

Master Thesis in Informatics

# IT GOVERNANCE

## IN A GLOBAL LOGISTICS COMPANY

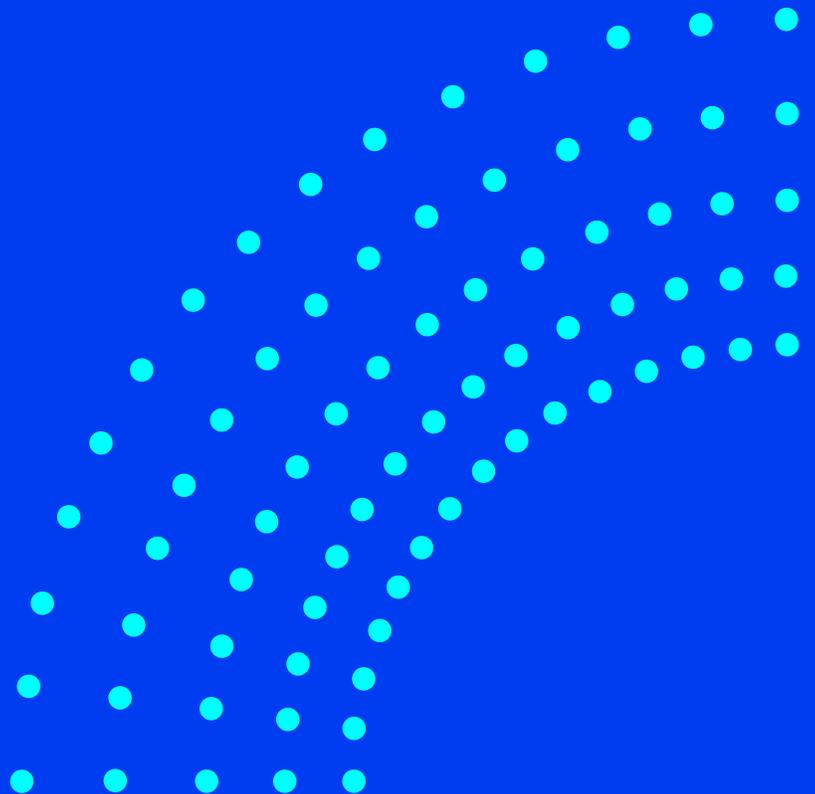
Peter Grewal and Fredrik Knutsson  
Göteborg, Sweden 2005



IT University  
of Göteborg

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Göteborg University,  
Department of Informatics



REPORT NO. 2005:11

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GÖTEBORG UNIVERSITY AND CHALMERS UNIVERSITY OF TECHNOLOGY  
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## **IT Governance – In a global logistics company**

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## **IT Governance – In a global logistics company**

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### **SUMMERY**

In this Master thesis, we have examined IT Governance within a global logistics company, Volvo Logistics. First of all we present a theoretical framework about IT Governance. This theoretical framework contains information about what IT Governance is, how it should be organised, what IT Governance work is, and areas that affect IT Governance. After the theoretical framework was presented, we conducted an empirical research by interviewing respondents from the company. The purpose with IT Governance is to help companies create and obtain business value from IS/IT and it is the executive management and the board of directors who should be responsible for it. IT Governance should be an integrated part of companies' corporate governance and individuals with decision making rights should be involved. Volvo Logistics fulfil these requirements and have a structured way of working with their IS/IT investments, even if it can be improved. We also conducted a benchmark of their IT Governance that can be compared with IT Governance at 256 other companies around the world. Volvo Logistics got 79 points out of 100 points.

The report is written in English.

**Keywords: IT Governance, IT Management, IT Governance organisation, IT Governance decision making, IT Governance decisions areas, IT Governance Institute, CobiT, organisational communication, business and IS/IT alignment.**

## **IT styrning – I ett globalt logistikföretag**

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### **ABSTRAKT**

I denna magisteruppsats har vi undersökt IT styrning inom ett globalt logistikföretag, Volvo Logistics. Först presenteras ett teoretiskt ramverk om IT styrning. Detta teoretiska ramverk innehåller information om vad IT styrning är, hur det skall organiseras, vilket arbete som skall utföras inom IT styrning och vilka områden som påverkar IT styrning. Efter att ha presenterat det teoretiska ramverket så genomförde vi en empirisk undersökning genom att intervjua respondenter från företaget. Syftet med IT styrning är att hjälpa företag skapa och bibehålla affärsvärde från IS/IT och det är den ledningens och styrelsens ansvar. IT styrning skall vara en integrerad del av företagets styrning och det är individer med beslutanderätt som skall vara involverade. Volvo Logistics uppfyller dessa krav och har ett strukturerat sätt att arbeta med IS/IT investeringar, även om det kan förbättras. Vi genomförde även en benchmark över deras IT styrning som kan jämföras med IT styrningen i 256 andra företag i världen. Volvo Logistics fick 79 poäng av maximalt 100 poäng.

Rapporten är skriven på engelska.

**Nyckelord: IT styrning, IT Management, organisation av IT styrning, beslutsfattande inom IT styrning, beslutsområden inom IT styrning, IT Governance Institute, CobiT, organisatorisk kommunikation, balans mellan verksamhet och IS/IT.**

## **PREFACE**

Making this Master thesis has been very interesting and we have had the honour to meet many individuals who have had the kindness of helping us with our work. Therefore, we would now take this opportunity to thank them. First of all, we would like to thank our industrial supervisor and the CIO of Volvo Logistics, Ingrid Lundberg. Without her help, this work would not have been possible. We would also like to thank our academic supervisor, Assoc. Prof. Urban Nulden. Both Åke Boije af Gennäs and Krister Eliasson from AB Volvo helped us by contacting some companies within the AB Volvo Group and it is thanks to them we made contact with Ingrid Lundberg. We would also like to thank PhD. Kalevi Pessi and PhLic. Håkan Enquist for help us with our work. Finally, we would like to thank all other persons who have helped us in our work, especially all the respondents.

Göteborg, 27<sup>th</sup> of January 2005

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Peter Grewal

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Fredrik Knutsson

# TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	BACKGROUND.....	1
1.2	PURPOSE AND RESEARCH QUESTION.....	2
1.3	DELIMITATIONS .....	2
1.4	EXPECTED RESULTS .....	2
1.5	DISPOSITION.....	2
<b>2</b>	<b>THEORETICAL FRAMEWORK .....</b>	<b>4</b>
2.1	CORPORATE GOVERNANCE .....	4
2.2	IT GOVERNANCE BACKGROUND.....	5
2.2.1	<i>Defining IT Governance .....</i>	<i>6</i>
2.2.2	<i>Why is IT Governance necessary?.....</i>	<i>8</i>
2.2.3	<i>Differences between IT Governance and IT Management.....</i>	<i>9</i>
2.3	IT GOVERNANCE ORGANISATION.....	9
2.4	IT GOVERNANCE DECISIONS.....	11
2.4.1	<i>IT Governance Decision Areas.....</i>	<i>11</i>
2.4.2	<i>IT Governance Archetypes for Decision Rights.....</i>	<i>14</i>
2.5	IT GOVERNANCE WORK .....	15
2.5.1	<i>According to CobiT .....</i>	<i>15</i>
2.5.2	<i>According to IT Governance Institute .....</i>	<i>17</i>
2.6	AREAS THAT INFLUENCE IT GOVERNANCE .....	19
2.6.1	<i>Link between business and IT.....</i>	<i>19</i>
2.6.2	<i>Organisational Communication .....</i>	<i>20</i>
2.6.3	<i>Approaches to communicate.....</i>	<i>21</i>
2.6.4	<i>Organisational culture .....</i>	<i>22</i>
2.6.5	<i>Conflicts.....</i>	<i>22</i>
2.7	BENCHMARKING DECISION RIGHTS AND ACCOUNTABILITY .....	23
2.8	SUMMARY.....	26
<b>3</b>	<b>METHOD .....</b>	<b>27</b>
3.1	METHODOLOGICAL PROCEDURE .....	27
3.2	INDUCTIVE REASONING .....	27
3.3	BACKGROUND TO THIS MASTER THESIS.....	27
3.4	LITERATURE STUDY .....	28
3.5	EMPIRICAL STUDY.....	28
3.6	RELIABILITY AND VALIDITY.....	30
<b>4</b>	<b>EMPIRICAL STUDY.....</b>	<b>32</b>
4.1	ABOUT VOLVO LOGISTICS CORPORATION .....	32
4.2	IT GOVERNANCE GOALS .....	33
4.3	IT GOVERNANCE ORGANISATION.....	33
4.3.1	<i>Roles and responsibilities .....</i>	<i>33</i>
4.3.2	<i>IT Governance Connections .....</i>	<i>37</i>
4.4	IT GOVERNANCE WORK .....	38
4.4.1	<i>IS/IT Strategies .....</i>	<i>38</i>
4.4.2	<i>IT Governance decisions .....</i>	<i>40</i>
4.4.3	<i>IS/IT investments.....</i>	<i>41</i>
4.4.4	<i>IS/IT education at Volvo Logistics.....</i>	<i>44</i>
4.5	AREAS THAT INFLUENCE IT GOVERNANCE .....	45
4.5.1	<i>Business and IS/IT Alignment.....</i>	<i>45</i>
4.5.2	<i>Decision makers knowledge about IS/IT .....</i>	<i>48</i>
4.5.3	<i>Organisation.....</i>	<i>48</i>
4.5.4	<i>Organisational communication .....</i>	<i>49</i>
4.5.5	<i>Conflicts, criticism and culture.....</i>	<i>50</i>
4.6	RESULTS FROM THE BENCHMARKING DECISION RIGHTS AND ACCOUNTABILITY.....	51
<b>5</b>	<b>DISCUSSION.....</b>	<b>52</b>

