depending on specialization. The second element of coordination is the nature of information exchange, meaning how information is exchanged within the organization and how frequently. Hence, the “frequency of [the] information flow in terms of” (p.157) within or across units, through meetings, reports across or among the hierarchy (Van de Ven and Ferry, 1980). Naturally, its appropria-
bility depends on how well it matches with what is required to solve the tasks most success-
fully. For example, tasks which are solved together as a team most likely require a higher need
of information exchange. All these three structural dimensions and its containing elements can
be used to create IPC for an organization. The key is to define them in a way that they match
with the requirements (IPR).

To summarize, structure describes the base of an organization and coordination is what links
the interdependent units together and enables “coordinated action across large numbers of in-
terdependent roles” (Galbraith, 1974, p.28). Van de Ven and Ferry (1980) and Burns and
Stalker (1994) mention that, depending on the difficulty and variability of the work, different
structures might be chosen. Matching with previously established facts, Newman (1973) also
argues that the reason why a company might choose a specific structure depends on the kind
of work and tasks it aims to fulfill. If the chosen structure is not capable of matching the re-
quirements to successfully process information, information overload can occur.
3. METHODOLOGY

This chapter provides the methodological reasoning and choices employed in this thesis. This includes the different steps of the research (see Figure 6), the procedures and methods. First, the research approach will be explained, followed by the research design, research strategy, the description of the data collection, as well the operationalization of theory and data analysis. The chapter ends with ethical considerations and a note on validity.

3.1 RESEARCH APPROACH

The research approach describes how the researchers of this thesis understand the relationship between theory and data (Saunders et al., 2009). The aim of this thesis is to receive new empirical data by operationalizing an existing theory, namely the organizational information processing theory (OIPT). Moreover, the employed theory functions as the theoretical framework and was defined prior to collecting empirical data, an approach which resonates with Saunders et al., (2009) and Bell et al., (2019). Lastly, the framework was adjusted for the purpose of this thesis and related to the context of information overload. It is important to mention that the intention was not to expand or develop a new framework but rather to use the OIPT as a tool to analyze the data and discuss the findings.

3.2 RESEARCH DESIGN

In this section the research design of the thesis will be examined. The research design “guides the execution of a research method and the analysis of the subsequent data” (Bell et al., 2019,
In this thesis, an **exploratory research design** is chosen with the goal to assess a general phenomenon in a new light. Moreover, the exploratory study allows flexibility and adaptability which is necessary when conducting new research in an undeveloped research area since new empirical data is likely to appear which requires a change of direction. However, it must be mentioned that even though the chosen research design is characterized by flexibility, this does not imply the absence of direction. An exploratory research design rather enables an initially broad focus which narrows down as the research progresses (Saunders et al., 2009).

Referring to the time horizon of the thesis, data was collected within a limited timeframe rather than over a longer period of time. As a consequence, the study is considered **cross-sectional**. The goal is to receive generalizable findings regarding which structural elements can have an influence on information overload rather than focusing on a single case context of each company (Saunders et al., 2009).

### 3.3 RESEARCH STRATEGY

Since the organization design, more specifically organizational structure, in regard to information overload is an undeveloped research field (e.g. Eppler and Mengis, 2004; Antoni and Ellwart, 2017) a **qualitative research strategy** was considered appropriate (Saunders et al., 2009). To answer the stated research question of this thesis, mainly rich data instead of solely numerical data, needed to be received which excluded the quantitative research strategy. Moreover, the qualitative research strategy was chosen since it allowed the authors to gain insights and knowledge about the organization design/organizational structure coupled with information overload from the participant’s point of view (Bell et al., 2019).

### 3.4 DATA COLLECTION

The primary data of the thesis was collected through **semi-structured interviews** since it enables flexibility and consistency simultaneously. A list of questions on specific topics regarding the organizational structure and information overload was covered (see more in the subsequently chapter 3.5 and Appendix 2 for the interview guide) in order to reduce the risk of receiving inconsistent answers. However, it was also possible to ask new questions which elaborated on the interviewee’s replies as well as to change the order of questions and sometimes even the wording of questions. Through this, the respondents could share their subjective interpretations of how they understand certain issues (Bell et al., 2019).
The semi-structured interviews were conducted **face-to-face** in order to be able to interpret the interviewee’s reactions (Bell et al., 2019). Moreover, the interviews lasted between 42 to 90 minutes and were conducted in English at the office of each interviewee in Linköping, Sweden (see *Table 2*). The location was chosen according to the recommendation made by Saunders et al. (2009) which states that the location should be comfortable for the interviewee. The interviews were recorded, subsequently completely transcribed and included one observer for each interview who acted as ‘passive’ interviewer in order to evaluate the overall development of the interview (Bell et al., 2019). Due to this transparency, the reliability of the conducted research was considered quite high.

As a complement, **secondary data** was used. Such data, for example organigrams, was obtained from the interviewees or the companies’ websites. These documents were considered authentic and allowed the authors to receive valuable background information about the companies’ organizational structure (Bell et al., 2019). This procedure goes along with triangulation, an approach involving more than one source of data, which was employed to “ensure that the data are telling [what one] think[s] they are telling” (Saunders et al., 2009, p.146). Making use of multiple sources of data allowed for a good foundation for the validity criteria of qualitative research (Bell et al., 2019).

To answer the stated purpose and research question, seven middle managers working each in organizations with a relation to software development/IT and a subsidiary in Linköping, Sweden were chosen. Several reasons reinforce this choice. First, it was important to interview companies located in the same industry in order draw conclusions and see patterns. The **software development/IT industry** was selected since the problem of information is significant in these kinds of knowledge-intensive organizations (Eppler and Mengis, 2004). The authors of this thesis were interested in discovering similarities but also differences within diverse data which is the reason why companies with varying numbers of employees and subsidiaries were chosen (see *Table 1*). More specific, the companies investigated differ from each other in overall size in terms of employees, with 33 employees as the smallest organization and 200,000 employees as the biggest organization. Looking at the size
of the subsidiaries in Linköping, one can observe varying numbers from seven to 600 employees. Moreover, the respective unit/division size the participants are working in ranges from eight to 700. For more details on the companies considered in this thesis see Appendix 5.

<table>
<thead>
<tr>
<th>Company</th>
<th>Overall Size</th>
<th>Linköping Subsidiary Size</th>
<th>Unit/Division Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>9,000</td>
<td>600</td>
<td>450</td>
</tr>
<tr>
<td>B</td>
<td>3,500</td>
<td>235</td>
<td>700</td>
</tr>
<tr>
<td>C</td>
<td>38</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>D</td>
<td>33</td>
<td>7</td>
<td>33</td>
</tr>
<tr>
<td>E</td>
<td>9,000</td>
<td>90</td>
<td>51</td>
</tr>
<tr>
<td>F</td>
<td>190</td>
<td>77</td>
<td>8</td>
</tr>
<tr>
<td>G</td>
<td>200,000</td>
<td>90</td>
<td>136</td>
</tr>
</tbody>
</table>

**TABLE 1: COMPANY SIZE OVERVIEW**

Second, only companies with a **subsidiary in Linköping, Sweden** were chosen in order to create a personal contact via face-to-face interviews (Saunders et al., 2009) and to avoid any potential differences due to culture and language (Bell et al., 2019).

Third, middle managers with different responsibility areas and varying tenures were chosen. They are considered “**experts in the subject**” (Saunders et al., 2009, p.140) and were expected to give the authors different insights which could be valuable for the research. Moreover, a requirement for the thesis was to ensure that the experts interviewed, received information from below and above in the hierarchy (Sparrow, 1999). The authors assumed that information is condensed at this organizational level and most of the answers can be applied for the organization as a whole (Harding et al., 2014). Hence, in this thesis the experts interviewed represent each respective company (see more in Table 2). Due to confidentiality and anonymity reasons, the names of the companies and interviewees cannot be further specified.
### Table 2: List of Respondents

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Position</th>
<th>Tenure at the Company</th>
<th>Date and Duration of the Interview</th>
<th>Referred to as</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Area Product Owner</td>
<td>1.5 years</td>
<td>07.03.2019 56 min</td>
<td>Interviewee A Representing Company A</td>
</tr>
<tr>
<td>2</td>
<td>Group Manager</td>
<td>3 years</td>
<td>07.03.2019 90 min</td>
<td>Interviewee B Representing Company B</td>
</tr>
<tr>
<td>3</td>
<td>Chief Project Officer</td>
<td>3 years</td>
<td>13.03.2019 45 min</td>
<td>Interviewee C Representing Company C</td>
</tr>
<tr>
<td>4</td>
<td>Regional Manager</td>
<td>2 years</td>
<td>14.03.2019 53 min</td>
<td>Interviewee D Representing Company D</td>
</tr>
<tr>
<td>5</td>
<td>Team Manager</td>
<td>23 years</td>
<td>14.03.2019 50 min</td>
<td>Interviewee E Representing Company E</td>
</tr>
<tr>
<td>6</td>
<td>Team Manager and Web Developer</td>
<td>11 years</td>
<td>15.03.2019 42 min</td>
<td>Interviewee F Representing Company F</td>
</tr>
<tr>
<td>7</td>
<td>Design and Engineer Manager</td>
<td>8 years</td>
<td>18.03.2019 56 min</td>
<td>Interviewee G Representing Company G</td>
</tr>
</tbody>
</table>

This approach resonates with the non-probability **purposive sampling** which means that participants were not selected on a random basis. This sampling technique was used to ensure that many different perspectives can be received in order to answer the research question (Bell et al., 2019).

### 3.4.2 Interview Guide

The interview guide was established and used in two ways. First, general questions were part of the interview guide which did not focus on rich data such as the individuals’ opinions and actions but rather on facts and were sent prior to the scheduled face-to-face interview via e-mail (see Appendix 2, Part 1: Structure Related Questions, A) General Questions), in order to save time during the actual interview and to prepare for the upcoming interview. These questions were related, for example to the number of subsidiaries or the size of the overall company. Most of the interviewees answered the general questions via e-mail before the interview. For those which did not answer beforehand, the questions were still included in the interview guide.
in order to receive the same valuable information. The remaining part of the interview guide (see Appendix 2, Part 1: Structure Related Questions, B) – D) and Part 2: Information Overload Related Questions) consisted of questions which allowed for more in-depth discussions about the organizational structure of the company and the phenomenon of information overload. Besides this difference, the same interview guide was used in all interviews.

3.5 OPERATIONALIZATION OF THEORY

In order to create an interview guide and collect empirical data, the theoretical framework used in this thesis (see chapter 2) needed to be translated into feasible measures (Saunders et al., 2009). In order to connect the two topics organizational structure and information overload, the interview guide (see Appendix 2) consists of two parts. Part 1 contains structure related questions and Part 2 information overload related questions. The basis of the operationalization of the theory for Part 1 was the literature of Van de Ven and Ferry (1980) as well as Galbraith (1974), and Tushman and Nadler (1978). For Part 2, previous articles (e.g. Eppler and Mengis, 2004; Antoni and Ellwart, 2017) which review the literature of the phenomenon of information overload have been consulted.

Since the focus was to collect empirical data regarding the organizational structure as a cause of information overload, special emphasis is put on the explanation of the operationalization of Part 1. The following four tables, Table 3 – 6, give an overview of the four categories under the headline Part 1: Structure Related Questions, namely A) General Questions, B) Nature of Work in Unit, C) Structure in General and D) Coordination of the interview guide. Here, the theoretical relevance was considered as well as how the theory was applied into the context of the companies investigated. Furthermore, the tables include how the theoretical relevance was captured in the questions asked.

Within Part 1, the interview guide starts with A) General Questions, in order to get an overview of the respective company (see Table 3). Question 1 and 4 – 7 relate to the overall complexity of an organization as well as to the Structural Configuration Factors such as spacial, vertical and horizontal differentiation. Question 2 and 8 only refer to the Structural Configuration Factors of the company. Question 3, the size of the company, has been asked in order to understand the scope of the companies’ operations.
After the general questions, the interview guide continues with B) Nature of Work in Unit (see Table 4). The focus was to gain knowledge about the workflows and collaborations of the company. For this, questions regarding hierarchy characteristics as well as task characteristics such as “Do you usually know how to solve your daily tasks?” or “How would you describe the relationships among colleagues and managers within the organization?” were asked. It needs to be mentioned that Question 2 regarding the homogeneity/heterogeneity among organizational members was asked during the interview but proved to be irrelevant within the scope of the thesis. Hence, it was not further applied in the thesis.

Category C) Structure in General, aims to receive data regarding how the respective company is structured (see Table 5). First, it was important to know how the company is organized in terms of the forms of departmentation in order to get an overview (Question 1). Then, Question 2, 6 and 7 are concerned with the standardization and formalization of a company, e.g. if there are some kind of written rules or standardized processes how to execute tasks. These questions are part of the IPC of an organization and are referred to the dimension ‘Definition’ in this thesis. Question 4 – 5 refer to the distribution of power and authority, e.g. “How free are you
when making decisions in your work?” and are part of the Structural Configuration Factors. Question 3 aims to understand the task interdependences within the company.

<table>
<thead>
<tr>
<th>Question</th>
<th>Theoretical Relevance</th>
<th>As applied in Thesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Forms of Departmentation</td>
<td>IPC: Structural Configuration Factors</td>
</tr>
<tr>
<td>2</td>
<td>Standardization &amp; Formalization</td>
<td>IPC: Definitions</td>
</tr>
<tr>
<td>3</td>
<td>Task Interdependence</td>
<td>IPR: Task Interdependence</td>
</tr>
<tr>
<td>4</td>
<td>Distribution of Power and Authority</td>
<td>IPC: Structural Configuration Factors</td>
</tr>
<tr>
<td>5</td>
<td>Distribution of Power and Authority</td>
<td>IPC: Structural Configuration Factors</td>
</tr>
<tr>
<td>6</td>
<td>Formalization</td>
<td>IPC: Definitions, Formal vs. Informal Structure</td>
</tr>
<tr>
<td>7</td>
<td>Formalization</td>
<td>IPC: Definitions</td>
</tr>
</tbody>
</table>

**TABLE 5: STRUCTURE IN GENERAL**

The fourth and last category of Part 1 of the interview guide, D) Coordination, is concerned with the task procedures and the nature of information exchange of the respective company (see *Table 6*). Questions such as “Within the business unit/department how are tasks usually solved?” or “How do you receive and share information within your business unit/department?” were asked and referred to the IPC, more specific the dimension ‘Coordination’, of an organization.

<table>
<thead>
<tr>
<th>Question</th>
<th>Theoretical Relevance</th>
<th>As applied in Thesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Task Procedures</td>
<td>IPC: Coordination</td>
</tr>
<tr>
<td>2</td>
<td>Nature of Information Exchange</td>
<td>IPC: Coordination</td>
</tr>
</tbody>
</table>

**TABLE 6: COORDINATION**

**Part 2** of the interview guide, namely Information Overload Related Questions, aims to receive empirical data regarding the phenomenon of A) Information Overload in General as well as B) Information Handling/Processing within the respective company. Additional insights about C) Communication within the company, were gained as well. For this part, questions such as “How do you experience information overload within your daily work life?” and “Can you describe some processes or ways how information is handled within your organization?” were asked.
3.6 DATA ANALYSIS

After receiving data from the seven interviews, the data was analyzed according to a **thematically approach** which focuses on emphasizing and identifying certain patterns, or themes, within the data (Bell et al., 2019). First, in order to get familiar with the data, the digitally recorded interviews were transcribed into the text processing software Microsoft Word and thoroughly read which already allowed to organize the received answers for further analysis. The second step included the usage of the qualitative data analysis software Nvivo which is an all-in one-platform where unstructured data can be stored, organized and categorized digitally in order to work more efficiently (QSR International, 2019). Here, the authors transferred the transcribed interviews into the software and examined the data according to repetitions of words or phrases and similarities and differences (Bell et al., 2019). This allowed the authors to initially organize the data according to certain categories. However, during the usage of Nvivo, the authors realized that these categories were unstructured and not sufficient enough in order to analyze the empirical data with the purpose of answering the research question. Hence, as a third step, the authors decided to relate the received data to the theoretical framework, OIPT. More specifically, the data was structured according to the themes information processing requirements (IPR) and information processing capacities (IPC) of each respective company. This allowed to reflect on the data and interpret the findings in a sufficient way (Saunders et al., 2009).

Lastly, the transcripts were reviewed manually in order to get acquainted to each context of the interviewee and to extract quotes for the analysis chapter.

3.7 ETHICAL CONSIDERATIONS

The empirical study was conducted while considering ethical issues. This means that the participants and organization’s names were treated anonymously in order secure confidentiality (Saunders et al., 2009). In addition, the interviewees were informed about the purpose of the research, its confidentiality and agreed on being interviewed and recorded during the conversation.

3.8 VALIDITY

For every research there are certain limitations which need to be considered. First, the interviews were conducted during a specific period of time and had a predefined time limit in order

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3 Since these categories were not considered relevant for this thesis, they will not be further specified.
to meet the interviewees preferences. Further, due to resource constraints, the authors were able to only interview one person per company, seven in total, which could reduce the reliability of the study. In addition, the authors of the thesis have drawn conclusions for an entire organization based on the statements of one single individual. Even though these individuals were experts and held positions which gave them good insights into the entire organization, it could be argued that the results rather apply on the individual level or at least on the level of similar managerial positions. Hence, the validity of the findings could be questioned. The authors have proceeded as they did in order to contribute with more interesting and generalizable findings that go above the individual level by asking the interviewees questions concerned with topics relevant for the organization as a whole. Moreover, as already mentioned before, in order to ensure validity, the triangulation technique was used by combining both primary and secondary data and including one observer during the interviews (Bell et al., 2019). Moreover, two trial interviews with participants in similar positions within varying companies were conducted. This was done to make sure that the appropriate questions were asked and the planned time for the interviews was correct. As a consequence, the authors of this thesis adjusted the interview guide after the trial interviews.
This chapter analyzes the empirical data gathered from the semi-structured interviews, according to the organizational information processing theory (OIPT) as previously described in the theoretical framework. The chapter starts by giving a first indication of each company by presenting the respective complexity. Then, the chapter compares the information processing requirements (IPR) and information processing capacities (IPC) for each of the seven investigated companies individually and connects these findings to the phenomenon of information overload. The chapter concludes with a summary of the results of all seven individual analyses.

4.1 COMPANIES A – G: OVERVIEW OF COMPLEXITY

According to Tolbert and Hall (2009), complexity is defined by looking at an organization’s horizontal, vertical and spacial differentiation. The authors of this thesis have collected data based on these three factors, as horizontal, vertical and spacial differentiation are also part of the Structural Configuration Factors (see chapter 2.2.4.1) as described by Van de Ven and Ferry (1980). According to Fredrickson (1986), for example companies with several supervisory levels and multiple locations can be considered complex. The complexity of an organization is considered relevant in this context, since it can give a first impression of what to expect when assessing an organization. Moreover, increased complexity indicates also higher difficulty to control or coordinate (Lawrence and Lorsch, 1967). Below, a visualization of each company’s organizational complexity can be found (see Figure 7). The way that Figure 7 should be interpreted is, the more to the right on the scale the company is located, the more complexity is implied for that individual firm. Hence, companies located on the right-hand side of the scale have a high complexity, while firms located on the left-hand side have a low complexity. This visualization is supposed to act as an introduction for the reader as to how complex the individual companies are (see Appendix 4 for how the scale for the complexity was defined). In order to sort the companies into categories from low to high complexity, the collected data for the horizontal, vertical and spacial differentiation of each company has been analyzed individually, compared among each other and then combined into the complexity (see Appendix 3 for the visualizations of horizontal, vertical and spacial differentiation of Company A – G). Therefore, this allocation of the complexity takes place according to a comparison between the individual companies. This is done in order to give context and to be able to make statements on whether a company has a specific complexity. It is important to keep in mind that the aim is not to compare between the companies in order to conclude which company has the highest or
lowest complexity. Hence, statements such as ‘Company B has the highest complexity’ are not made. Rather, the authors created this context, to be able to say which company has a high or low complexity, to make statements like; ‘Company B has a high complexity’. Reason for doing this, was the possibility of drawing conclusions between complexity and information overload, rather than gaining insights into these specific companies in particular.

4.2 INDIVIDUAL COMPANIES ANALYSES

In the following paragraphs, the authors will analyze the data of each individual company (Company A - Company G) by using the OIPT framework. Each analysis starts by giving an indication into what the information overload situation in the respective company looks like. Then, the IPR and IPC for each organization are analyzed and compared in order to understand if there is match or mismatch between the two, and why. Finally, this match or mismatch is connected to the phenomenon of information overload in an organizational context. To undergird the findings, quotations from the interviews will be used (see Table 2 for the list of respondents).

4.2.1 COMPANY A

Information Overload
Interviewee A suffers from information overload “in the sense that it is a lot of unnecessary information that is being communicated to me” (Interviewee A). In the situation of Interviewee A, information overload is described as a situation where many meetings need to be attended,
even at the same time, and where one gets overflowed with information which is often not wanted while trying to work on tasks. As a consequence, the time and focus are removed from executing these tasks.

**Information Processing Requirements**

Interviewee A is an Area Product Owner at Company A. To date, the company counts 600 employees at the subsidiary in Linköping, Sweden and recently went through a restructuring period due to several reasons which will be explained throughout the following sections. Before the restructuring, incoming **tasks** the company had to solve were “just collected in a mess […] and basically priority was given to the customers that shouted the loudest” (Interviewee A). After the restructuring, subtasks are now distributed, and responsibilities assigned in common meetings where one person from each team is present. Through this, every team at the company knows what the other teams are working on. Furthermore, Interviewee A faces a lot of unplanned work which is considered part of the daily work. Here, Interviewee A emphasizes the “need to set your priorities right, work on the right things in the right order and not work on other things”.

Even after the restructuring, the authors found that between the units of Company A **high interdependencies** exist which can be explained by the nature of the company, its products and industry. This means that a lot of coordination and cooperation between different units is needed which will be explained in more detail throughout this chapter.

**Information Processing Capacities**

Firstly, the IPC of an organization are among others dependent on the **Structural Configuration Factors**. Within the unit of Interviewee A, three supervisory levels and approximately 10 job titles exist. In the overall company of Interviewee A, six supervisory levels can be counted which indicates that the way up to the top management is rather long. Overall, Company A counts five divisions. Referring to the job titles in the overall company, “before [the restructuring], there was a myriad of coordinating functions, roles, titles […] and a lot of fixation on that. It was a total mess” (Interviewee A). Even after the restructuring process, Interviewee A “cannot even guess” how many job titles there are which indicates a large number and a high specialization in skills and knowledge of the employees. Looking at the spacial differentiation of the company, 33 sites can be counted worldwide. Due to the named factors, the overall **complexity** of Company A can be considered **moderate** (see **Figure 8**).
Regarding the administrative intensity, one manager is usually supervising circa 40 employees. The very high managerial span of control can also be seen in the free way of working of Interviewee A. “I was very free to set priorities for the work, in fact I decided if we were going to work on something” (Interviewee A). Referring to the form of departmentation of the company, “the different subsidiaries are organized in different ways. Let’s call it a chaos with certain matrix-like touches” (Interviewee A).

The second dimension of IPC, definitions, play a major role at Company A. As already mentioned, “there was a myriad of coordinating functions, roles, titles [at the company]” (Interviewee A). During the restructuring, the aim was to shift the focus from individual roles and titles to team responsibilities in order to be able to solve task only by cooperating internally within the team. For Company A, this means that “if somebody has a question […] you go and talk to the team” (Interviewee A). Since tasks are solved together, every team member knows what the other members are working on and job roles and responsibilities are clear. Hence, the information flows to the relevant persons. Due to the clarity and transparency of roles and responsibilities, the employees of Company A are able to stick to their roles even if additional tasks which are not part of the job description come up later. According to Interviewee A, the aim of the company is to create a culture which does not enable employees to diverge from their tasks. The company “will not allow [pitching in work from the side], if it is important enough, it should be assigned properly with a priority and be executed in the ‘normal’ way” (Interviewee A). Referring to the formalization of Company A, the authors found out that there
were too many processes and rules which were not followed. “There were a lot of fluffy processes that nobody really understood how to apply and [during the] reorganization we also wanted to minimize processes, so it was a little bit more manageable. In my view, you want very little process but the ones that are there to be very clear and transparent and very useful […] [otherwise] you will just have the organization drift away and you will get more problems” (Interviewee A).