5.1	IT GOVERNANCE CONCEPT .....	52
5.2	IT GOVERNANCE ORGANISATION .....	52
5.3	IT GOVERNANCE WORK .....	54
5.4	AREAS THAT INFLUENCE IT GOVERNANCE .....	57
5.5	THE IT GOVERNANCE BENCHMARK .....	59
5.6	FURTHER RESEARCH .....	60
<b>6</b>	<b>CONCLUSIONS .....</b>	<b>61</b>
<b>7</b>	<b>REFERENCES.....</b>	<b>63</b>
	<b>APPENDIX A - GOVERNANCE ARRANGEMENTS MATRIX.....</b>	<b>1</b>
	<b>APPENDIX B - GOVERNANCE PERFORMANCE SURVEY .....</b>	<b>2</b>
	<b>APPENDIX C – INTERVIEW TEMPLATE IN SWEDISH.....</b>	<b>3</b>
	<b>APPENDIX D – VOLVO LOGISTICS PROCESSES .....</b>	<b>6</b>

## TABLE OF FIGURES

Figure 1 – Business Technology, connection between business and IS/IT .....	1
Figure 2 - Framework that linking corporate and Key Asset Governance (Weill and Ross 2004, p.5).....	4
Figure 3 - IT Governance framework according to the IT Governance Institute (2003, p.12).....	7
Figure 4 - Positioning of IT Governance and IT Management (Peterson see Grembergen 2004, ).....	9
Figure 5 - Primary and Secondary Stakeholders in IT Governance (Peterson see Grembergen 2004,) .....	10
Figure 6 - CobiT IT Processes defined within the four domains (CobiT 2003, p.5) .....	17
Figure 7 - Focus areas of IT Governance (IT Governance Institute 2003, p.20).....	18
Figure 8 - Balance between strategies (Pearlson 2001, p.16).....	18
Figure 9 - Governance Arrangements Matrix (Weill and Ross 2004, p.11) .....	24
Figure 10 - How organisations govern (Weill and Ross 2004, p.64).....	24
Figure 11 - Volvo Logistics organisation, Volvo Logistics internal material .....	32
Figure 12 - Volvo Logistics global IS/IT organisation, Volvo Logistics internal material .....	35
Figure 13 - Considered factors when Volvo Logistics IS/IT strategy was formulated, Volvo Logistics internal material .....	38
Figure 14 - The matrix show which Governance Archetypes are used by Volvo Logistics for different Governance Decisions. ....	40

## LIST OF TABLES

Table 1 - Definitions of IT Governance (Grembergen, 2004,).....	6
Table 2 - Framework for the key IT Governance decisions (Weill and Ross 2004, p.27).....	12
Table 3 - Key players in IT Governance Archetypes (Weill and Ross 2004, p.60).....	15
Table 4 - Respondents positions at Volvo Logistics.....	29
Table 5 - Degree of standardisation and structuring, (Patel and Davidson 1994, p.62). ....	29
Table 6 - IS/IT responsible and participation within Volvo Logistics, Volvo Logistics internal material .....	35

# 1 INTRODUCTION

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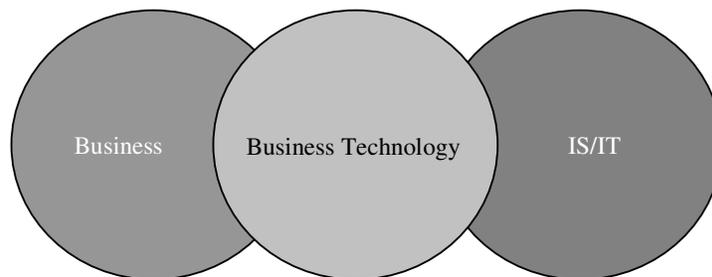
*This chapter provides a background to our thesis and gives the reader an introduction to the subject. It also contains a problem description, our research question, and the purpose of our thesis. Finally, we present our delimitations of this thesis, expected results, and the thesis disposition.*

---

## 1.1 BACKGROUND

This Master thesis is the result of the final 20 weeks of the Business Technology Master program at the IT-university of Göteborg. The purpose of this Masters thesis is to give us an opportunity to use our knowledge, find new relevant information, and work in a scientific way.

The purpose of the Business Technology Master program is to align Information System (IS), Information Technology (IT) and the business within a company to each other. By doing this, it is possible for a company to reach its business objectives that are set by high demands. A guideline for this Master thesis is that it should involve both business and IS/IT.



*Figure 1 – Business Technology, connection between business and IS/IT*

Organisations today, are becoming more global and work in a new era of competition that is faster and more turbulent (Grembergen, 2003). According to IT Governance Institute (2003), IT is needed to initiate and sustain economic activities and has become an integral part of most companies business. In order to deal with global and dematerialised transactions IT is necessary. A greater part than before of companies market value depends on intangible assets such as for example information and knowledge and revolves around the use of IT.

Cap Gemini Ernst & Young (2004) performed a study with CIOs from 35 large companies and authorities in Sweden, during the fall 2003. The study showed that an important factor to achieve an effective IS/IT activity is to have governance that clarifies roles for the executive management team, the business, and suppliers of IT services. Furthermore, the study showed that seven of ten respondents thought that their executive management team did not have expressed goals for IT. This can result in that the cost efficiency for IT is affected, according to the respondents. The study also showed that there was a focus on lowering IT costs within many of the companies, something that can result in that they

miss the increased revenues, and the more effective business that IT can make possible. Still, one of three executive managements considers IT as a cost. Since IT is necessary for many companies to enabling and supporting company goals, good IT Governance is required (IT Governance Institute, 2003). Today, global logistics companies, often depend of IS/IT since they need to keep track of their transported goods around the world. This means that they can benefit from good IT Governance.

## **1.2 PURPOSE AND RESEARCH QUESTION**

The purpose with this master thesis is to study IT Governance, validate theories against a global logistics company, and document new empirical findings. The global logistics company will be studied is Volvo Logistics and our research question is the following:

*“What should a global logistics company consider regarding IT Governance?”*

Volvo Logistics IT Governance function will be examined and compared to academic research. We will divide our research into the following areas: IT Governance organisation, IT Governance decision areas, IT Governance work, and areas that influence IT Governance.

## **1.3 DELIMITATIONS**

IT Governance consists of several stakeholders and they can be divided into primary and secondary stakeholders (Peterson in Grembergen (2004)). The primary stakeholders consists of corporate executives, business managers and IT managers. In this thesis we will only interview primary stakeholders. We will only interview employees from Volvo Logistics Göteborg office in Sweden and do not consider other regions.

## **1.4 EXPECTED RESULTS**

Our expected results are a comparison of existing theories about IT Governance and documentation of new findings in areas such as roles, responsibilities, organisation, and communication. Since most research about IT Governance comes from either a very business oriented area or a very IS/IT oriented area, we will try to focus our work between these areas and connect them to each other. The material about IT Governance we will present in this thesis could be used by people responsible for IT Governance and it does not matter if they have a background from IS/IT or from other parts of the business. We will also give Volvo Logistics a clear and understandable view over their IT Governance and some suggestions about how they can improve their IT Governance.

## **1.5 DISPOSITION**

**Chapter 1: Introduction** – This chapter provides a background to our thesis and gives the reader an introduction to the subject. It also contains a problem description, our research question, and the purpose of our thesis. Finally, we present our delimitations of this thesis, expected results, and the thesis disposition.

**Chapter 2: Theoretical framework** – In this chapter, relevant theoretical findings will be presented. The chapter begins with explaining corporate governance and then will IT Governance be defined, why it is necessary and the differences between IT Governance and IT Management. After that a part that explains the roles and responsibilities within IT

Governance, five key IT decision areas within IT Governance and what IT Governance work contain. Then, we present some areas that can influence IT Governance. Finally, we introduce the Governance Arrangements Matrix. It helps visualising decision areas within IT Governance and who makes decisions within these areas. The matrix also shows who gives input to decision makers within different decision areas.

**Chapter 3: Method** – In this chapter we explain how we conducted our research and how this master thesis was made.

**Chapter 4: Empirical study** – This chapter is the result of our empirical study. Here, Volvo Logistics organisation and our respondents opinions about the company's IT Governance are presented.

**Chapter 5: Discussion and conclusions** – In this chapter we discuss both theoretical and empirical findings and compare them with each other.

**Chapter 6: Conclusions** – Our conclusions are presented in this chapter.

## 2 THEORETICAL FRAMEWORK

*In this chapter, relevant theoretical findings will be presented. The chapter begins with explaining corporate governance and then will IT Governance be defined, why it is necessary and the differences between IT Governance and IT Management. After that a part that explains the roles and responsibilities within IT Governance, five key IT decision areas within IT Governance and what IT Governance work contain. Then, we present some areas that can influence IT Governance. Finally, we introduce the Governance Arrangements Matrix. It helps visualising decision areas within IT Governance and who makes decisions within these areas. The matrix also shows who gives input to decision makers within different decision areas.*

### 2.1 CORPORATE GOVERNANCE

To be able to create an understanding of IT Governance and its role within an organisation it is necessary to look at a broader view which can be done through viewing the corporate governance. According to OECD (2004), corporate governance establishes a set of relationships between a company's management, its board, its shareholders, and other stakeholders. Furthermore corporate governance is defined as something that provides structure for determining organisational objectives and monitoring performance to ensure that objectives are determined. Within some nations, it is statutory to have a supervisory board, whose purpose is to protect the shareholders and other stakeholders, such as employees, customers and creditors. This board and the senior management team work with implementation of governance principles and this makes it possible to ensure effectiveness of organisational processes.

Weill and Ross (2004) have made a framework for linking corporate and IT Governance. The framework (see figure 2) illustrates the connection between Corporate Governance and the company's key assets governance. In the figure below the parts that touch IT Governance are marked in grey.