In order to execute the tasks of the company, coordination mechanisms are crucial. Since high interdependencies existed within and between units before the restructuring, Company A “put together cross-functional teams that are much more able to carry out a full task by themselves without the need of always coordinating and talking to each other” (Interviewee A). The aim is that now one team “contains all the functions it needs in order to carry out the entire task” (Interviewee A). Despite the intended self-sufficiency and independence between the teams, there is still “a lot of cooperation needed” (Interviewee A). To deal with the remaining need for cross-team communication and coordination, the company continues to hold many information and exchange meetings. Here, Interviewee A tries to be the filter for the team in order to avoid irrelevant information. Furthermore, “on a daily basis we had very many meetings actually before and after the reorganization [where] […] people are sitting in a meeting with their laptops and at the same time chatting with other people and then being like 10% active in the meeting – speaking of overload” (Interviewee A).

**IPR vs. IPC**

Looking at both the information processing requirements and information processing capacities of Company A, one can assume that both of them do not match. After organizational restructuring, the number of roles and titles have decreased, and team responsibilities have been assigned which made it clear to understand who is responsible for what. This also allowed that less additional work arising from the side was done. Due to the complex nature of the product and the high specialization of Company A, a lot of coordination and information meetings are still necessary. However, it seems that these meetings are inefficient and do not allow the intended independence to execute tasks. In addition, Company A has still a lot of unclear, ‘fluffy’ processes which indicates that its high need of coordination and communication is not met.
To conclude, it seems that Company A is not able to meet its task requirements (IPR) with an appropriate structure (IPC). Even though responsibilities have been located to a team level instead of an individual level as part of the restructuring process, Interviewee A still experiences information overload. One can assume that Company A was not able to solve the information overload but rather to shift the problem from inside to between teams.

4.2.2 COMPANY B

Information Overload
Referring to the information overload Interviewee B experiences, the participant distinguishes, first of all, between information one needs to have, and one would like to have. Nowadays, the challenge to distinguish between information from the “private side or […] the work side” (Interviewee B) contributes to this issue. Moreover, the interviewee emphasizes that information often carries hidden expectations, meaning that if one receives information, it is often not clear what the sender of the information expects from the receiver. A consequence of information overload is that it is hard to filter and prioritize the information.

Information Processing Requirements
Interviewee B is a Group Manager at Company B in Linköping, Sweden which counts 235 employees today. Referring to the tasks the interviewee is solving, the authors got to know that “you know kind of the shell of the day, you know your basic tasks. […] Of course, things can occur of which you are not aware [of] […] Anything can happen, so I think that is the changing part of the day” (Interviewee B).

Task-interdependence is part of the daily work of Interviewee B. In order to execute the task within the responsibility area of Interviewee B, one team which is globally dispersed is assigned. This means that tasks are solved in a sequentially manner where one part of the team at one location starts with a task and the other team at the other location continues. “We have the time difference, that is quite interesting since we are talking about information but seeing it from an overall perspective it is very effective” (Interviewee B). It becomes clear that the high dependency within the unit, even within the same team, calls for coordination mechanisms in order to solve tasks since “it’s very hard to work on a remote level” (Interviewee B).
Information Processing Capacities

First, in order to evaluate the IPC of Company B, the **Structural Configuration Factors** will be analyzed. Within the unit of Interviewee B, five supervisory levels and approximately 50 job titles exist. In the overall company, six supervisory levels and 850 job titles can be counted. Referring to the latter number, one needs to consider that every company can define job titles differently. However, it can be assumed that there are many in Company B and that they matter. In addition, Company B has six divisions overall. Due to these factors, it can be assumed that the way up to the top is rather long and that employees are highly specialized in Company B. Looking at the spacial differentiation, the company is globally dispersed and counts 50 sites worldwide. Due to all these factors, Company B has a **high complexity** (see Figure 9).

![FIGURE 9: COMPLEXITY OF COMPANY B](image)

Regarding the administrative intensity, one manager is responsible for approximately 9 employees which can be considered a fairly low number for being able to make decisions freely. “[My manager] […] gives me the freedom to of course, within my frames, to decide” (Interviewee B) but main decisions are made by the upper management. During the interview, it became clear that Company B has a combination of centralized and decentralized power since divisions with matrix structures within them exist.

Second, the **definitions** as part of the IPC of Company B will be analyzed. As already mentioned before, the company puts an emphasis on job titles which has led to a large number of those. Even though employees have specific roles and responsibilities, the high number can make it challenging to understand which tasks belong to one’s role. It has happened before that some employees have diverged from their defined job responsibility and been “involved in
everything, so this is the tricky thing” (Interviewee B). Interviewee B emphasizes the importance of clear and transparent roles and states that the company needs to improve the efforts to empower roles and individual positions in order to avoid receiving too much information from different sides (Interviewee B). Moreover, the distribution of power and authority is transparent so that each employee knows where the decision-making power lies. Even though an official hierarchy exists, the organization is considered flat since “the power is among all of us” (Interviewee B). Moreover, Interviewee B states that the company “is a very open organization, I have every opportunity to ask who I want actually”. Referring to the formalization of the company, the company has clear job descriptions for every employee in order to be aware of the roles and responsibilities. These job descriptions are also visible on the intranet which goes along with the fact that “everything is quite open” (Interviewee B).

Third, **coordination**, especially within the unit and the team of Interviewee B, is of high importance. As already mentioned before, the tasks are executed in a sequential manner even though the team is dispersed across two different locations. The sequential approach could be considered efficient from a time perspective but maybe less optimal when considering the information exchange it includes since a lot of communication and collaboration is necessary. “They need to communicate with each other. I encourage it a lot and that’s a big thing to frequently work with” (Interviewee B). As a consequence, many meetings including stay-tuned sessions are held to share information and keep the employees up-to-date even though they do not share the same office.

**IPR vs. IPC**

When comparing the IPR with the IPC of Company B, one can observe that a **high interdependence** within the units and teams exists which means that a lot of collaboration and communication is necessary. The flat environment with its open relationships between different hierarchical levels enables employees to **communicate outside of the official structure** which is not considered a negative fact per se, but it might lead to the consequence that the information load is simply transferred to another person who is not supposed to receive this information in the first place. What is surprising within Company B is that employees are expected to answer when these kinds of questions come up. “You can be approached by a totally new person asking a question and that is what I mean with expectations” (Interviewee B). This contradicts with the effort of Company B to **empower roles and push responsibilities** to specific persons. This also refers to the problem of the company that there are too many job titles and unclear roles.
and that employees are involved in many things at the same time instead of sticking to their role. “There are so many new roles right now, so there is communication around people in different organizational departments right now” (Interviewee B). It seems that the formalized job descriptions lack **clarity and transparency** in practice in order to enable the information flow to the relevant person.

Therefore, one could conclude that Company B is not able to match its IPC with the IPR which could explain the information overload Interviewee B is experiencing.

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**4.2.3 COMPANY C**

**Information Overload**

Interviewee C experiences information overload at the workplace in the form of verbal communication. “I think that is the phenomenon when you get a lot of information and somehow you have to decide which information is relevant and which you do not need to use and do something with. You have to sort all the information” (Interviewee C). The interviewee also states that there is the problem of information overload from the private side. “I have a lot of information at work to handle. Well then I ignore that information which has to do with the private life” (Interviewee C).

**Information Processing Requirements**

Interviewee C is a Chief Project Officer at Company C. The company counts 38 employees in Linköping, Sweden as well as in total and can be considered quite small. Referring to the **task characteristics** of Interviewee C, the day-to-day tasks are very different. “You don’t know when you come in the morning what to do. Well, a little bit, there is always a backlog but a lot of new things. […] It doesn't get boring; things happen all the time” (Interviewee C).

Regarding the **inter-unit task interdependence**, little interdependence between the employees exist since they have similar specializations which means that they could transfer tasks very easily without the need to coordinate much.

**Information Processing Capacities**

One dimension of the IPC is the **Structural Configuration Factors** of an organization. Due to the size of Company C, no distinction between the unit and the overall company can be made.
for those factors. Within Company C, two supervisory levels and six job titles exist which displays a short way up to the top-management and a low specialization in skills and knowledge. Company C has one division and is only located in Linköping, Sweden. All the just-mentioned factors determine the **low complexity** of Company C (see Figure 10).

Regarding the administrative intensity of the company, both Chief Executive Officer (CEO) and Chief Operating Officer (COO) have the supervisory responsibilities for all employees which means that one manager is overseeing 18 employees. Bearing in mind that this number applies for the top management level, the span of control is considered high. When it comes to the distribution of power and responsibilities, employees and managers are “very free” (Interviewee C). Referring to the departmentation of the company, a functional structure can be seen.

The second dimension of IPC, **definitions**, matter at Company C as well. The company has been growing for the last years and also plans to continue to grow which means that structural adjustments might become necessary (Interviewee C). According to the interviewee, roles and responsibilities are divided and published internally but not really followed strictly. “We are getting bigger so there was a period with a lot of noise and a lot of questions […] [For the future,] we may need to delegate more [responsibility] and point out to certain people so that everyone in the organization knows who to ask if you have questions […] since other people are overloaded with questions” (Interviewee C). Furthermore, an official hierarchy of Company C is defined but according to the interviewee it is still very flat and open. “In practice [there is] no level at all […] and I have a lot of freedom” (Interviewee C). Regarding the
formalization of the company, clear instructions and templates for how to execute tasks exist which could help employees to execute them efficiently.

The third dimension, coordination, varies compared to the other companies due to the relatively small size and open environment of Company C. Even though a low task interdependence exists between the employees, certain information exchange is still necessary. “We talk to everyone and know everyone. […] If someone is encountering a problem, you usually ask the person next to you” (Interviewee C). Since a lot of information is communicated verbally, it is challenging within Company C to forward and delegate the received information since the sender and receiver often face each other in person. “If you talk to someone, you can't say stop, I don't have time to listen to that right now” (Interviewee C).

IPR vs. IPC

Looking at the requirements and the structure of Company C, one can assume that both of them are not matched. Even though low interdependencies exist between the employees of the company, certain coordination mechanisms are still necessary. Since the company is small and has an open environment, everyone in the company talks to everyone which could indicate that employees are not aware of each other’s roles and responsibilities. As a consequence, everyone can be approached, especially verbally, and receive information which one is not supposed to receive according to the official structure. Hence, it can become challenging for employees to stick to their roles and not to take on additional responsibilities.

To conclude, Interviewee C experiences information overload, mainly through verbal communication. However, for the purpose of this thesis, it does not matter if the information overload occurs through verbal or written information. Especially, through the recent growth of Company C, it is apparently not able to align its IPR and IPC which could be a reason for the information overload at Company C.

4.2.4 COMPANY D

Information Overload

Interviewee D faces the problem of information overload during the daily work and defines it as when too much information is received. “There is a lot of new stuff that requires actions, planning actions and I would say there you have an overload” (Interviewee D). Interviewee D experiences information overload “when I have a backlog of tasks already, for my assignments
[…] and then more mails are coming in, requesting new stuff or questions” (Interviewee D). The interviewee also refers to the problem that information overload becomes challenging since there are many other private communication channels where one can receive information during working.

**Information Processing Requirements**

Interviewee D is a Regional Manager at Company D. Company D counts seven employees in Linköping, Sweden. Looking at the task characteristics of Interviewee D, the authors got to know that they can be complex and very diverse. However, there are some routines throughout the day such as daily stand-up meetings or less formal meetings since Interviewee D “believe[s] in routines”.

Referring to the task interdependence of Company D, Interviewee D states “we need each other because we contribute together” which implies that employees and managers have to coordinate and communicate in order to solve tasks.