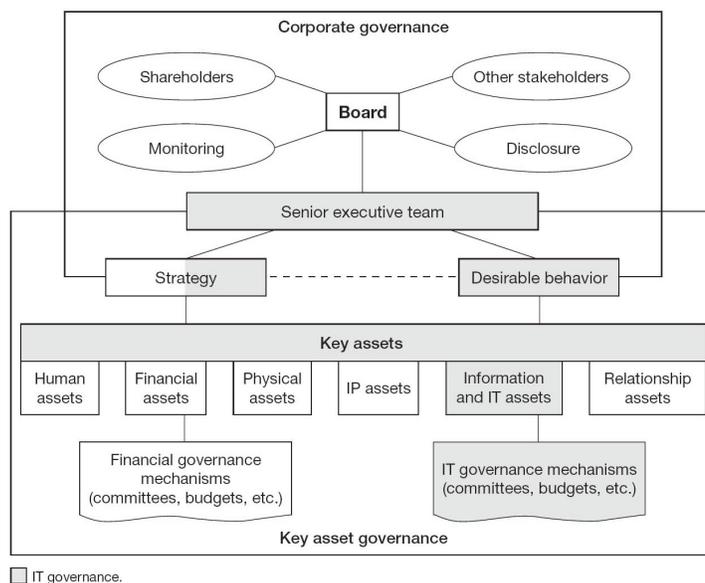


Figure 2 - Framework that linking corporate and Key Asset Governance (Weill and Ross 2004, p.5)

On the top of the framework the board's relationships is depicted. The senior executive team is commissioned by the board and their assignment is to formulate strategies and desirable behaviours for the organisation. Weill and Ross (2004) see a strategy as a set of choices and examples of strategies are "who are the targeted customers" and "what is the unique and valuable position targeted by the firm".

Desirable behaviours embrace the beliefs and culture of the organisation and are defined through strategies, corporate value statements, mission statements, business principles, rituals, and structures. In every enterprise the desirable behaviours are different but should be clearly defined due to that they are the key to achieve effective governance. (Weill and Ross, 2004)

Below the strategy and desirable behaviours in the framework six key assets are illustrated. These assets create business value for the organisation and they are:

- **Human assets:** People, skills, career paths, training reporting, mentoring, competencies.
- **Financial assets:** Cash, investments, liabilities, cash flow, receivables.
- **Physical assets:** Buildings, plant, equipment, maintenance, security, utilization.
- **IP assets:** Intellectual property (IP), including product, service, and process know-how formally patented, copyrighted, or embedded in the enterprises' people and systems.
- **Information and IT assets:** Digitised data, information, and knowledge about customers, processes performance, finance, information systems.
- **Relationship assets:** Relationships within the enterprise as well as relationships, brand, and reputation with customers, suppliers, business units, regulators, competitors, channel partners.

These key assets need mechanisms to be governed and used and it is the senior executive teams' task. Many of these mechanisms are possible to use within several of the assets but within some of the areas it is necessary to have unique mechanisms. To have joint governance mechanisms to ones' assets does not only increase the integration but also leads to a less amount of mechanisms which create more value. (Weill and Ross, 2004)

## 2.2 IT GOVERNANCE BACKGROUND

*"Bad decisions will still be made (no process will ever overcome that), but they will have been made for the right reasons."*

Regarding IT Governance, Butler Group (2003, p.9)

Today's organisations work in a new era of competition that is faster, more turbulent, more global and more digital, simultaneously requiring relentless cost-efficiencies as well as the flexibility to find new ways to innovate and create value (Grembergen, 2003). An organisations market value consists of both tangible and intangible assets. Tangible assets

are things like inventory and facilities. Intangible assets are often more difficult to define and could be for example knowledge, information, reputation and trust. Many assets mentioned above can be supported with help from IT.

A study made by Weil and Ross (2004) showed that managers in leading positions often could not describe their own IT Governance in a proper way. The governance over IT in an organisation is not an isolated activity. It should be an integrated part of the organisations other governance functions and should sustain and extend overall strategies and business objectives (IT Governance Institute, 2003). The purpose of IT Governance within the organisation is to identifying the fundamental decisions that has to be done within the organisation and to find who is the best positioned to make these decisions. The task is not to focus on the daily decision making made within the organisation, which makes it possible to observe the organisation from another level. All the IT decisions that are made within an organisation needs to be managed and this is the role of IT Governance. A well functioning IT Governance has to distribute the decision making to the persons that has the best requirements to understand the needs and their implications. (Weill and Ross, 2004)

### 2.2.1 DEFINING IT GOVERNANCE

Grembergen (2004) compares three definitions of IT Governance (see table 1) and come to the conclusion that even though there are some differences between them they all focus on the same issues such as linking business and IT.

Table 1 - Definitions of IT Governance (Grembergen, 2004,<sup>1</sup>)

<p><i>“IT governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation’s IT sustains and extends the organisation’s strategies and objectives.”</i></p> <p style="text-align: right;">The IT Governance Institute, 2003</p>
<p><i>“The organisational capacity to control the formulation and implementation of IT strategy and guide to proper direction for the purpose of achieving competitive advantages for the corporation”</i></p> <p style="text-align: right;">The Ministry of International Trade and Industry, 1999</p>
<p><i>“IT Governance is the organisational capacity exercised by the Board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT.”</i></p> <p style="text-align: right;">Grembergen, 2002</p>

Weill and Ross (2004) definition of IT Governance is not very similar to the definitions in table 1 and their definition is the following:

<sup>1</sup> [http://library.books24x7.com/book/id\\_6523/viewer.asp?bookid=6523&chunkid=502932983](http://library.books24x7.com/book/id_6523/viewer.asp?bookid=6523&chunkid=502932983)

*“Specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT”*

Weill and Ross (2004, p.8)

Oltsik (2003) has another definition of IT Governance and defines IT Governance as a set of policies, processes, and procedures that support everything that IT does. IT Governance consists of several disciplines such as change management, problem management, release management, availability management, and service level management. One important part of the IT Governance is to eliminate problems such as missed project deadlines, cost overruns, unanticipated downtime, and security lapses.

The purpose of IT Governance is according to the IT Governance Institute to make sure that IT within an organisation is aligned with the rest of the organisation. Responsible use of IT resources should support the organisation to maximize business goals and exploiting new possibilities. The IT Governance function should also manage possible IT related risks. The IT Governance framework according to the IT Governance Institute is showed in figure 3.

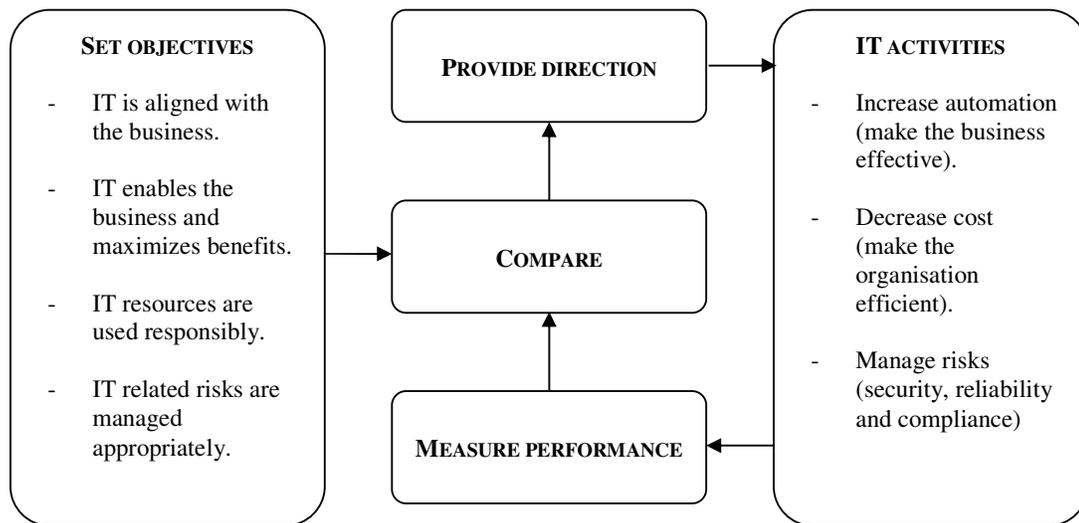


Figure 3 - IT Governance framework according to the IT Governance Institute (2003, p.12)

To make it possible to integrate IT into the organisation it is necessary for board members to participate when IT strategies are formulated and all executives should be involved in IT Governance. Organisational structures should be provided by the chief executive officer (CEO) to support implementation of IT strategies. It is also important that the CIO is business orientated and understands technology, to be able to provide a bridge between them. (IT Governance Institute, 2003)

Effective IT Governance must address the following questions according to Weil and Ross (2004):

1. What decisions must be made to ensure effective management and use of IT?
2. Who should make these decisions?
3. How will these decisions be made and monitored?

An organisation has to ask four key questions before implementing IT Governance and they are “why”, “what”, “how” and “when”. The answer to the first question “why”, should explain benefits with implementing IT Governance. A common answer to the second question “what”, is that IT Governance is the aligning of corporate and IT strategy. This is true but it is more complex than that. The third question “how” is even more difficult to answer than the “what” question. Among other things it has to ensure that IT Governance does not turn into IT segregation. Tools like portfolio management, risk management, balanced scorecard and change management could be used. Finally the “when” questions answer should be now! (Butler Group, 2003)

### **2.2.2 WHY IS IT GOVERNANCE NECESSARY?**

IT Governance is necessary since the average enterprise spends a lot of money on IT. More than 4.2% of the average enterprise revenues are annually spent on IT. These 4.2% include both the IT budget and hidden IT spending outside the IT budget. Overall, IT investments now account for more than 50% of an enterprise’s total capital budget. (Gomoloski in Weil and Woodham (2002))

IT Governance requires a lot of time, work and attention so there has to be something that motivates it. Weil and Ross (2004) mention some reasons why an organisation should try to implement effective IT Governance. First of all, good IT Governance pays off. A study that they did showed that firms that were successful in their IT Governance had more than 20% higher Return On Assets (ROA) than similar firms with the same strategy but with ineffective IT Governance. IT Governance was not the only factor that affected the result but good government often come with good management. Another reason is that IT is expensive and it is therefore important to focus on strategic priorities. In many companies the IT investments exceed 50% of the total capital that is invested. Next reason for an effective IT Governance is to prevent hidden IT spending. Today, IT investments are being made all over an organisation and not in just one place.

Development of new information technologies is being made rapidly today and this creates new business opportunities and threats. If companies should be able to respond fast enough to changes they need a flexible infrastructure. This infrastructure has to be cost effective, meet the business needs today, and be flexible in order to be able to support future business needs. It is often difficult to evaluate value received from IT investments and especially to evaluate them in advance. IT Governance plays an important role when it comes to organisational learning about value received from an IT investment. With an effective IT Governance, mechanisms can be created and through them potential value can be debated within the organisation.

Unfortunately, many IT projects have failed during recent years. According to the Standish Group’s Chaos Report from 2001 no more than 28% of IT projects are successful. One reason that many IT projects fail is that organisations fail to adopt new processes that support the implementation of new technologies. It is important to have the right people involved when making IT decisions and senior managers should not just abdicate to IT executives. Senior management should not get involved in to many IT decisions but decisions taken should be in line with the direction that the senior management is trying to take the organisation.

IT Governance is performed differently in different leading enterprises. It is common that different leading enterprises' IT Governance makes the tension, between IT decisions such as standardisation versus innovation, transparent.

### 2.2.3 DIFFERENCES BETWEEN IT GOVERNANCE AND IT MANAGEMENT

The differences between IT Governance and IT Management are not always clear. Weil and Ross (2004) mean that governance determines who should make decisions and management is the process of making and implementing the decisions. According to Peterson in Grembergen (2004) IT management is focused on the internal effective supply of IT services and products and the management of present IT operations. The responsibility within IT Governance is much broader than IT Management and is focused on performing and transforming the IT in the organisation to better meet present and future demands from the business (internal) and the business customers (external). The differences between IT Governance and IT management according to Peterson in Grembergen (2004) are illustrated in figure 4.

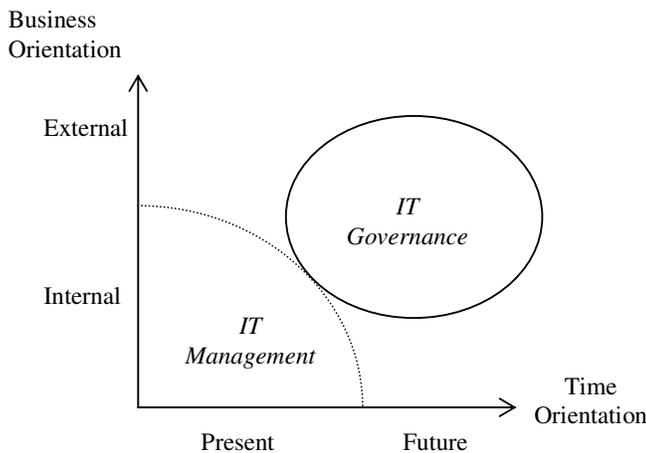


Figure 4 - Positioning of IT Governance and IT Management (Peterson see Grembergen 2004, <sup>2</sup>)

### 2.3 IT GOVERNANCE ORGANISATION

An IT Governance organisation consists of different rules and responsibilities. Clear and unequivocal definitions of roles and responsibilities of the involved parties is a crucial condition for an effective IT Governance framework. It is the responsibility of the Board and Executive management to communicate these roles and responsibilities and to clarify that they are understood throughout the entire organisation. (IT Governance Institute, 2003).

To be able to accomplice a well functioning governance of IT, corporate executives and the business and IT management have to have an important role. This implies that the responsibility is not only the CIOs'. Still, too often, corporate executives and business managers assume that the responsible of the IT Governance is on the CIO (Grembergen, 2004). To have effective IT Governance it is necessary to have several stakeholders sharing the responsibility. It is not sufficient with only the CIO and other IT executives but

<sup>2</sup> [http://library.books24x7.com/book/id\\_6523/viewer.asp?bookid=6523&chunkid=502932983](http://library.books24x7.com/book/id_6523/viewer.asp?bookid=6523&chunkid=502932983)

it is necessary that business management take charge of IT. Peterson in Grembergen (2004) describes primary and secondary stakeholders in IT Governance, see figure 5. The primary stakeholders are IT managers, business managers, and corporate executives. These groups exercise different roles within IT Governance which leads to that it is not necessary for the business executives to understand the technical parts of IT. Their role is rather more to understand the business capabilities of IT, and monitor business value appropriation from IT. By bringing together business and IT managers is it possible to achieve competence in business, social, and technical skills (Peterson, O’Callaghan and Ribbers, 2000). The secondary stakeholders in IT Governance are customers, shareholders, IT vendors, and suppliers.

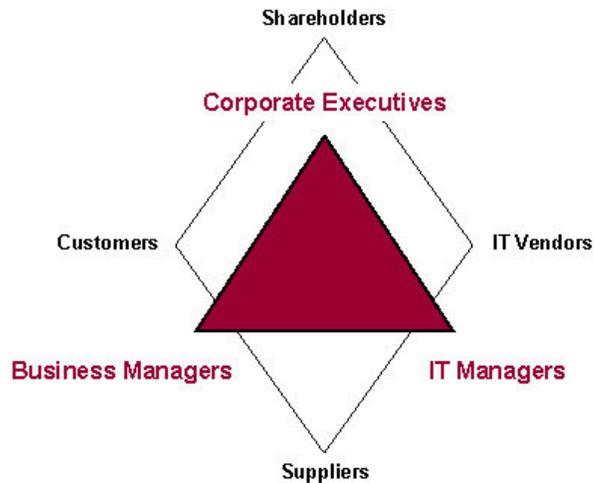


Figure 5 - Primary and Secondary Stakeholders in IT Governance (Peterson see Grembergen 2004,<sup>3</sup>)

The company’s CEO is responsible for carrying out the strategic plans and policies that have been established by the Board. It is the responsibility of the CEO to secure that the CIO both participate and is accepted in the senior level decision-making process (Grembergen, 2004). Cap Gemini Ernst & Young (2004) performed a study in Sweden, and this study showed that the CIO role and its connection to companies’ executive management and business development are becoming more obvious today. The study showed that 59% of the participating companies had a CIO in their executive management team. According to 97% of the respondents, letting the CIO be a part of the executive management team has resulted in that IT has become more business focused and is getting more accepted by business executives. Both the CEO and the CIO are responsible to regularly report to the board and according to Duffy (2002) it is the board’s duty to occupy the role of an independent overseer of business performance and compliance. To be able to ask the right questions and to make the right decisions it is necessary that the individual members of the Board to keep them selves up-to-date of current business models, management techniques, technologies, and of course the potential risks and benefits associated with each of them (Grembergen, 2004). According to IT Governance Institute (2003), IT Governance entails a number of activities for the board of directors and for the executive management. They should be informed of the role and impact of IT on the company, assigning responsibilities, defining constraints within which to operate, measuring performance, managing risk and obtaining assurance.

<sup>3</sup> [http://library.books24x7.com/book/id\\_6523/viewer.asp?bookid=6523&chunkid=814662899](http://library.books24x7.com/book/id_6523/viewer.asp?bookid=6523&chunkid=814662899)

## **Chief Information Officer (CIO)**

Garner Group defines a CIO's mission the following way:

*“To provide technology vision and leadership for developing and implementing IT initiatives that create and maintain leadership for the enterprise in a constantly changing and intensely competitive marketplace.”*

Gartner Group see Truex (2002, p.3)

A CIO should report to a functional senior executive, for example, a Chief Executive Officer (CEO) or a Chief Financial Officer (CFO). Pearlson (2001) defines the following responsibilities for a CIO: The CIO should promote IT as a strategic tool for growth within the organisation and set organisational directions and priorities for the company's architecture. Furthermore, the CIO should act as a business strategy consultant and participate in decision making at executive-level. Another task is to perform the business technology planning which means trying to link business and technology. The CIO should also be responsible for application development and overview emerging organisational initiatives and legacy. IT infrastructure management is another responsibility that should be performed and this is to maintain present technologies and examine emerging technologies. The task of implement and develop strategies for out- and in-sourcing regarding IT and to develop relationships between the organisation and suppliers of IT is also under the CIO's responsibility. A CIO should provide technologies to support improving cooperation between the organisation, suppliers, and customers. When it comes to customer satisfaction management which is to understand and communicate with both internal and external customers to ensure that they are satisfied, the responsibility is the CIO's. Finally, the CIO is responsible for making sure that IT users get the training that they need and provide information regarding IT to executives. The vice-president of Meta Group, Kumar, means that:

*“Leading CIOs in Global 2000 enterprises and government agencies have shifted senior management's perception of IT from a cost centre focused on increasing organisational efficiency to a value provider focused on winning competitive advantage for the organisation.”*

(Kumar, 2003)

## **2.4 IT GOVERNANCE DECISIONS**

### **2.4.1 IT GOVERNANCE DECISION AREAS**

According to Weill and Ross (2004), there are five IT related decisions in every organisation and that these decisions have connections between them. The five decision areas are; IT principles, IT architecture, IT infrastructure, business application needs, and IT investment and prioritization. Each decision needs individual attention but it is important that they are an integrated part to the others decisions, also they can not be isolated. Weill and Ross (2004) have created a framework (see table 2) that contains the five different decisions in order to make a clear connection between decisions. IT principles clarify the company's goal for IT and are placed at the top of the framework to illustrate that these decisions will affect the other decisions. If the IT principles are not clear within a company, the other decisions within the five IT related decision areas probably will be meaningless.

Table 2 - Framework for the key IT Governance decisions (Weill and Ross 2004, p.27).

<b>IT principles decisions</b> High-level statements about how IT is used in the business		
<p style="text-align: center;"><b>IT architecture decisions</b></p> <p>Organisation logic for data, application, and infrastructure captured in a set of policies, relationships, and technical choices to achieve desired business and technical standardisation and integration.</p>	<p style="text-align: center;"><b>IT infrastructure decisions</b></p> <p>Centrally coordinates, shared IT services that provide the foundation for the enterprise's IT capability.</p>	<p style="text-align: center;"><b>IT investment and prioritization decisions</b></p> <p>Decisions about how much and where to invest in IT, including project approvals and justification techniques.</p>
	<p style="text-align: center;"><b>Business applications needs</b></p> <p>Specifying the business need for purchased or internally developed IT applications.</p>	

### **IT principles**

Principles express the company's basic beliefs about its long-term use of technology (Devenport, Hammer and Metsisto, 1989). Principles provide guidelines and rationales for the constant examination and re-evaluation of technology plans (Richardson, Jackson and Dickson, 1990). According to Weill and Ross (2004) detailed IT principles should clarify at least three exceptions for IT in an enterprise:

1. What is the enterprise's desired operating model?
2. How will IT support the desired operating model?
3. How will IT be founded?