**Information Processing Capacities**

First, the dimension, Structural Configuration Factors, of Company D will be discussed. Due to the relatively small size of Company D, no distinction between the unit and the overall company can be made. Within Company D, two supervisory levels, only one unit and 15 job titles exist which displays a short way up to the top-management but a high specialization. Employees “have skills in different areas, but we are still in the [same] area” (Interviewee D). Referring to the spacial differentiation, Company D is dispersed across two locations. Because of these factors, Company D is considered to have a low complexity (see Figure 11).
Referring to the administrative intensity, one manager is usually supervising 13 employees at Company D which is considered an average number for the span of control. Moreover, due to the low number of supervisory levels, decision-making power is rather distributed which goes along with the statement of Interviewee D that employees and managers are very free when it comes to making decisions. This is also displayed in the rather decentralized matrix structure.

Second, the definitions within Company D will be analyzed. Roles and responsibilities are defined and codified but not really used in practice. “It is [written] […], in a folder somewhere” (Interviewee D). Company D also plans to grow in the future which implies restructuring the organization including new roles and responsibilities as well as communication processes in order to know who to contact. According to Interviewee D, “restructuring is related to information overflow; it is very much [dependent] on how many roles and hats you have in an organization and the information you need to be interested in”. To date, an official hierarchy exists but is not really followed. “We promote an open culture, of course there are routines to follow and that needs to be crystal clear but that does not mean you cannot be open” (Interviewee D).

As mentioned before, the employees of Company D have specialized knowledge and are dependent on each other which means that the third dimension, coordination, is necessary in order to execute tasks. As a consequence, tasks are solved by “the whole team together” (In-
terviewee D). Referring to the way information is exchanged, the company holds regular meetings in a more informal way where “we keep it as open as possible […] so it is better that everyone has access to too much information” (Interviewee D).

**IPR vs. IPC**
Comparing both IPR and IPC of Company D, it seems that the current IPC does not match the IPR of the company. In combination with future growth plans of the company, Interviewee D acknowledged this fact as well. Moreover, **roles and responsibilities** are not clear enough in order to fulfill tasks. Hence, it might be possible that employees can be approached outside of the **formal structure** and take on roles besides the official job responsibility which are not explicitly stated in the organization chart. This might lead to an increase in communication to certain people who are not supposed to receive this information and to a potential information overload. Furthermore, Company D prefers an **open environment** where one has access to too much information than too little which can increase the load of information on employees as well.

Finally, it can be assumed that the capacities of Company D are not aligned with the requirements in order to fulfill the company’s tasks which could explain the situation that Interviewee D suffers from information overload at the workplace.

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**4.2.5 COMPANY E**

**Information Overload**
Interviewee E experiences information overload daily at the workplace. According to the interviewee, information overload is a situation “when unimportant information, is coming in in big flows so you miss the important information” (Interviewee E). More specifically, Interviewee E considers the information overload in form of e-mail as a major challenge. “The inflow is so big, you are on CC of many e-mails, so you miss to take care of them” (Interviewee E).

**Information Processing Requirements**
Interviewee E is a Team Manager at Company E in Linköping, Sweden. To date, the company counts 90 employees at the site in Linköping. Referring to the **task characteristics** of Interviewee E, the authors found out that the interviewee executes tasks which are partly based on
routine “but normally the details can vary very much” (Interviewee E) which can also be explained by the nature of the product the company is producing. Most of the time, Interviewee E focuses on solving difficult and unpredicted problems during the daily work. “That is also a task of the work […]. We do not feel that we are disturbed, it is our job to be disturbed” (Interviewee E). Furthermore, the authors got to know that the interviewee usually knows how to handle these disturbances “but it can come surprises that make me have to drop everything, and just focus on that task” (Interviewee E).

Referring to the task interdependence, the unit of Interviewee E usually solves tasks together in a team. The employees are specialized but several team members have the same knowledge which means “we are not dependent and vulnerable if someone leaves the company, all of us have a backup” (Interviewee E). However, there might be some interdependence between other units “[…] but sometimes we can also just do things within our team, so we just do that” (Interviewee E).

Information Processing Capacities
Looking at the IPC of Company E, one needs to analyze the Structural Configuration Factors. Within the unit of Interviewee E, five supervisory levels and seven job titles exist. Looking at the overall company, 75 job titles, 9 divisions and five supervisory levels can be counted. Referring to the considerably low number of job titles within the unit of Company E, it can be assumed that the employees are specialized within that unit but work on similar things. “[There are] big differences in the details but in general it is the same kind of principle” (Interviewee E). Referring to the spacial differentiation, Company E is globally dispersed across 50 locations. When summarizing these factors, the overall complexity of Company E can be considered high (see Figure 12).
Referring to the administrative intensity, one manager is usually supervising six employees which can be considered a low managerial span of control. However, Interviewee E states that the organization is quite flat and that employees can have a free way of working and decide things independently within their frames. “Managers are more supporting the employees rather than controlling them, so giving responsibility” (Interviewee E). Finally, the company is organized according to divisions and within the division, matrix functions can be found.

Referring to the **definitions** of Company E, roles and responsibilities are clearly defined but allow for some flexibility in case of new upcoming tasks. Moreover, frameworks or templates exist in order to give guidance for handling and prioritizing incoming tasks. “We have found a way how we work and not all is very documented, but we have some templates of course” (Interviewee E). Moreover, the hierarchy and the title of each employee in the company is codified permanently in a system which is accessible for everyone. “[You can] see what part of the organization the person belongs to and then I usually understand, and it is often quite well updated” (Interviewee E).

Lastly, Company E has certain **coordination** mechanisms in order to solve task interdependences. As already mentioned, employees work on similar things but with different specializations which means that team-work is part of the daily work at the unit of Interviewee E. “We all work well in a team, we complement each other” (Interviewee E). According to Interviewee
E, not every person knows everything but there are some overlaps which decrease interdependencies. This also shows that tasks can be transferred more easily. Another part of the coordination mechanism are regular meetings, e.g. “weekly meetings where we have all our tasks on a long list, also tasks coming in that are long term and then we make a prioritization […]. It is a very simple way that works very well, so everyone is happy with that” (Interviewee E).

**IPR vs. IPC**
Comparing the IPR and IPC of Company E, it becomes clear that tasks can be complex and vary a lot but usually are known how to be solved. Since employees are specialized to a certain extent, a task interdependence between the employees exist which means that teamwork becomes important. These interdependences are partly solved by certain overlaps which means that “we have different groups, but it is not so that one person knows everything” (Interviewee E). Moreover, clear definitions for roles and responsibilities exist so that employees are aware of their own and each other’s tasks. Additionally, efficient coordination mechanisms are in place in order to enable a sufficient execution of work tasks.

To conclude, looking at the requirements and the structure of Company E, it seems that the company is able to balance both of them which could enable successful information processing. However, as stated earlier, Interviewee E experiences information overload “all the time”. At this point it becomes questionable what the possible reasons for the occurrence of information overload could be. Since the authors could not identify a clear connection between information overload and organizational structure in the case of Company E, no clear answer to that can be given but to refer to the conceptual framework of Eppler and Mengis (2004) and Antoni and Ellwart (2017) which discusses further causes of information overload (see chapter 1.3 and chapter 5.4).

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**Information Overload**
The authors of the thesis got to know that Interviewee F experiences no information overload at the workplace. The interviewee states that “I am kind of organized […]. I use tools in order to sort things out because I can’t remember everything” (Interviewee F). Since the interviewee gets 99% of all information via e-mail, the interviewee has a certain strategy “to have a zero mailbox by the end of the day” (Interviewee F).
Information Processing Requirements

Interviewee F works as a Team Manager and Web Developer for Company F in Linköping, Sweden with 77 employees. Referring to the task characteristics, Interviewee F knows “more or less” how to solve work tasks due to existing experience. “I am the one who has all the background and know how things work [...]. I know how to solve the problem [in case there is one]” (Interviewee F). Moreover, the interviewee gets “a lot of different tasks that are unplanned” (Interviewee F) but at the end the day-to-day tasks are quite similar.

When it comes to the task interdependence between and within units, Company F has tried to create processes so that employees can work independently. However, processes within the company exist “where someone is co-reviewing [the work] when someone is done” (Interviewee F). This way of working indicates that a task interdependence exists but only to certain extent.

Information Processing Capacities

Referring to the IPC of Company F, several factors need to be examined. First, the Structural Configuration Factors will be analyzed. Within the unit of Interviewee F, two supervisory levels exist and in the overall company three which indicates a rather short way up to the top. Within the unit of Interviewee F, three job titles can be counted and in the overall company approximately 30. Interviewee F mentions that with company growth, specialization is becoming vital in the company since it enables more efficiency, especially for bigger tasks and projects (Interviewee F). “We went from everyone doing everything to more specialization” (Interviewee F). Moreover, the company has 22 divisions and four subsidiaries worldwide. Due to these factors, Company F has a moderate complexity (see Figure 13).
Referring to the administrative intensity, one manager is usually supervising six employees which indicates a rather small number and a low managerial span of control. In regard to the distribution of power and authority, the employees of Company F “are not free to anything everyday but plan for things they want to do” (Interviewee F). Looking at the departmentation of the company, Company F is structured according to a functional organization.

Second, the definitions of Company F need to be examined in order to evaluate the IPC. Company F has “a few guidelines for things we should keep in mind […] and what type of quality we are aiming for. But how the employees work, meaning to get to that goal, is on them and their responsibility” (Interviewee F). Moreover, roles and responsibilities of all members of the organization worldwide are codified and accessible for everyone. “There you can see which roles and which office people belong to” (Interviewee F). Since the company has been growing for the past years, it has become stricter in terms of clear definitions which need to be followed. “We try to be flat still, but it is stricter than before. I think that is a good thing” (Interviewee F).

Third, the coordination mechanisms of Company F need to be evaluated. As already mentioned, specialization is crucial at Company F. However, teamwork and sharing within the team is important as well in order to distribute work. For example, Interviewee F puts employees in pairs in order to solve more complex and time-consuming task. However, the tasks are often executed individually for the sake of efficiency. “It depends on the task, but I think 80%, it’s
very individual” (Interviewee F). In order to execute these tasks, several communication channels are used. Moreover, every morning stand-up meetings are held between the dispersed offices in order to keep each other updated. “We [try] as much as possible to feel as a team even though we are divided into two different offices” (Interviewee F). In these meetings, information is only shared which is relevant for each person. “I am trying to be the filter. […] Even if you might want more information you do not really get it” (Interviewee F).

**IPR vs. IPC**

Looking at both IPR and IPC of Company F, one can observe that the structure in place seems to be capable to enable successful information processing. The tasks of Interviewee F seem to be difficult but manageable due to sufficient work experience. Moreover, the daily tasks seem to be quite similar which means that the task variability can be considered low. The tasks of the employees of Company F are mostly executed individually. However, since employees are specialized, a task interdependence exists to a certain extent. One way how Company F attempts to meet this requirement is through **team work and knowledge sharing** so that the employees can fulfill their tasks efficiently. Regular meetings where only necessary information is exchanged contributes to the efficient way of executing tasks.

Finally, it seems that Company F manages to balance its requirements and capacities which is the optimal result. Since Interviewee F does not experience an information overload, it can be assumed that the match between IPR and IPC is an explanation for that.

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**4.2.7 COMPANY G**

**Information Overload**

The last interviewee does not experience information overload at the workplace. However, the interviewee associates the problem with “there are meetings all the time and everyone is sending e-mails […] I do not have an issue [with this] myself […].” (Interviewee G).

**Information Processing Requirements**

Interviewee G is a Design and Engineer Manager at Company G in Linköping, Sweden which counts 90 employees today. The **tasks** the interviewee is solving in the daily work can be characterized as quite difficult. “Of course, there is some kind of agenda but [in-between] you actually never know [what is going to happen]” (Interviewee F). Since the interviewee has been
working for the company for some time, “I know how to handle [it]” (Interviewee F). Referring to the overall task variability, “what we are doing here in Linköping within the organization is quite similar” (Interviewee F).

Regarding the **inter-unit task interdependence**, one can observe that in order to solve tasks the members within the units need to coordinate and communicate. For that, certain coordination mechanisms have been established which will be discussed below in the section ‘Information Processing Capacities’ of Company G.