Answers to the first and the second question let us know how a company develops and deliver their products and services. They also clarify tomorrow's decisions about infrastructure and applications. New business strategies and organisational learning will evolve from those answers. The third question is about what criteria should apply to IT investments within the cooperation. The investments can either be financed centrally or within every business unit. It is also possible to use a combination of these financing types. In accordance to where the decisions about the IT Investments are made, one can chose either to make the decisions central in the corporation or in the different business units With distinct principles within the organisation it is easier to get managers and technical experts to use them. If the principles are vague, there is a risk that managers will ignore them. (Devenport, Hammer and Metsisto, 1989).

When developing IT principles it is possible to assign a task force. This group should involve senior managers to get their co-operation, which probably will facilitate the group's further work. The composition of the group concerning the number of members and the mix of backgrounds varies from company to company. According to Devenport, Hammer and Metsisto (1989) the task force usually consists of a handful persons with a deep understanding of either the business or the technology and are committed to the process. The task force should start by focusing on identifying the topics it wants to consider and prepare interviews with the senior managers. The purpose with the interviews is to get as much information as possible about broad strategic or organisational issues. It is not about discussing computers but to realize the top manager's view on regarding where the business is headed. The interviews should also discussing issues such as risk, user autonomy, and the role of IT. The next step for the team after the interviews is to discuss

and summarize the results. From the gathering information the task force can list a number of principles.

### **IT architecture**

Today's organizations work in a new era of competition that is faster, more turbulent and more and more global and digital, simultaneously requiring relentless cost-efficiencies as well as the flexibility to find new ways to innovate and create value (Grembergen, 2003). This will result in that the business needs to change constantly and to make that possible it has existed flexibility in the architecture of the organization.

Weill and Ross (2004) describe IT Architecture as the organisation's logic for data, applications, and infrastructure, captured in a set of policies, relationships, and technical choices to achieve desired business and technical standardisations and integration. A company's architecture provides a road map for introducing technology, data, and process standardization to maximize business benefits

### **IT infrastructure**

The IT infrastructure is the foundation of IT capabilities (both technical and human), delivered as reliable shared services throughout the organization, and centrally directed, usually by corporate IT management. The purpose of the IT infrastructure is to enable organization-wide data sharing and cross-business integration and according to Weill, Subramani and Broadbent (2002) the goal of IT infrastructure is to create a unified IT infrastructure that supports long-term investments. Typically, about 55% of an enterprise IT budget is infrastructure (Metagroup; Weill; Barney see Weill, Subramani and Broadbent (2002)).

### **Business applications needs**

Decisions about business applications need to deal with which applications that the enterprise needs to generate value. There are often two objectives in identifying which applications the organisations are in need of. These two objectives, creativity and discipline, can be in conflict with one another. The First objective, creativity, is about identifying new and more effective ways to deliver customer value using IT. These creative solutions can generate interesting technical challenges. Discipline is about architectural integrity. This means that one in default condition must choose applications that fit within the context of the enterprises' architecture. This implies that one has to sacrifice functionality but managers have found that 80% solutions can offer significant business value and it will also reduce technical risks and project costs. (Weill and Ross, 2004)

### **IT investment and prioritization**

To make decisions about IT Investments and priorities is making up ones mind regarding three questions; (1) how much to spend, (2) what to spend it on and (3) how to reconcile differing needs.

How large investments in IT should be is a decision that has to be made. It is not unusual to look at industry benchmark and the spending levels to make this decision. Weill and Ross (2004) claim that successful companies only have used benchmarks as a starting point. It is important to focus on the strategic role that IT plays in the organisation and get the technology to fulfil its objective. To make decisions regarding where the IT investments should be made, one possibility is to use an IT investment portfolio (for more details about IT portfolio see chapter 2.5.3). In the IT investment process, consideration has to be taken to the different needs in different business units but they still have to follow the company's overall needs.

#### **2.4.2 IT GOVERNANCE ARCHETYPES FOR DECISION RIGHTS**

Different archetypes are used by Weil and Ross (2004) to describe different combinations of people who has either decision rights or input rights to IT decisions in an organisation. They use political archetypes and they are Business monarchy, IT monarchy, Feudal, Federal, IT duopoly and Anarchy.

- **Business monarchy:** Senior executives make decisions about IT in a Business monarchy and those decisions affect the whole organisation. Inputs to decisions often come from the CIO or from IT managers in different business units.
- **IT monarchy:** IT professionals make decisions in an IT monarchy. They can consist of IT professionals from corporate teams, business units or a combination of both.
- **Feudal:** The entities in a Feudal archetype are business units, region, or functions. It is based on making independent decisions that are optimised for local needs. This archetype is not common since organisations often want synergies between different business units.
- **Federal:** A combination of involving both the centre of an organisation and business units is a Federal archetype. Participants can be unit leaders, business process owners, IT leaders from business units, and corporate IT leaders. This archetype is the most difficult archetype used for decision making since enterprise leaders and business unit leaders have different concerns. Another issue is that big and powerful business units often get more attention and influence, which can lead to dissatisfaction for the smaller units.
- **IT duopoly:** When a group of IT executives and another group make decisions in a two-party agreement it is an IT duopoly. The group of IT executives can consist of IT people from a central group, business units, or a combination of them. The other group can consist of for example top management, business unit leaders or business process owners. IT duopoly never has both corporate and local representation, something that the federal model always has.

- **Anarchy:** Isolated individual or small group make decisions that suit their local needs in the Anarchy model. This model is usually not formally sanctioned but can be used when rapid responsiveness to local needs is required. A drawback is that it is often expensive to support.

Table 3 lists the distinguishing characteristics of different governance arrangements and how key players are classified in IT Governance archetypes.

Table 3 - Key players in IT Governance Archetypes (Weill and Ross 2004, p.60)

	C-level executives	Corporate IT and/or business unit IT	Business unit leaders or key business process owners
<b>Business monarchy</b>	X		
<b>IT monarchy</b>		X	
<b>Feudal</b>			X
<b>Federal</b>	X	X	X
	X		X
<b>IT duopoly</b>	X	X	
		X	X
<b>Anarchy</b>			

## 2.5 IT GOVERNANCE WORK

There are many different IT Governance models available today but the one of the most famous IT Governance models is CobiT. The CobiT model is very detailed and easy to use. The IT Governance Institute has developed a model that is based on the CobiT model but is more general and because of this it gives a holistic view over IT Governance. The idea with this model is to apply parts from the CobiT model in it.

### 2.5.1 ACCORDING TO COBIT

CobiT (2000) is short for Control Objectives for Information and related Technology and presents an international and generally accepted IT control framework enabling organisations to implement an IT Governance structure throughout the company. Using CobiT helps organisations implementing IT Governance and is presents a generally IT control framework.

CobiT (2000) is business orientated and describes how IT should be governed from an executive management and business perspective. It proposes that IT needs to deliver the information that an organisation needs in order to achieve its objectives. The target audience for the CobiT framework is the management and business process owners since the model promotes processes. The premise that CobiT starts from is that IT resources needs to be managed by a set of naturally grouped processes in order to provide the information that an organisation needs to achieve its objectives. The CobiT framework consists of four domains and those domains consist of one high level Control Objectives for each IT process and there are 34 different Control Objectives that includes everything from strategy to development, operation, and support. The purpose of the model is to help the management or anyone who makes orders which demands they should have on the control objectives, which Key Performance Indicators that should be used and how one

should measure the mature ness of the processes and to identify the risks. The four domains, see figure 6, are the following:

- **Planning and Organisation** includes handling of strategies and tactics. The purpose is to identify how IT can support the achievement of the business objectives. It is important that an IT strategy plan is made and communicated throughout the organisation. This part also includes the responsibility to manage IT investments, projects, quality, and human resources. To handle this it is necessary to define the IT organisation and relationship.
- **Acquisition and Implementation:** To be able to realize the IT strategies that were developed in the domain above it is necessary to identify, develop, or acquire IT solutions. It is also important to implement and integrate the solutions into the business process. Furthermore, this domain is responsible for changes and maintenance of existing systems to make sure that the lifecycle is continued.
- **Delivery and Support** is responsible for the actual delivery of the required service. This includes tasks as; define and manage service levels, ensure security, identify and allocate costs, educate and train users, assist and advise customers. Also included are managing the configuration, problems and incidents, data, facilities and operations. To be able to deliver services it is necessary to develop a support process.
- **Monitoring:** All the IT processes that the IT organisation is composed of needs to be regularly monitored. This is necessary if one want to be able to get the sought-after effect of the companies IT.

All the 34 IT processes can be applied at different levels within an organisation. This means that some of the processes will be applied at an enterprise level, some on an IT function level and others at a business process owners' level. These 34 high-level control objectives are broken down into 318 detailed control objectives by CobiT (2000).