**Information Processing Capacities**

In order to evaluate the IPC of Company G, the **Structural Configuration Factors** will be analyzed first. Within the unit of Interviewee G, three supervisory levels and six job titles exist. Overall, five supervisory levels and six divisions can be counted. Since the overall company is quite big, the interviewee could not give an answer on how many job titles there are in total which implies most likely a high specialization in skills and knowledge. Looking at the spacial differentiation, the company has more than 100 sites worldwide. According to the named factors, Company G can be considered **highly complex** (see Figure 14)

![Figure 14: Complexity of Company G](image)

Regarding the administrative intensity, one manager is responsible for approximately 19 employees which can be considered an average number for the managerial span of control. However, according to Interviewee G, employees are very dependent on their supervisors. “There
is a very [small] [...] number of managers that can say yes within [the] organization” (Interviewee G). More specifically, the board of directors of the company has the ultimate decision-making power and bigger decisions need a prior approval by the manager. According to Interviewee G, “they like to control the investments and how we spend our money from the very top, so that is good and bad. But on the other hand, there is a really good cost control”. Hence, the decision-making power is quite centralized and located at the top. All these factors are displayed in the departmentation of the company which is functional.

The second dimension of the IPC, definitions, play an important role at Company G. First, roles and responsibilities within the company are clear and transparent. “You can easily check [in the database], the title and the organization and the person’s manager and the structure, you can see everything” (Interviewee G). Second, special emphasis is put on the formalization and standardization. The company “likes to have everything written” (Interviewee G). Moreover, guidelines and templates exist so that the units follow the same way of working. According to Interviewee G, “I would like to say that we have the general rules and guidelines. Maybe we need to be a little more specific in some areas”.

As a third step the coordination dimension needs to be evaluated. In order to ensure that work within and between units is being done efficiently and that employees have a direct contact person, the company created an organizational construct with functional leads. With this, despite geographical dispersion, “we are taking care of all [employees]” (Interviewee G). Moreover, due to the already mentioned hierarchical structure of the company, employees follow the organization chart which means that information “is actually not reaching all the employees at the same time” (Interviewee G). In other words, since the hierarchy is followed during the daily work, information flows according to the formal structure and not outside. When it comes to exchanging information between and within units, regular team meetings and e-mails are used. Interviewee G states that “we have all these kinds of systems that we are supposed to work [with] […] but since there are a lot of communication programs coming up, I do not actually know which one to use”. As a consequence, this can have an influence on the efficiency of the communication exchange.
IPR vs. IPC
When comparing the two parts IPR and IPC including the mentioned dimensions and elements, it seems that Company G balances its IPR with its IPC. Company G is highly complex but still organized hierarchically with a centralized decision-making power. Furthermore, the employees of the company are very dependent on their supervisors and cannot make decisions on their own before having an approval. However, despite the central decision-making power, Company G prefers a short way up to the top so that decisions can be made quickly and efficiently. This could imply that in order to make decisions and solve tasks, information only flows to the relevant persons and in an efficient way. In addition, task interdependence is solved via function leads and clear, highly formalized roles and responsibilities. Through defining and making roles clear a deviation is less likely and hence employees are more likely to stick to them without much need to coordinate.

To conclude, one can presume that Company G, is able to match its requirements with the appropriate structure. In the case of Company G, even though many communication channels are in place and there is no mechanism for the use of each of them, it can be assumed that an information overload is less likely to be experienced if the hierarchical order is followed and information mainly flows according to a predefined and standardized way.

4.3 SUMMARY OF INDIVIDUAL ANALYSES OUTCOMES

The following table (see Table 7) acts as a short summary and provides an overview of the previously described outcomes of the individual company analyses from chapter 4.2. In Companies A – D, the IPR appears to be not successfully matched with the IPC which could explain that the organizational members are suffering from information overload at the workplace. Company E depicts an exception in the thesis as its IPR and IPC seem to be matched, but the organizational members still experience an information overload. This could indicate that other sources of information overload dominate the structural cause. Finally, it appears that both Company F and G are able to meet their task requirements (IPR) with an appropriate structure (IPC) since no information overload exists.
<table>
<thead>
<tr>
<th>Company</th>
<th>Information Overload?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>IPR &gt; IPC – Information Overload Does Exist</td>
</tr>
<tr>
<td>Company B</td>
<td>IPR &gt; IPC – Information Overload Does Exist</td>
</tr>
<tr>
<td>Company C</td>
<td>IPR &gt; IPC – Information Overload Does Exist</td>
</tr>
<tr>
<td>Company D</td>
<td>IPR &gt; IPC – Information Overload Does Exist</td>
</tr>
<tr>
<td>Company E</td>
<td>IPR = IPC – Information Overload Does Exist</td>
</tr>
<tr>
<td>Company F</td>
<td>IPR = IPC – Information Overload Does Not Exist</td>
</tr>
<tr>
<td>Company G</td>
<td>IPR = IPC – Information Overload Does Not Exist</td>
</tr>
</tbody>
</table>

**TABLE 7: OVERVIEW OF INDIVIDUAL ANALYSES OUTCOMES**
5. DISCUSSION

After the analysis of each individual company, this chapter will sum up the main empirical findings from this thesis and discuss them in relation to theory. Aim here is to emphasize which of the identified structural elements are key when it comes to causing information overload in an organization and therefore to contribute in strengthening the observable connection between information overload and organizational structure and hence contribute to the existing literature of information overload. It needs to be mentioned that the findings will be compared to each other not for the purpose of comparing the companies itself but rather to discuss and summarize the findings to identify structural elements as a cause for information overload. In order to get a detailed overview, Table 8 summarizes the main findings of the individual companies analyses from chapter 4. The most relevant multipliers for higher information processing requirements and capacities are listed respectively as well as the ultimate results, the match or mismatch between those.

During the individual company analyses, the OIPT as defined by Galbraith (1974) and Tushman and Nadler (1978) was successfully used as a tool to analyze whether or not structure could be a cause for information overload. The conducted research hereby confirms the relevance of a match between IRP and IPC in order to enable successful information processing in an organization which was introduced by Schick at al. (1990). The analysis has shown that information overload can indeed be the result of a mismatch between IPR and IPC (see Table 8). Company A – D experience information overload at the workplace which can be explained through the mismatch between the IPR and IPC. The task requirements (IPR) of these companies are considered high since the tasks are often diverse and complex and are characterized by high task interdependencies. It seems that the structure (IPC) in place is, however, not able to meet these requirements. Roles and responsibilities of the organizational members within the respective company lack clarity and many information exchange meetings, some of them inefficient, are held. Company E can be considered a special case in this thesis since its IPR and IPC do match which would enable successful information processing, but information overload is still experienced. Finally, Company F – G are able to match their IPR and IPC. Roles and responsibilities are clear and mostly strictly followed which allows to meet the task requirements of these companies. This could explain why there is no information overload.
<table>
<thead>
<tr>
<th>Company</th>
<th>IPR</th>
<th>IPC</th>
<th>Information Overload?</th>
</tr>
</thead>
</table>
| Company A  | • Team responsibilities  
• High task interdependencies                                          | • Moderate complexity  
• Departmentation: Matrix  
• Clear job roles & responsibilities  
• Many inefficient information exchange meetings | IPR > IPC – Information Overload Does Exist |
| Company B  | • Diverse & varying tasks  
• High task interdependencies                                          | • High complexity  
• Flat & open work environment  
• Departmentation: Divisions with matrix structure  
• Many job titles & unclear responsibilities  
• Many information exchange meetings | IPR > IPC – Information Overload Does Exist |
| Company C  | • Varying tasks  
• Individual work  
• Low task interdependencies                                             | • Low complexity  
• Departmentation: Functional  
• Unclear roles & responsibilities  
• Informal, verbal information exchange meetings | IPR > IPC – Information Overload Does Exist |
| Company D  | • Complex and diverse tasks  
• Certain task interdependencies                                          | • Low complexity  
• Open work environment  
• Departmentation: Matrix  
• Unclear roles & responsibilities | IPR > IPC – Information Overload Does Exist |
| Company E  | • Difficult & unpredictable tasks  
• Moderate task interdependencies                                          | • High complexity  
• Departmentation: Divisions with matrix functions  
• Clear definitions of roles & responsibilities  
• Teamwork with knowledge overlaps | IPR = IPC – Information Overload Does Exist |
| Company F  | • Difficult tasks  
• Low task variability  
• Low task interdependencies                                             | • Moderate complexity  
• Departmentation: Functional  
• Clear, strict roles & responsibilities  
• Mainly individual work  
• Efficient information exchange meetings | IPR = IPC – Information Overload Does Not Exist |
| Company G  | • Difficult & varying tasks  
• High task interdependencies                                             | • High complexity  
• Strict & formalized work environment  
• Departmentation: Functional  
• Clear roles & responsibilities | IPR = IPC – Information Overload Does Not Exist |

**TABLE 8: SUMMARIZED FINDINGS OF EACH COMPANY**
Since the analysis in this thesis is based on the structure of the OIPT, it is important to remember that high IPR require high IPC to cope with the uncertainty (Galbraith, 1974). Therefore, when trying to understand where the reason for information overload lies there are two main parts to look at in this chapter. First, identifying elements that increase IPR, since when the IPR outweigh the IPC, information overload can be the result (Schick et al., 1990). Second, understanding which elements of the IPC equip an organization with the capacities to cope with high uncertainty and hence requirements, since knowing which IPC elements matter, can give an insight into what causes information overload, when these elements are missing. The main findings are therefore structured as followed. First, it will be discussed which elements of the two IPR dimensions, task characteristics and inter-unit task interdependence, increase the requirements the most. Second, the findings will discuss which elements of the three IPC dimensions, the Structural Configuration Factors, definitions and coordination are most crucial in order to balance the IPR with the IPC. Lastly, some additional findings and other causes of information overload will be presented.

5.1 INFORMATION PROCESSING REQUIREMENTS

As previously established, the requirements are related to the tasks within the organization (Tushman and Nadler, 1978). The first finding, that has been seen as to increase IPR, is unclear definitions of tasks. If employees are uncertain exactly what tasks contain, who tasks are assigned to, how they are divided among colleagues and how they should be prioritized uncertainty increases. One outcome of ambiguously defined tasks can be the occurrence of unexpected, additional work put forward from a colleague. If an employee’s current tasks are not clearly defined and prioritized, this organizational member could be unsure whether or not this unexpected task is relevant. The data collected for the purpose of this thesis, revealed that employees often feel disturbed and less productive if work gets given to them in this way. This also coincides with research, which shows that this kind of distraction at the workplace creates information overload and decreases efficiency (Hemp, 2009a). If tasks were clearly assigned a priority in a comprehensive system, emerging work would be properly assigned through the system which would help managing uncertainty. The results collected from the data clearly show that tasks which include clear descriptions of actions and expectations are required when receiving information since that makes the employees feel less overwhelmed with information. Overall, this finding indicates, that information overload can be caused through unclear task
definitions provided. Therefore, the authors suggest that the IPR dimension of task characteristic is lacking an additional element, task definition, since this can also influence uncertainty in the organization.

Regarding the elements of task difficulty and task variability the employees seemed to be quite capable of handling the uncertainty created within the task characteristic dimension. The interviewed employees seemed capable to handle high uncertainty caused through high task difficulty, based on the reasoning that they consider solving difficult problems as part of their jobs and have the necessary skill set to solve such issues. Hence, these two elements seem less relevant in the connection to structure, since this is a kind of uncertainty that the employees are capable of solving by themselves. However, it should be considered that it seems that in the interviewee’s cases, the organizational structures succeeded in coping with this uncertainty by assigning the right tasks to the right employees with the right roles, which is the prerequisite for them to handle this uncertainty.

The results of this thesis have also emphasized the relevance of the task interdependence dimension. The more interdependent the individual employees are in the organization, the more uncertainty emerges (Galbraith, 1974). The investigated companies have developed complex coping mechanisms, such as closely collaborating teams which constantly exchange information.

![FIGURE 15: IPR ELEMENTS ADDED AND ASSESSED]
Figure 15 displays the visualized findings within the information processing requirements (IPR). All elements shown in the figure are relevant and have an influence on an organization’s IPR, but the ones marked in yellow and blue color represent elements that have been identified as more important or less important among the other elements respectively. The elements marked with a red star have been additionally added by the authors based on the empirical findings.

5.2 INFORMATION PROCESSING CAPACITIES

The first dimension considered of the information processing capacities (IPC) are the Structural Configuration Factors. The authors have identified a rather unexpected finding, regarding the element of the forms of departmentation. The conducted research was not able to confirm the elements’ relevance in contributing to information overload to different extents. Literature suggested that matrix organizations, due to high interdependencies, require more communication and hence distribute more information which could lead to increased information overload (Mintzberg, 2009). The authors have not been able to clearly identify patterns which can be based on the different forms of departmentation, since interdependencies also exist in other organizational forms. It could be assumed that the forms themselves are not a key factor in either increasing or decreasing IPC as it matters more if the chosen form matches the task requirements. Even though the research has shown that information overload can often be found at the top positions of a company, especially when managers see themselves as filters, the authors have again not been able to identify a clear connection between the location of the information overload and the forms of departmentation. This finding indicates that there is no or a low correlation that links the forms of departmentation directly to the occurrence of information overload.

The authors were able to identify another finding, related to the elements of horizontal, vertical and spacial differentiation, which according to Tolbert and Hall (2009) define a company’s complexity. Lawrence and Lorsch (1967) state that increasing complexity also increases the difficulty to coordinate, indicating the need for higher efforts within the coordination mechanism. The results from the data analysis, however, show that complexity as defined by Tolbert and Hall (2009) is not the only determinant for complex coordination mechanisms. For example, Company A was considered highly complex by the interviewee him/herself (Interviewee A) and also showed elaborate mechanisms within the IPC dimensions to cope with this, while
it is not a highly complex organization according to Tolbert and Hall (2009). This either indicates that more than only the horizontal, vertical and spacial differentiation determine organizational complexity or that complexity is not clearly related to increased coordination mechanisms. Overall, this finding could imply that a complex structure according to the definition of Tolbert and Hall (2009) does not necessarily mean higher IPC or an increased capacity to handle IPR. Moreover, Tolbert and Hall (2009) argue that complexity in organizations increases the difficulty of bringing the right information to the right place. The authors could, however, not identify a clear link between high complexity and the information not reaching the right place in the organization, as there are too many other factors that also have an influence on that. Therefore, complex structures of organizations are not necessarily a way to balance IPR and IPC and can moreover not be clearly determined as factors which increase the likelihood of information overload.

The next key finding emphasizes the importance of the dimension of definitions. Throughout the interviews it became very clear that roles and responsibilities are a necessity, in order to increase IPC. It became evident that it was not enough for the employees to just formalize such definitions, the important part was the clarity of roles, the transparency to understand other people’s roles and finally also the possibility and permission to adhere to the roles. This also supports the employees in their capacities to accept or reject tasks which they consider to be outside of their responsibility. Transparency of roles and responsibilities was mentioned as a tool that helps employees in being able to aim information flows at the right colleagues rather than only looking at the formalized roles in form of an organigram. An organigram accurately depicts the division of labor in the company by showing “(1) what positions exist in the organization, (2) how these are grouped into units, and (3) how formal authority flows among them” (Mintzberg, 2009, p.19). Still, the managers in the interviews emphasized the importance of such formalizations less than knowledge about roles and responsibilities in general. The authors therefore believe that an organigram can be an important support in clearly defining roles and responsibilities, but additional efforts are necessary. This also became evident in the interviews when considering that the interviewees assigned themselves to different roles and responsibilities if those were not very clearly defined. One such role was being a filter for information between themselves and their employees. This seems to emphasize the importance of really clarifying roles and making clear that responsibilities outside the role are not required to be taken. This can also reduce the pressure employees feel to act immediately on requests, it has to be made clear what is reasonable to be responsible for, what is expected and who is
responsible to act on such requests. From the collected data the authors were able to identify what a part of such a capacity could look like. One of the investigated companies (Company F) described a rotating system which clearly appoints one responsible at a time, which also reduces disturbances for the other employees. This leads to the conclusion that whether or not an individual experiences information overload is clearly related to the role and position occupied in the organization. Tushman and Nadler (1978) confirm the importance of defining roles and responsibilities. However, the research conducted in this thesis shows an extension to what is important when it comes to the dimension of definitions. **Clearly defining the boundaries** between what describes work and free time seems to be an important addition, especially today where the boundaries between work and private life seem to coalesce and this introduces the opportunity of being overloaded with information around the clock (Grebner et al., 2004). As mentioned before, it is the responsibility of the organization to provide a base to enable the employees to cope with uncertainty caused by task difficulty and task variability, therefore, when assigning and defining roles and responsibilities, the skills of the respective employees have to be taken into consideration. Overall, this finding is considered most relevant since the vast majority of the interviewees have emphasized the importance of clear roles and responsibilities as a way to be able to process information better and feel less overloaded with information.

Finally, findings considering the dimension of **coordination** will be presented. Regarding the **nature of information exchange**, several interviews have revealed that employees often communicate outside of official structures. The occurrence of this can also be confirmed with literature based on Tolbert and Hall (2009). They have defined two different kinds of structure among which information can flow, formal and information structure. Formal structure describes the “official, explicit division of responsibilities, definitions of how work is to be done, and specifications of relationships involving the members of an organization” (Tolbert and Hall, 2009, p.20) meaning what kind of tasks and jobs are necessary and how they are supposed to be done. Informal structure on the other hand, is related to “unofficial divisions, definitions, and relations that emerge over time in an organization” (Tolbert and Hall, 2009, p.20). The collected data showed that managers even encourage their employees to avoid using the formal structure when contacting others about information. The research from this thesis was not able to confirm that eluding from formal structure to informal structures does necessarily cause information overload. However, several conclusions can be drawn from this finding. First, the structure in place could be faulty and personal experience is a better base on which to judge
who to contact. Second, the structure in place does not reflect reality as it only describes individual employees as being located under a manager, and therefore always encourages that the information should flow via managers. This way of sharing information can especially overload managers and turn them into bottlenecks while at the same time it is not guaranteed that the information even reaches its destination. One from the interviews observed way to respond to this challenge is to create teams as responsible contact points rather than individuals as seen in one interview (Company A). Literature states that “the more complex, elaborate, and comprehensive the coordination […] mechanisms are, the greater the ability to process information and deal with inter-unit uncertainty” (Tushman and Nadler, 1978, p.618). This is something the authors have been able to confirm with the results of this thesis. It gives an indication that many companies lack those kind of comprehensive coordination mechanisms which leaves them with insufficient IPC to deal with high uncertainty. This finding also indicates that the way information is shared matters more than the medium used to share information, there was no relation found between the medium of information exchange and an increase or decrease in information overload.

Regarding the element **task procedures**, the research results confirm the importance of thorough considerations and decision-making when it comes to choosing what kind of approach is appropriate towards the to-be-executed tasks. This matters especially when looking at task difficulty and variability since those “are regarded as a criterion for the magnitude of information and communication costs” (Picot et al., 2008, p.164).
**Figure 16** visualizes the findings in the area of IPC. Naturally, all depicted elements influence an organization’s IPR, but the ones marked in yellow and blue color describe elements that have been identified as more important or less important respectively. The elements marked with a red star have been additionally added by the authors based on the findings.
5.3 ADDITIONAL FINDINGS

The empirical research has furthermore revealed one additional finding that the authors consider worth mentioning. An identified factor that clearly links the structure to information overload is the fact that internal restructuring has been observed as a response to information overload (see chapter 4.2.1 for Company A and chapter 4.2.4 for Company D). This is a more comprehensive attempt by the organization to readjust and match their IPR and IPC after noticing those are not balanced and the company is not able to cope with the uncertainty. According to Galbraith (1974) and Tushman and Nadler (1978) there are two ways to achieve a balance, either to lower the IPR or to increase the IPC. Restructuring is a way to increase the entire IPC rather than just single dimensions or elements of it.

5.4 OTHER CAUSES OF INFORMATION OVERLOAD

Finally, while analyzing the results of the collected data, it has been observed that even if the IPR and the IPC are seemingly balanced and the structure in place capable of handling the uncertainty, information overload can still exist. This confirms the initial literature used, where Eppler and Mengis (2004) state that the causes of information overload are fivefold and besides organization design, personal factors, information characteristics, information technology (IT) and task and process parameters can all be causes of information overload. The five factors are not based on a linear logic, but rather on interdependent relationships which can cause information overload.

The first part, personal factors, refers to the individual’s receiving and processing information capacity (Herbig and Kramer, 1994) and is related to a person’s traits such as skills and the level of experience (Owen, 1992) but also to the personal situation (e.g. amount of sleep, time of day) on how to deal with information overload (Eppler and Mengis, 2004). The authors of this thesis have attempted to disregard that factor as it is part of the subjective view literature on information overload (Edmunds and Morris, 2000) which is outside the scope of this thesis.

The second factor are the information characteristics themselves which refer to the quantity (Bawden, 2001), but also to the characteristics of the information such as complexity, novelty and uncertainty of information (Schneider, 1987). Naturally, this factor is a determinant for information overload, however in the case of this thesis the interviewees did not mention that they have problems with understanding information that is being forwarded to them. This could
indicate that this factor does not play a large role for those specific cases, or simply that the interviewees are not aware of the efforts they had to spend in working towards understanding and using necessary information.

Third, IT, is one of the main reasons why information overload became a relevant issue in many organizations in the 1980s and 1990s. Especially, the new information and communication technologies (ICT) such as the internet, intranets, and e-mail in combination with an increased speed of access (Schultze and Vandenbosch, 1998) contribute to the problem of information overload (Bawden, 2001; Klausegger et al., 2007). However, there are also researchers who stress arguments in favor of the new ICT. For example, Edmunds and Morris (2000) emphasize the advantages an e-mail can have since it is an asynchronous communication form with decreases the probability to interrupt the workflow of a person. In this thesis, IT has not been emphasized as a cause for information overload per se, it was simply assumed that the information exchange was flowing through such mediums. It could be argued that, for example the usage of many different communication channels could increase the likelihood of information overload, but the collected data on this has been disregarded in order to stay within the scope of this thesis.

Lastly, the authors have to large parts combined the factors of task and process parameters and organization design. The former describes causes of information overload which can arise due to job characteristics (Dabbish and Kraut, 2006). These are, for example complex tasks which are not based on reoccurring routines (Tushman and Nadler, 1978) or working under time pressure (Schick et al., 1990). Moreover, jobs with a higher level of interdependence are associated with an increased need for “coordination of work tasks and higher levels of communication” (Dabbish and Kraut, 2006, p.432) in order to do the job (Kiggundu, 1981). As mentioned, the organization design, especially the organizational structure of a company, is an important factor regarding the occurrence of information overload which has been discussed extensively in this paper. While, the authors of this thesis chose the largely unexplored factor of organization design as their focus, for the purpose of this thesis it was decided that the two factors, task and process parameters and organization design, are too closely related to be regarded separately. This is mainly due to the fact that literature describes that structure in place is a response to fulfill the purpose of solving tasks within an organization. This circumstance is also reinforced by the nature of the OIPT model applied in this thesis. The authors
have therefore combined arguments from the two last factors since task related as well as structural elements have been investigated. However, the authors have attempted to focus on the organization design as a cause while the task and process parameters were largely used as a foundation to argue for identified findings.

This thesis has re-emphasized what Eppler and Mengis (2004) also stated, that these factors are interrelated and connected to each other. Especially in the case of task and process parameters and organization design since those two factors inevitably influence each other. Overall, not only one of the five just mentioned factors is causing information overload but rather a combination of them (Eppler and Mengis, 2004). It can also be argued that when looking at certain findings, the causes can also outweigh each other such as in the case of Company E where the IPR and IPC are matched, hence organization design can be disregarded as a cause for information overload, and yet the employees are experiencing information overload, indicating that some of the other factors outweigh this balance. Nevertheless, the authors of this thesis have attempted to single out the cause of organization design and draw conclusions which are related to that cause in order to answer the stated research question.
Nowadays, many firms and individuals have experienced information overload. Some struggle more with it, some less, but what is undeniable are the negative consequences that information overload brings along. Many causes of the phenomenon have been investigated previously but a connection between information overload and its causes in organization design, in particular structure and coordination, has to large parts been neglected. This thesis has attempted to take the first step in changing this and has succeeded in providing valuable insights into the connection of dimensions and elements of structure as causes for information overload.