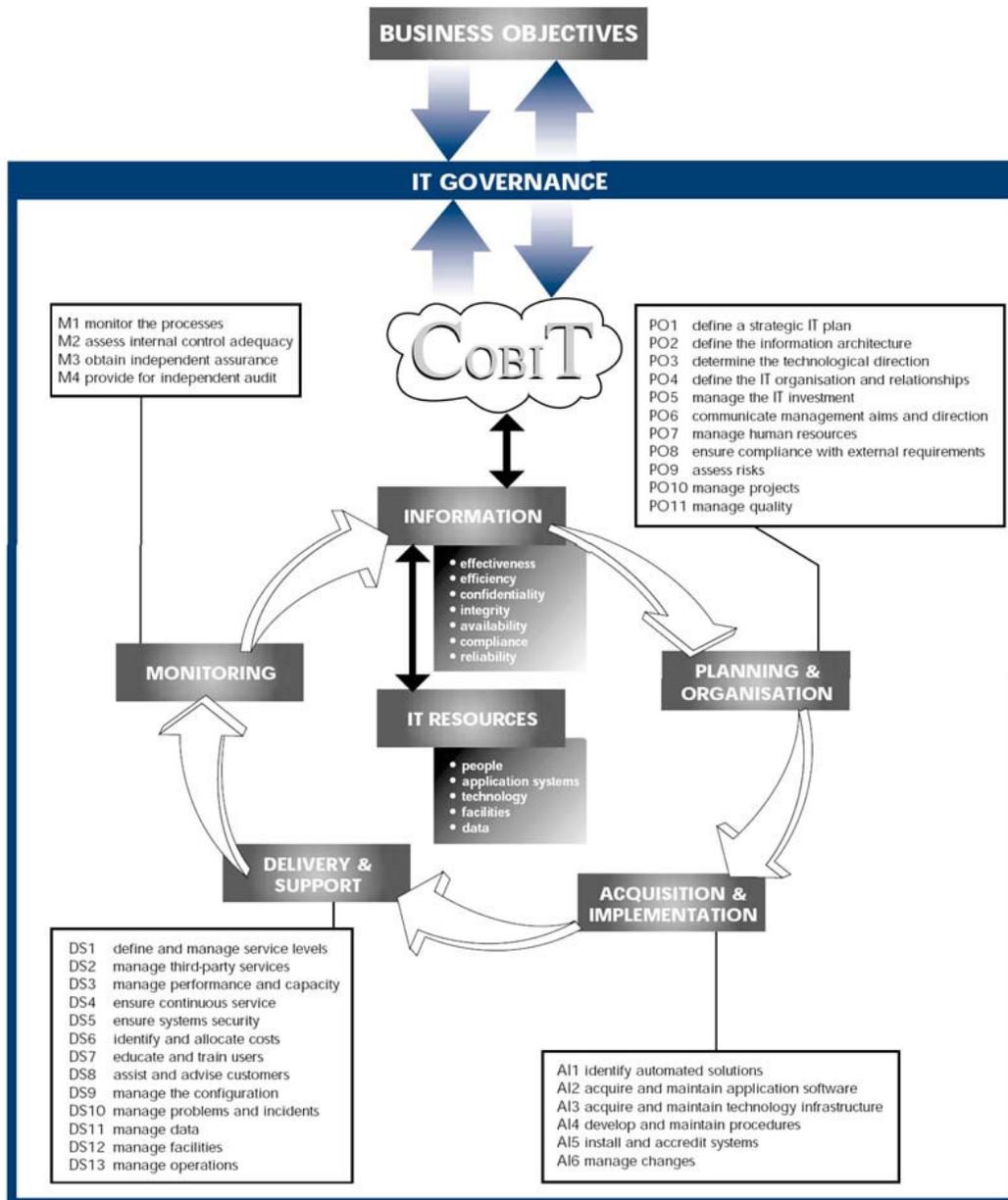


Figure 6 - CobiT IT Processes defined within the four domains (CobiT 2003, p.5)

### 2.5.2 ACCORDING TO IT GOVERNANCE INSTITUTE

According to the IT Governance Institute (2003), IT Governance is concerned about two things: IT's delivery of value to the business and mitigation of risks. Value delivery is driven by strategic alignment and risk management is driven by embedding responsibility into the enterprise. IT Governance is a continuously work and both value delivery and risk management need to be supported by resources and results should be measured to ensure that the results are obtained.

They divide IT Governance into five parts, see figure 7. The two areas described above are outcomes and the three remaining areas are drivers and they are: strategic alignment, resource management and performance measurement. All these are driven by stakeholder

value. The figure below also shows the IT Governance life cycle which can be entered at any point. The life cycle is also affected by the organisations surrounding environment. Factors that can influence the company's environment could be:

- stakeholder values
- the mission, vision and values of the enterprise
- the community and company ethics and culture
- applicable laws, regulations and policies
- industry practise

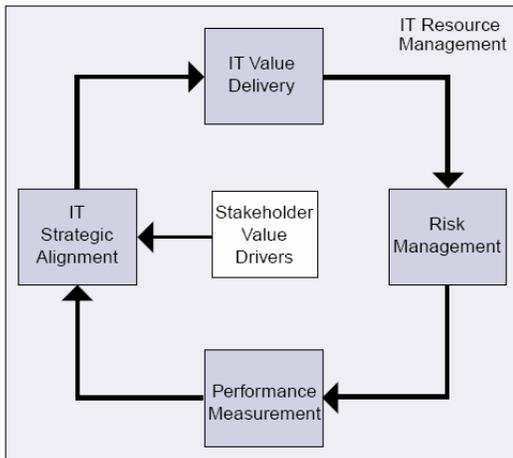


Figure 7 - Focus areas of IT Governance (IT Governance Institute 2003, p.20)

**Strategic alignment** is about how to align IT strategies with business, what to consider when formulating IT strategies and how to implement IT strategies. According to Pearlson (2001), the company's business-, organisation- and information-strategies have to be balanced with each other (see figure 8). If one of them is changed, it will affect the other strategies and they also have to be changed.



Figure 8 - Balance between strategies (Pearlson 2001, p.16).

**Value delivery** should focus on optimising the cost and proving the value of IT. IT value can be of both quantitative and qualitative value for the organisation. To achieve an effective IT value delivery it is necessary to manage both the actual costs and the return on investment.

**Risk management** is necessary that enterprises handles the incidents within the organisation, these can otherwise result in negative economical consequences. There are also demands from governments after bookkeeping scandals like Enron and WorldCom in U.S. This has contributed to the creation of the Sarbanes-Oxley (SOX) act in 2002. The SOX act increase the demand for that companies management systems include internal supervision to secure that the enterprises financial reports are correct and reliable (Carlbring, 2004). To have a good risk management of the organisation's information system could contribute to the success of the company, and even the survival. A survey from Information Security Forums (Carlbring 2004 see ISF 2000, p.1) showed that companies that handle their information risks in an active and systematic order were struck by half as many incidents as companies without and they reduced economical reduction by one fifth.

Risk Management should be considered as a strategic business process where a company's risks are integrated with the corporate governance. According to DeLoach (2000) it is possible for a company to consider and manage risks before they become a reality. By integrate risks on all levels within a company, awareness about the company's risks can be achieved and a holistic view over them. Knowledge about a company's risks and how they should be managed gives an increased value to the company by creating better information for decision making according to DeLoach (2000). This is called enterprise-wide risk management according to DeLoach (2000) and it should be considered as a continuous strategic process that aligns corporate strategies, processes, employees, technologies and knowledge.

**Resource management** is about how the organisations resources best can be used and managed.

**Performance measurement** handles questions about how to measure effects of decisions and how to get a holistic view of running IT-projects. Performance measurement is necessary to manage the other four factors.

## **2.6 AREAS THAT INFLUENCE IT GOVERNANCE**

There are many areas that influence and affect IT Governance and some of them are presented in this chapter. The areas presented in this chapter are: link between business and IT, organisational communication, approaches to communicate, desired behaviours in an organisation, organisational culture and conflicts.

### **2.6.1 LINK BETWEEN BUSINESS AND IT**

A key concern of business executives is the alignment between business and IT. Strategic alignment purpose is to focus on performs to achieve connected goals across the IT and other functional organisations, like finance, marketing, HR, R&D, manufacturing (Luftman and Brier, 1999). To achieve a link between business and IT, it is necessary to see how IT is aligned with the business but it is also important to see how the business should be aligned with IT. Achieving alignment is an evolutionary task and requires powerful support from senior management, strong leadership, good working relationships, reasonable prioritization, trust, and effective communication. But it is also important to have an extensive understanding of the business and technical environments.

Luftman and Brier (1999) performed a survey to find out which enablers and inhibitors that exists to achieve alignment. The survey was made by 500 firms in 15 industries and took five years to complete. Analysis of the survey data showed that the six most important enablers and inhibitors, ranked according to importance are:

#### **Enablers**

- Senior executive support for IT
- IT involved in strategy development
- IT understands the business
- Business/IT partnership
- Well prioritised IT projects
- IT demonstrates leadership

#### **Inhibitors**

- IT/business lack close relationships
- IT does not prioritize
- IT fails to meet its commitments
- IT does not understand business
- Senior executives do not support IT
- IT management lacks leadership

The authors reflected over how it is possible to maximize alignment enablers and minimize inhibitors. They suggest a six-step approach that is designed to make strategic alignment work in any company. The six steps are:

- **Set the goals and establish a team.** First ensure that there is an executive business sponsor and champion for the assessment. After that, assign at team of both business and IT leaders and take representatives from the major business functional organisations. Theirs purpose is to investigate the maturity regarding the alignment between business and IT. Next task for the team is to define opportunities to reach a better harmonious relationship between business and IT.
- **Understand the business-IT linkage.** In this step, the organisation must understand the current and future business and IT environments.
- **Analyse and prioritise gaps.** The purpose of this third step is to understand the necessary activities that improve the business and IT alignment.
- **Specify the actions (project management).** The fourth step will carry out the recommendations to improve the business and IT alignment. To each of the prioritized gaps assign specific remedial tasks with clearly defined deliverables, ownership, timeframes, resources, risks, and measurements.
- **Choose and evaluate success criteria.** In this step the team reviewing the goals and regularly discussions will accomplish selecting the measurement criteria to evaluate the implementation of the project plans. The review of the measurement should show how and why the objectives are or are not being met.
- **Sustain alignment.** Obtaining alignment between IT and business is a difficult task. To sustain the benefit from IT, alignment behaviour must be developed and cultivated according to Luftman and Brier (1999).

## **2.6.2 ORGANISATIONAL COMMUNICATION**

Organisational communication is an interdisciplinary area that involves the intersection of organisation and communication theory. Organisational communication is according to Miller (1999), how the context of the organisation influences the communication processes and how the symbolic nature of communication differentiates it from other forms of organisational behaviour.

Classical organisational theories often describe organisations as highly standardised, specialised, and predicable. These theories are still used by some organisations today when, for example, job fitting an employee to his or hers optimal task. Communication in these theories is often formal, task-related, written and the direction of communication is from the top of the organisation and down. Another thing that classical organisational behaviour theories believe is that the decision process is entirely logical and rational according to Miller (1999). These completely rational decision process theories have become more rejected and models that include irrational components like for example intuition are preferred, since they better describe how decision makers in organisations work.

In a perfect world for organisations, all employees work solely for the good of the organisation. Obvious this is not the case and since the human being is a competitive animal, people see power as something important for their own wellbeing and personal advancement (Butler Group, 2003). This can result in that decisions taken not always support an organisation in the best possible way. Things like cultural clashes and power struggles can lead to questions like “whose way is it going to be?” instead of “which way is the best?” (Grembergen, 2004).

It is important to have a two way communication between business and the IT department in order to have a good relation between them and to be able to cooperate. To be able to get a business and IT alignment it is of great importance to make sure that departments share knowledge with each other. It is important to facilitate the sharing of knowledge and management and this could be done by for example having people from the IT staff working in the business units and people from business units working in the IT department. Another way of doing this can be by continuously educating the employees. (Grembergen, 2004)

### **2.6.3 APPROACHES TO COMMUNICATE**

In a study made by Weil and Ross (2004), they found that the more IT Governance was formally communicated out to the organisation the more effective it was. Information that was communicated was for example how their IT Governance worked and the expected outcomes from it. The meaning of communication mechanisms is to spread meaningful information, something that is very important since IT initiatives often affect both business processes and the organisational culture.

When Senior Management announces and clarifies priorities they usually get a lot of attention and this form of communicating governance is very common. Another communication approach is through formal committees and IT Governance in an executive level can often be folded onto ongoing work. It is also a good idea to create committees lower in the organisation. This can result in a greater understanding of governance decisions about architecture, infrastructure, and individual business application projects. Communication within and between committees are desired and can help aligning their efforts with governance initiatives.

IT Governance needs an organisational home like for example an IT Governance department or a CIO. The reason for this is that IT Governance needs someone to communicate, educate about IT Governance and someone to look after that individual mechanisms are aligned and do not interfere with each other. Those who are responsible

for the IT Governance must insure alignment between their governance of IT and the organisations other key assets governance. Those assets are “Human assets”, “Financial assets”, “Physical assets”, “IP assets”, “Relationship assets” and are described more detailed in chapter 2.1 Governance.

When affected managers ignore IT Governance decisions it is important to explain why and how these decisions should be carried out. The reason for this is to clarify if the affected manager ignores decisions because they lack understanding or because they do not agree. A Web-based portal can provide a central communication channel for IT Governance. It can educate members in the organisation about IT Governance processes and this is a very common ways of doing this. By making for example enterprise standards and policies available the transparency of governance can be increased.

#### **2.6.4 ORGANISATIONAL CULTURE**

Organisational culture is according to Bang in Kaufmann and Kaufmann (1998) those common norms, values and apprehension of reality that are developed in an organisation when members interact with each other and their surroundings. Kaufmann and Kaufmann (1998) mean that the purpose with organisational culture is to create identity, stability, meaning and organisational commitment for the employees. They also believe that a strong organisational culture is characterised by five elements according to and they are the following:

1. Values and norms that are clearly defined
2. Human resources are important
3. Charismatic leaders
4. Rituals and ceremonies
5. Expectations about steering are clear

The larger an organisation is the harder it is to establish a common culture for the whole organisation and that weak cultures often has more formal structures that coordinates behaviour within organisations, than strong cultures. Large organisations also have several subcultures within the framework of the large culture. These subcultures can for example be departments or groups of professions. (Kaufmann and Kaufmann, 1998)

#### **2.6.5 CONFLICTS**

Conflicts are according to Putnam and Poole in Miller (1999, p.195) “*the interaction of interdependent people who perceive opposition of goals, aims, and values, and who see the other party as potentially interfering with the realization of these goals*”. Kaufmann and Kaufmann (1998) think that conflicts between people and groups are likely an inevitable phenomena and a natural part of organisations working days.

Sortland in Kaufmann and Kaufmann (1998), state that the conflicts can be represented in two ways, a negative way, and a positive way. The negative way is that conflicts is a sign of illness and prevent development. The positive way is that conflicts can be a driving force for changes and conflicts are essential for development. A negative effect of conflicts is for example negative emotions such as anger. Another one is that when two groups are in conflict they sometimes over dramatise differences and speaks of the other group in a bad way. This kind of conflict can lead to something called groupthink. Groupthink is a phenomenon that can be triggered by factor like strong leadership, a strong unity of the

group, an unstructured problem, and pressure to find solutions to problems. Symptoms of groupthink can be that the group thinks that it is them against the others, their own morale is the right one, experienced invulnerable and they put pressure against deviants. Consequences of group thinking are often a limited and a preconceived behaviour when seeking for information and an insufficient evaluation of alternatives. Conflicts that lead to groupthink can make it difficult for one group to understand other group's train of thought.

The positive effects of conflicts are that they can make changes easier, enhance a group's loyalty, enlighten problems, increase understanding for an opposite party's opinion and lead to better decisions.

## **2.7 BENCHMARKING DECISION RIGHTS AND ACCOUNTABILITY**

The Governance Arrangements Matrix is described by Weil and Ross (2004) and can help visualise decision areas within IT Governance and who makes decisions within these areas. The matrix also shows who gives input to decision makers within different decision areas. When performing a Governance Performance Survey, IT Governance performance is measured. If The Governance Arrangements Matrix is combined with the Governance Performance Survey a benchmark is performed that can be compared with 256 other companies that have conducted the benchmark.

### **The Governance Arrangements Matrix**

The Governance Arrangements Matrix (figure 9) handles the two following questions about IT Governance: *What decisions must be made and who should make them?* The first question "*What decisions must be made?*" is addressed in the part of the matrix that is named Governance Decision (see chapter 2.4.1) and the second question "*Who should make them?*" is addressed in the part of the matrix that is named Governance Archetype (see chapter 2.4.2). All five Governance Decision areas have an "Input" field and a "Decision" field. These fields should show who gives input to the different Governance Decisions and who makes the different Governance Decisions. Depending on who makes Governance Decisions, different Governance Archetypes is created. If for example an IT specialist is the only one who makes decisions about IT Principles in a company they have a Governance Archetype named IT Monarchy. The required information for The Governance Arrangements Matrix should be filled in the matrix by people who are involved in and has knowledge about a company's IT Governance.

**GOVERNANCE DECISION**

ARCHETYPE \ DECISION	IT Principles		IT Architecture		IT Infrastructure		Business Application Needs		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy										
IT Monarchy										
Feudal										
Federal										
Duopoly										
Anarchy										
Don't Know										

Figure 9 - Governance Arrangements Matrix (Weill and Ross 2004, p.11)

Weil and Ross (2004) study about how enterprises govern their IT was conducted in 256 different companies and the result is showed in figure 10. The number in each cell of the matrix represents their percentage of the whole column they are in. This means that the numbers in each column adds up to 100% and the grey areas show the most common pattern about how enterprises govern there IT.

**GOVERNANCE DECISION**

ARCHETYPE \ DECISION	IT Principles		IT Architecture		IT Infrastructure		Business Application Needs		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy	0	27	0	6	0	7	1	12	1	30
IT Monarchy	1	18	20	73	10	59	0	8	0	9
Feudal	0	3	0	0	1	2	1	18	0	3
Federal	83	14	46	4	59	6	81	30	93	27
Duopoly	15	36	34	15	30	23	17	27	6	30
Anarchy	0	0	0	1	0	1	0	3	0	1
No data or do not know	1	2	0	1	0	2	0	2	0	0

Figure 10 - How organisations govern (Weill and Ross 2004, p.64)

### **The Governance Performance Survey**

The purpose of the Governance Performance Survey is to measure effectiveness of organisations IT Governance and it should be answered by at least ten managers from the senior management team. Their averaged result should then be calculated. The Governance Performance Survey consists of four main questions and they are the following:

1. How important are the following outcomes of your IT governance, on a scale from 1 (Not important) to 5 (Very important)?
  - Cost-effective use of IT
  - Effective use of IT for growth
  - Effective use of IT for asset utilization
  - Effective use of IT for business flexibility
  
2. What is the influence of the IT governance in your business on the following measures of success, on a scale from 1 (Not successful) to 5 (Very successful)?
  - Cost-effective use of IT
  - Effective use of IT for growth
  - Effective use of IT for asset utilization
  - Effective use of IT for business flexibility
  
3. What are the areas where IT governance works best? Why?
  
4. What are the areas where IT governance is not effective? Why?

### **Calculating a result from the Governance Performance Survey**

The first question affect the importance of different outcomes and the second question answer how well the present IT Governance meets the different outcomes. Since all companies do not rank their outcomes the same way, answers from the first question are used to weight answers from the second question. Weighted scores from the two questions are then added and divided by the maximum score that could be attained. The maximum score is 100 and the minimum score is 20. Mathematically this result in the following formula (Weill and Ross 2004, p.240):

$$\sum_{n=1to4} (\text{importance of outcome Q1} * \text{influence of IT Governance Q2}) * 100$$

---

$$\sum_{n=1to4} (5 (\text{importance of outcome}))$$

### **Combining the IT Governance Arrangements Matrix with the Governance Performance Survey**

Weil and Ross studied 256 organisations in 23 countries and the results from their Governance Performance Survey's are shown in the Governance Arrangements Matrix below. Each column adds up to 100% and the most common patterns are shaded in figure 11. Examples of participating organisations are UPS, UNICEF, Pfizer, DuPont, and

Motorola. The average result from the participating organisations was 69 and the score for the top one third organisations was over 74. Maximum possible score was 100.

## **2.8 SUMMARY**

There are many different definitions of IT Governance and this causes confusion. According to Peterson in Grembergen (2004) there is a difference between IT management and IT Governance since IT Governance is much broader than IT management. The corporate governance and IT Governance should be integrated with each other according to Weil and Ross (2004).

An important part of IT Governance is making decisions about how the company's IS/IT should make it possible to reach its business goals. Decisions about IS/IT can be divided into five areas according to Weill and Ross (2004) and they are: IT principles, IT architecture, IT infrastructure, business application needs, and IT investment and prioritization. Different individuals and groups should make decisions about the five areas mentioned above. To give decisions taken impact it is important to involve the right people. To be able to make these important decisions it is necessary to get relevant information as input. IT Governance work is well described by IT Governance Institute's model that divide IT Governance work into five areas: "strategic alignment", "value delivery", "performance measurement" and "risk management". According to them all these areas should be considered when making decisions about IS/IT. Another model named CobiT, divides IT Governance work into the following four areas: "planning and organisation", "acquisition and implementation", "delivery and support" and "monitoring". The IT Governance Institute's model gives a more holistic view and parts from the CobiT model are used in it. The CobiT is very detailed and easy to use since it provides things like check lists.