6.1 RESEARCH CONTRIBUTION, PURPOSE AND QUESTION

In order to provide valuable insights, this thesis made use of the organizational information processing theory (Galbraith, 1974) to compare requirements and capacities for information processing in an organization. This approach proved to be a useful tool to apply in relation to information overload. The existing framework was expanded and adjusted to be applied to the empirical data gathered in the scope of this thesis.

Moreover, the research conducted in this thesis was based on qualitative data collected through semi-structured interviews and analyzed through a thematical approach. And even though this thesis is only a small contribution to the field of information overload, it has given an indication for what research in this area could comprise.

This research aimed to contribute with new insights to the field of information overload. The findings are highly relevant to managers since understanding which parts of the structure in place are key elements of the information processing capacities can open up opportunities to improve those. Moreover, the acknowledgement that the occurrence of information overload can be an indication for potentially necessary adjustments in the structure is a helpful tool to set up a structure that matches what the work in the organization requires. Information overload is not simply caused by forthcoming employees or too many communication tools, it can find its roots much deeper in the organization, in the structure itself. Therefore, the research questions this thesis has answered was:

*What is the role of organizational structure in information overload and, in particular which elements of this structure influence information overload in an organization?*
First and foremost, this thesis has been able to strengthen the assumption that structure can indeed take the role of a major cause for information overload. Moreover, the authors have been able to verify the implications Schick at al. (1990) made, that a mismatch between IPR and IPC can cause information overload in an organization.

In more detail, specific elements within the dimensions of the information processing requirements as well as the structural dimensions of the information processing capacities were identified as having a particular influence on triggering information overload and will be summed up in the following. Regarding the dimension task characteristics in the IPR, the elements of task difficulty and task variability have shown to be less important in relation to structure. However, it could be assumed that employees would not be able to cope with those by themselves if they were assigned to unsuitable roles. Moreover, this dimension should be extended with the element of task definition, since insufficient task definitions can increase uncertainty. Regarding the dimension of task interdependence, high interdependence increases uncertainty and hence if suitable coping mechanisms, such as creation of teams, are not in place, the requirements increase. Further, related to IPC, the finding can be described as follows, the element of forms of departmentation within the dimension of Structural Configuration Factors has been assigned with little relevance in the context of causing information overload. The elements that create complexity, were also not verified as clearly increasing coping mechanisms or even being a response to handling increasing IPR. Moreover, the dimension of definitions has revealed that clarity and transparency as well as adherence to roles and responsibilities are key elements when it comes to coping with uncertainty. This dimension could be extended with the additional elements of boundary definitions to support employees in separating their work and private life. Within the dimension of coordination, it was shown that how employees communicate matters more than via what medium is communicated. There was no clear correlation between communicating outside the formal structure and increased information overload. Naturally, the importance of matching the task procedures to the task requirements was emphasized. The additional findings revealed that restructuring can be a comprehensive approach to matching IPR and IPC and hence reducing or even eliminating information overload. Finally, the results also confirm Eppler and Mengis’ (2004) assumptions that there are various causes for information overload.
There are several limitations that have to be considered in the context of this thesis which will be mentioned in this chapter. Eppler and Mengis (2004) have defined five different dimensions in their conceptual framework (see chapter 1.3). The authors of this thesis have used this as a frame of reference but combined the organization design and the task and process parameters dimensions due to logical reasons in regard to the theoretical framework and literature available on structure. This means that the other dimensions of Eppler and Mengis (2004) have been largely neglected but are nonetheless likely to play a crucial role in causing information overload since they can influence each other. Regarding the theoretical framework, the OIPT, it was used as a tool but updated and adjusted when actually applied to the obtained data. Another important factor to consider is that due to availability and time limitations, this thesis disregards all external factors which could influence information overload. External factors can also play an important role in the original OIPT framework, since the task environment is considered an influential part of the IPR (Galbraith, 1974; Tushman and Nadler, 1978).

Regarding the interviews, due to unavailability of resources and time constraints of the thesis, the authors interviewed only seven managers in total. However, the number was considered sufficient since valuable insights were gained from these interviews. Nevertheless, the generalizability of the findings can still be questioned. Furthermore, as mentioned, only one interviewee per company was interviewed which can question the reliability of one individual’s statement for the context of the whole organization. In addition, the authors were not able to interview seven people from exactly the same departments within the organizations which could lead to certain differences in the received results. Moreover, the authors asked to interview middle managers but not all the interviewees were located in the same position from a management perspective. This can be explained by the varying definitions of middle managers in the investigated organizations or due to misunderstandings in communication and unclear statements from the side of the authors.

Due to the nature of the qualitative study, the subjective view of the interviewees has to be taken into consideration, also considering that all managers interviewed were located in Sweden where the impression of the company could vary compared to other locations and subsidiaries of the same organization. Moreover, the findings derived from companies located in the software development/IT industry which means that different answers could be received when
interviewing companies from different industries. Another takeaway and limitation from the research is, that **size** plays an important role. Smaller organizations can face information overload however usually in different ways. In smaller organizations verbal communication is used a lot more and taking on tasks from others is still manageable. This seems very reasonable since the information load is simply smaller in an organization with less employees and the steps it takes to retrieve the right information are limited. Moreover, in smaller organizations, clear structures seem to be seen as less important. However, with growing size the need for more clarity becomes obvious. The introduction of more clear structures, roles and responsibilities becomes more important in order to also enable successful coordination and less information overload. This finding can indicate that comparing companies of such varying size can distort results to a certain degree.

### 6.4 IMPLICATIONS AND FUTURE RESEARCH

The authors aimed to contribute with insights towards the theoretical context as well as to practitioners in the field.

The results of the thesis clearly emphasize the relevance of this topic and the need for more scholarly attention towards it. Investigating the topic brings along challenges as research in this area needs to combine hard facts about structure with soft facts on how the employees experience information overload since information overload can be challenging to measure, both quantitatively and qualitatively. Therefore, it can be challenging to connect the two topics in a meaningful way.

As previously mentioned, it could be argued that the sample size of this thesis was too small to state general findings and draw conclusions from those. Hence, a similar study with a larger sample size could reinforce the collected findings from this thesis and further contribute to the field.

Regarding the analysis of collected data in this field, the OIPT used in this thesis is one approach to understand a complex issue. Extending or replacing this model in future research could lead to new learnings. Moreover, this thesis has contributed to the field of information overload, however there are also great opportunities for contributions in the field of organiza-
tion design. Finally, this thesis gives insights into causes of information overload within structure, it does however not give recommendations or ideas for improvements which could also be investigated in the future. Furthermore, as already mentioned before, all root causes of information overload are interrelated and can affect each other. In order to gain more knowledge about organization design as a cause of information overload, the authors suggest conducting studies which include the other four causes as well. Here, additional research studies are considered necessary. Van de Ven and Ferry (1980) also argue that measuring and assessing organizations is commonly done in a quantitative manner.

To conclude, the fact that structure plays a major role in causing information overload seems so obvious and is yet so overlooked in literature and practice equally.


### APPENDIX 1: DEFINITIONS OF INFORMATION OVERLOAD

<table>
<thead>
<tr>
<th>Definition</th>
<th>Characteristics</th>
<th>References</th>
</tr>
</thead>
</table>
| **Inverted U-curve**             | • The performance of an individual correlates positively with the amount of information up to a certain point  
• After that, the information becomes an obstacle rather than a help | Bawden et al., 1999  
Chewning and Harrell, 1990  
O’Reilly, 1980  
Schick et al., 1990 |
| **Objective view or “classic” definition** | • Information-processing view  
• Information overload: IPR > IPC | Galbraith, 1974  
Eppler and Mengis, 2004  
Mackenzie, 1974  
Schick et al., 1990  
Tushman and Nadler, 1978 |
| **Subjective view**              | • Consequences for the individual such as stress, anxiety, decreased efficiency, dissatisfaction | Edmunds and Morris, 2000  
Eppler and Mengis, 2004  
Farhoomand and Drury, 2002  
Himma, 2007  
O’Reilly, 1980  
Savolainen, 2007  
Schick et al., 1990 |
| **Quantitative dimension**       | • A large amount of information  
• See also “classical” definition | Galbraith, 1974  
Eppler and Mengis, 2004  
Mackenzie, 1974  
Schick et al., 1990  
Tushman and Nadler, 1978 |
| **Qualitative dimensions**       | • Information attributes such as complexity, ambiguity, uncertainty and intensity of the information | Bawden and Robinson, 2009  
Schneider, 1987 |
APPENDIX 2: INTERVIEW GUIDE

Introduction Question

1. Tell us a little bit about the company and your role within the company…

PART 1: Structure Related Questions

A) General Questions

1. How many subsidiaries does the company have worldwide?
2. How is the company organized? For example: Matrix, functions, divisions...
3. a) What is the size of the business unit/department to which you belong? (Average number of members)
   b) What is the size of the subsidiary in Linköping? (Average number of employees)
   c) What is the size of the overall company? (Average number of employees)
4. In the business unit/department to which you belong, how many management levels are there? (Meaning employees with management positions, above and below)
5. In the overall company, how many management levels are there?
6. How many different divisions are there within the company?
7. a) Can you give a rough estimation on how many different job titles there are within your business unit/department?
   b) Can you give a rough estimation on how many different job titles there are within the company? (Job title for example: Project Manager, Application Engineer etc.)
8. a) What is the ratio between managers (which are managing people) and staff?
   b) On average, how many employees is one manager managing? How many are you managing?

B) Nature of Work in Unit

1. How would you describe the relationships among employees and managers within the organization?
2. Can you describe the employees in your business unit/department? Are they similar to each other in terms of values, interests or are there big differences/variety?
3. Do you usually know how to solve your daily tasks? How do you know that?
   Do you spend a lot of time solving unpredicted, difficult problems?

---

4 Part 1: Structure Related Questions, A) General questions was sent beforehand to the interviewees via e-mail.
4. Are the day-to-day tasks within your unit usually very similar? Can you usually predict what kind of work/tasks you will have to do in your role? Can you usually predict what kind of work/tasks the members in your business unit/department will have to do in their role?

C) Structure in General
1. How is the company organized? For example: Matrix, functions, divisions... What do you think about the structure of your company?
2. Are there some kind of written rules or standardized processes that tell the employees how to do tasks? If so, how in much detail? Or why not?
3. Are the different people in your business unit/department usually doing similar tasks or do they all have different specializations? Would it be easy to transfer tasks?
4. How free are you usually to decide how you do your work and how you prioritize your tasks?
   How free are your employees in terms of deciding how to do their work and what to focus on (prioritize from day to day)?
5. How free are you when making decisions in your work? Are you dependent on what your manager tells you when making decisions and to what extent? How free are your employees when it comes to making decisions?
6. Do you usually know who to contact if you have a question regarding to your task (because you do not have certain specialized knowledge), also across departments? How do you know that? If you had a question that only another member of the organization can help you with, since they have that knowledge, how do you decide who to contact? Due to their job description or rather authority or who you know best?
7. In general, how can you find out what roles/ responsibility members of your organization have? Is it written somewhere or through experience?

D) Coordination
1. Within the business unit/department how are tasks usually solved? Individually, sequentially or whole team solves them together? How about unexpected problems?
2. Are you or other members in your business unit/department usually dependent on others and their input or information in order to solve tasks?
How do you receive and share information within your business unit/department? Through written reports, personal one-to-one talks or unit meetings? In what frequency?

PART 2: Information Overload Related Questions

A) Information Overload in General
1. What does information overload mean to you?
2. How do you experience information overload within your daily work life? In which situations? How often?
3. How does information overload affect your daily work?
4. How does information overload affect the members of your business unit/department?
5. What is the biggest challenge of information overload for you?
6. Have you led actions to reduce the overload within the business unit/department that you are managing? Which ones?
7. What do you think are the causes of information overload? What are its primary sources?

B) Information Handling / Processing
1. Do you experience any difficulties in processing the information you need to be able to do your job? If so, describe these difficulties.
2. Is there anything that the organization does to either enhance or reduce the information processing load placed upon its employees?
3. How do you personally handle and prioritize information when you receive it?
4. When you receive an e-mail, do you sometimes wonder why the sender considered the information relevant for you?
5. How do you deal with a situation where you receive information which is not relevant for you? (Do you follow a certain process? How do you know who to forward the information to?)
6. Do you in your role as manager act as information distributor? How exactly?
7. Can you describe some processes or ways how information is handled within your organization? Who decides who gets the information? How is it processed, organized and forwarded? Why?
8. How are systems built to process the information? Why do they flow this way? Why are they build this way? How is information shared within the company?
9. (Are there members within the organization who, as part of their role, have the responsibility of managing flows of information?)

C) Communication

1. With whom do you usually communicate most, rather within your business unit/department or with different employees with similar roles to yours?
2. How many different communication channels are available in your organization?
APPENDIX 3: VISUALIZATION OF COMPLEXITY ELEMENTS

1. VERTICAL DIFFERENTIATION INDICATED THROUGH THE NUMBER OF SUPERVISORY LEVELS OVERALL

2. HORIZONTAL DIFFERENTIATION INDICATED THROUGH THE NUMBER OF DIVISIONS
3. HORIZONTAL DIFFERENTIATION INDICATED THROUGH THE NUMBER OF JOB TITLES IN DIVISION

4. SPACIAL DIFFERENTIATION INDICATED THROUGH THE NUMBER OF GEOGRAPHICALLY OPERATING SITES
APPENDIX 4: COMPLEXITY CALCULATION

In the following paragraphs, the authors will present how the complexity for Company A – G has been defined. As mentioned, in order to be able to describe companies with high or low complexity, the investigated firms have been set into context with each other. The companies were assigned positions and scores based on the respective position within the three different Structural Configuration Factors which define the complexity: vertical, horizontal and spatial differentiation. The position describes the company’s position among the others, therefore numbers between (1) and (7) have been assigned, (1) being the highest and (7) being the lowest position. For example, the company with the highest number of supervisory levels, which is how vertical differentiation can be measured, is Company A, therefore the position (1) was assigned to Company A. However, Company B has the same number of supervisory levels, hence Company B has also been assigned to position (1). Further, depending on the position, the companies got assigned a score between (7) and (1), where (7) is the highest and (1) the lowest. Hence, the highest score (7) is assigned to the highest position (1). See below for the correlation between positions and scores. In order for all the three factors to be weighted equally, it was made sure that the mean value was kept stable at (4), for all scores of the factors. This means that, in case two companies shared the same position, as in the example Company A and B share position (1), then the scores for position (1) and (2) were added together and the mean of those was assigned as scores to both companies. In that case \((7 + 6) / 2 = 6.5\), hence (6.5) was assigned to both companies at position (1).

1. CORRELATION OF POSITIONS AND SCORES

<table>
<thead>
<tr>
<th>Position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

The following five tables display the companies’ positions and scores among the three relevant factors: vertical, horizontal and spacial differentiation. See Appendix 5 for the complete data obtained from the interviews.

2. POSITIONS AND SCORES OF VERTICAL DIFFERENTIATION (NUMBER OF SUPERVISORY LEVELS OVERALL)

<table>
<thead>
<tr>
<th>Position</th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
<th>Company E</th>
<th>Company F</th>
<th>Company G</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>6.5</td>
<td>6.5</td>
<td>1.5</td>
<td>1.5</td>
<td>4.5</td>
<td>3</td>
<td>4.5</td>
<td>4</td>
</tr>
</tbody>
</table>
3. POSITIONS AND SCORES OF HORIZONTAL DIFFERENTIATION (NUMBER OF DIVISIONS)

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
<th>Company E</th>
<th>Company F</th>
<th>Company G</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Score</td>
<td>3</td>
<td>4.5</td>
<td>1.5</td>
<td>1.5</td>
<td>6</td>
<td>7</td>
<td>4.5</td>
<td>4</td>
</tr>
</tbody>
</table>

4. POSITIONS AND SCORES OF HORIZONTAL DIFFERENTIATION (NUMBER OF JOB TITLES IN DIVISION)

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
<th>Company E</th>
<th>Company F</th>
<th>Company G</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Score</td>
<td>5</td>
<td>7</td>
<td>2.5</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>2.5</td>
<td>4</td>
</tr>
</tbody>
</table>

Since the complexity is composed of vertical, horizontal and spatial differentiation, all of these three factors should be weighted to equal parts. However, the horizontal differentiation is assessed through two factors, the number of divisions and the number of job titles, due to this fact, the average number of the according scores was calculated below. This average score is then used as the score for the horizontal differentiation.

5. POSITIONS AND SCORES OF HORIZONTAL DIFFERENTIATION (AVERAGE)

<table>
<thead>
<tr>
<th>Score</th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
<th>Company E</th>
<th>Company F</th>
<th>Company G</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\frac{(3 + 5)}{2} = 4$</td>
<td>$\frac{(4.5 + 7)}{2} = 5.75$</td>
<td>$\frac{(1.5 + 2.5)}{2} = 2$</td>
<td>$\frac{(1.5 + 6)}{2} = 3.75$</td>
<td>$\frac{(6 + 4)}{2} = 5$</td>
<td>$\frac{(7 + 1)}{2} = 4$</td>
<td>$\frac{(4.5 + 2.5)}{2} = 3.5$</td>
<td>4</td>
</tr>
</tbody>
</table>

6. POSITIONS AND SCORES OF SPACIAL DIFFERENTIATION (NUMBER OF GEOGRAPHICALLY OPERATING SITES)

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
<th>Company E</th>
<th>Company F</th>
<th>Company G</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Score</td>
<td>4</td>
<td>5.5</td>
<td>1</td>
<td>2</td>
<td>5.5</td>
<td>3</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

This introduction of scores was done in order to be able to find out the overall positions of the individual companies when it comes to the complexity. To do this, the average number of the previously assigned scores was calculated, see below.
7. AVERAGE SCORES OF VERTICAL, HORIZONTAL AND SPACIAL DIFFERENTIATION SCORES

<table>
<thead>
<tr>
<th>Score</th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
<th>Company E</th>
<th>Company F</th>
<th>Company G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(6.5 + 4 + 4)</td>
<td>(6.5 + 5.75 + 5.5)</td>
<td>(1.5 + 2 + 1)</td>
<td>(1.5 + 3.75 + 2)</td>
<td>(4.5 + 5 + 5.5)</td>
<td>(3 + 4 + 3)</td>
<td>(4.5 + 3.5 + 7)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>= 4.8</td>
<td>= 5.9</td>
<td>= 1.5</td>
<td>= 2.4</td>
<td>= 5</td>
<td>= 3.3</td>
<td>= 5</td>
</tr>
</tbody>
</table>

After that, positions have been assigned according to the average scores of vertical, horizontal and spacial differentiation scores. The highest score, in this case Company B with (5.9) has then been assigned to position (1). As seen below, all positions have been assigned according to the computed scores.

8. COMPLEXITY POSITION ACCORDING TO SCORES OF VERTICAL, HORIZONTAL AND SPACIAL DIFFERENTIATION SCORES

<table>
<thead>
<tr>
<th>Score</th>
<th>Position</th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
<th>Company E</th>
<th>Company F</th>
<th>Company G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>(6.5 + 4 + 4)</td>
<td>(6.5 + 5.75 + 5.5)</td>
<td>(1.5 + 2 + 1)</td>
<td>(1.5 + 3.75 + 2)</td>
<td>(4.5 + 5 + 5.5)</td>
<td>(3 + 4 + 3)</td>
<td>(4.5 + 3.5 + 7)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>= 4.8</td>
<td>= 5.9</td>
<td>= 1.5</td>
<td>= 2.4</td>
<td>= 5</td>
<td>= 3.3</td>
<td>= 5</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

These scores are reflected in the visualization of the complexity figure as seen in chapter 4 or below. The companies have been located in the graph, according to their position as seen in the complexity figure below. Company B, with position (1) is therefore considered highly complex while Company C, occupying position (6), has a low degree of complexity.
It should be noted, that there are three main reasons why these values are not absolute. First, it was never the intention to calculate actual values describing complexity. The point was to be able to rank the companies from low to high complexity. Second, there has been a disregard towards the actual values obtained, since focus has only been put on the position order. For example, within special differentiation, Company G occupies position (1) with 100 subsidiaries, the position (2) is held by Companies B and E, which have each only 50 subsidiaries. The difference between 100 and 50 was not taken into consideration but rather only the descending numbers. Third, looking at the three parts of which complexity consists, the part “4. Positions and Scores of Horizontal Differentiation” refers to the number of job titles within the divisions instead of the overall company since not all interviewees were able to make statement about that. However, one can assume that if a high number of job titles exists within the division, it most likely applies for the overall organization as well. To conclude, all these factors clearly show that the calculated numbers are just supposed to be seen as indicators in order to give an impression about complexity in general.
## APPENDIX 5: OVERVIEW OF STRUCTURAL CONFIGURATION FACTORS (VAN DE VEN AND FERRY, 1980) AND COMPANY SIZE

<table>
<thead>
<tr>
<th>Structural Configuration Factors</th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
<th>Company E</th>
<th>Company F</th>
<th>Company G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Differentiation</td>
<td>Division: 3 Overall: 6</td>
<td>Division: 5 Overall: 6</td>
<td>Division: 2 Overall: 2</td>
<td>Division: 2 Overall: 2</td>
<td>Division: 5 Overall: 5</td>
<td>Division: 2 Overall: 3</td>
<td>Division: 3 Overall: 5</td>
</tr>
<tr>
<td>Horizontal Differentiation</td>
<td>5 on corporate level, divided in itself again</td>
<td>6 on corporate level, divided in itself again</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Divisions</td>
<td>33</td>
<td>50</td>
<td>1</td>
<td>2</td>
<td>50</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Job Titles</td>
<td>Division: ca. 10 Company: -</td>
<td>Division: ca. 50 Company: 850</td>
<td>6</td>
<td>15</td>
<td>Division: 7 Company: 75</td>
<td>Division: 3 Company: 30</td>
<td>Division: 6 Company: -</td>
</tr>
<tr>
<td>Spacial Differentiation</td>
<td>Complex matrix with many divisions</td>
<td>Divisions with matrix structures</td>
<td>Functional</td>
<td>Matrix</td>
<td>Divisions with matrix functions</td>
<td>Functional</td>
<td>Functional</td>
</tr>
<tr>
<td>Forms of Departmentation</td>
<td>1 manager per 40 employees</td>
<td>1 manager per 9 employees</td>
<td>1 manager per 18 employees</td>
<td>1 manager per 13 employees</td>
<td>1 manager per 6 employees</td>
<td>1 manager per 6 employees</td>
<td>1 manager per 19 employees</td>
</tr>
<tr>
<td>Administrative Intensity</td>
<td>Free, giving context, external pressure</td>
<td>Frame is set but a lot of freedom in it</td>
<td>Very free, pressure from customer</td>
<td>Very free</td>
<td>Extremely free</td>
<td>Very free</td>
<td>More hierarchical, less freedom</td>
</tr>
<tr>
<td>Manager’s Span of Control</td>
<td>Large</td>
<td>Medium Large</td>
<td>Small</td>
<td>Small</td>
<td>Large</td>
<td>Medium</td>
<td>Very Large</td>
</tr>
<tr>
<td>Worldwide</td>
<td>9,000</td>
<td>3,500</td>
<td>38</td>
<td>33</td>
<td>9,000</td>
<td>190</td>
<td>200,000</td>
</tr>
<tr>
<td>Linköping</td>
<td>600</td>
<td>235</td>
<td>38</td>
<td>7</td>
<td>90</td>
<td>77</td>
<td>90</td>
</tr>
<tr>
<td>Division</td>
<td>450</td>
<td>700</td>
<td>38</td>
<td>33</td>
<td>51</td>
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