Impact of decisions taken within a company is affected by many things such as business and IS/IT alignment, organisational communication, human behaviour and organisational culture.

The Governance Arrangements Matrix can help companies visualising decision areas within their IT Governance and clarify who makes decisions within these areas. When combined with the survey called the Governance Performance Survey, IT Governance performance can be measured and compared with 256 other companies that conducted the benchmark.

## 3 METHOD

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*In this chapter we explain how we conducted our research and how this master thesis was made.*

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### 3.1 METHODOLOGICAL PROCEDURE

To be able to answer our research question it was necessary to use a method and there were two different methods to choose from. They are either qualitative or quantitative and according to Holme and Solvang (1997) they both have their advantages and disadvantages. It is possible to combine both methods so it is not necessary to select only one of them. The reason for this is that both methods has advantages and disadvantages and if they are combined in the right way they can strengthen each other. It is the research question that decides which method to choose and we did choose the qualitative method.

We have chosen a qualitative method since it is characterized by flexibility and this makes it possible to change the study by adding questions and change the order. According to Holme and Solvang (1997), flexibility has both advantages and disadvantages. The advantage is that it is possible to obtain a better and more basic understanding of the research question and the disadvantage is that can be difficult to compare obtained information.

### 3.2 INDUCTIVE REASONING

In our scientific work, we have come to conclusions based on collected information. This information comes from existing theories and our empirical study. The approach we choose for our work is called inductive reasoning. The inductive approach starts out from empiric information. This means that a scientist can formulate their own theories from collected empirical data without first having to find support from an already established theory (Patel and Davidson, 1994). To work inductive means that the scientist try to work unbiased and this makes it possible for the scientist to discover unexpected factors and problems.

### 3.3 BACKGROUND TO THIS MASTER THESIS

The problem area was the result of our own ideas, since we both thought this was an interesting area to study. First we made a planning report of what we wanted to do, how we wanted to do it and how long time it would take to do it. We contacted AB Volvo IT Governance function since we had worked together with them earlier in several courses in our master program, Business Technology. They gave us an opportunity to meet them at their work and we presented our idea. After our presentation they thought this kind of work was more suitable for one company and not the whole Volvo Group because then we had to move the whole work one level since they work with synergy effects within the group. They contacted two Volvo companies in the region, Volvo Penta and Volvo Logistics. Volvo Logistics was the first company to answer that they were interested in our idea and we contacted their CIO. After a meeting with their CIO, we started our work and this master thesis started to take form.

### **3.4 LITERATURE STUDY**

To understand the actual area of interest, a literature study has been made. The literature study started when the planning report for this master was made during the autumn 2004. The major focus on our literature study was when the theoretical framework was designed. It is worth mentioning that our literature study not only was the foundation for our theoretical framework but also a base for the development of the empirical questionnaire. Our questionnaire was made during the same period of time as we put together the theoretical framework. Furthermore, information from our literature study has been used when formulating the purpose of our work and research question. The literature used mainly come from areas like IT Governance, IT management, organisational communication, organisational culture and research methods. The literature consisted of books and research articles and most of them came from the University of Göteborg and Chalmers University's libraries and electronic sources. Electronically sources used are for example databases like EBSCOhost but we have also used an e-book. Words that we used to narrow our search for articles in databases are relevant words like for example IT Governance and different authors.

### **3.5 EMPIRICAL STUDY**

The empirical data is mainly collected through interviews but some internal and external documentation from the company has also been used.

#### **Interviews**

Holme and Solvang (1997) think that we can get more information if we use respondents with knowledge about the area of interest. Our empirical work started with three interviews with Volvo Logistics CIO. These interviews gave us an opportunity to get an understanding of Volvo Logistics IT Governance and the difficulties with it. During these interviews, the CIO helped us choosing and contacting our respondents. Seven respondents were selected and the CIO was one of them. All these seven respondents are members of Volvo Logistics executive management. They have decision making rights in the company and suit several IT Governance models profile for people who should be responsible for IT Governance. (IT Governance Institute, 2003; Grembergen, 2002). Our interview template is in Swedish since all respondents come from Sweden and the template can be found in Appendix C.

Before the interviews were carried out one respondent that represented Volvo Logistics Global Development contracting had to be replaced. The reason was that the respondent would be home from work because of parental leave at the time for our interviews. Volvo Logistics Scandinavia and Overseas (VLSO) region manager for the contracting department was selected as a new respondent instead. During one interview, one respondent recommended a person to interview and we followed this recommendation. This new respondent was also from VLSO and is the region manager for the Inbound process. This respondent has experience as a project leader for a large IS/IT project and has experience from IT Governance from a department view. We were also recommended to make an interview with Volvo Logistics head of strategic planning. All the respondents' positions at Volvo Logistics are presented in table 4.

Table 4 - Respondents positions at Volvo Logistics.

<b>Respondents positions</b>
Finance and Business support
CIO, Strategic IS/IT
Head of Strategic Planning
Process owner, Inbound
Process owner, Outbound
Process owner, Emballage
Region manager of Scandinavian and Oversees
Manager of Scandinavian and Oversees contracting department
Manager of Scandinavian and Oversees Inbound process

As mentioned above, knowledge gained from the literature study and from the three pre-interviews with the CIO was used when making the questionnaire that was used during the interviews. The questionnaire (see Appendix C) was divided into different areas to make it easier for us when making interviews. We could easily skip entire areas if we felt it was necessary and it helped us getting a holistic view over our questionnaire. The questionnaire was presented to Kalevi Pessi, a PhD in Informatics, and we discussed it with him before we made the questionnaire as our base for the interviews.

When conducting an interview two primary aspects has to be considered according to Patel and Davidsson (1994) (see table 5). The first thing is called the degree of standardisation and describes how much freedom the interviewing person has to change order of the questions, add new questions or remove questions during the interview. If there is a high degree of standardisation there is no or very little freedom to change. The other is called the degree of structuring and describes how freely the interviewed person can answer. If the respondent only can answer fixed alternatives like “yes” or “no” the degree of structuring is high. If the respondent can give open answers, the degree of structuring is low.

Table 5 - Degree of standardisation and structuring, (Patel and Davidson 1994, p.62).

	<b>High degree of structuring</b>	<b>Low degree of structuring</b>
<b>High degree of standardisation</b>	Enquiry with fixed alternatives.  Interview when a qualitative analysis of the result is desired.	Enquiry or interview with alternative answers.  Projective methods e.g. Rorschach-test.
<b>Low degree of standardisation</b>	A medical doctors recording of a patients previous medical condition.  Focused interviews.	Interview when a qualitative analysis of the results is desired.  Journalistic interviews.

Our interviews were made in a semi structured way. This allows us to have predetermined questions and change the order of questions, add questions or remove questions (Robson, 2002). It is difficult to position our interviews in table 5 since it only shows extreme values. Our interviews had a low degree of standardisation and the degree of structuring varied.

All respondents except the CIO were interviewed once and every interview lasted between one and two hours. The first seven respondents to be interviewed were interviewed in a time period of 20 days. The CIO were interviewed six times and these interviews also lasted somewhere between one and two hours. The three first interviews with the CIO were carried out before interviewing anyone else of the respondents. The next two interviews with the CIO were performed during the time period when other respondents were interviewed and we did a final interview with the CIO after we had interviewed all other respondents.

We interviewed all respondents in their own offices. According to Trost (1993), we should consider that a respondent should feel secure in the environment where the interview should take place. Trost (1993) also mean that most interview locations have advantages and disadvantages. Interviews were recorded and transcribed later on. This resulted in information used in our empirical chapter. The reason for why we recorded interviews was because that gave us the possibility to be more active during the interview and it was a smaller risk that we missed important information.

Respondents answer gave us inspiration for further literature studies and this resulted in that our theoretical framework was developed since we both wrote new parts for it and removed some parts from it.

### **Benchmark**

Together with Volvo Logistics CIO we have mapped who makes decisions about the five key IT decision areas and who give input to these decision areas. The result is showed in the Governance Arrangement Matrix (see figure 15). During five interviews we conducted a benchmark of Volvo Logistics IT Governance. All the respondents did not make this benchmark since it would take too much time from our questionnaire. The result from this benchmark allows Volvo Logistics to compare the result from their IT Governance with 256 different companies. They can also benchmark their IT Governance on a later occasion and compare if it has improved or not. Volvo Logistics have made several things that are considered “right” by academic research we have found and one example of this is that their CIO participates in senior level decision making just as Grembergen (2004) argues for. If the academic research we found is correct Volvo Logistics should get a pretty high score when performing the benchmark. This means that the benchmark can help validate academic theories. When positioning the global management we placed them as a business monarchy (see chapter 2.4.2). This can be discussed since business unit leaders and key business process owners are represented in the global management. Business unit leaders and key business process owners can also be placed as a federal governance type but then it has to be discussed which role they have in the global management. We made the judgement that they address IT Governance issues as members in the global management.

### **Documentation**

The empirical study is not only conducted through interviews. It is also conducted through collection of internal information from the company and their external website.

## **3.6 RELIABILITY AND VALIDITY**

When performing inductive study it is necessary to be careful with reliability and validity. According to Thurén (1991) reliability means that measurements are made in a correct way. Trost (1993) means that the idea about reliability comes from the quantitative method

and that it is inappropriate in qualitative studies. Since we make qualitative studies we do not think it is necessary to consider measuring the reliability in our study.

Validity means that the examined area is the area that was intended to be examined and nothing else according to Thurén (1991). To increase the validity we have analysed both theoretical and empirical material in order to examine if the material is relevant for our question of issue. This means that we have asked ourselves if the material can provide information that helps us answer our question of issue. To increase the validity in our secondary data we only use reliable sources like books and research articles. We have tried to increase the validity by trying to use as reliable sources as possible. If we have found a source that refer other sources we have tried to find the “original” sources and used them instead if possible.



## **4.2 IT GOVERNANCE GOALS**

There were several different answers to what the goal was with Volvo Logistics IT Governance. One respondent thought their IT Governance goal was to get the best possible information systems and that these systems should not only be tools for supporting processes but should also help them to control and manage their processes. A respondent believed that a goal for their IT governance was to give people in the company an understanding of the systems that affected them and why they invested in new systems. How they work, why they have got them and why is the cost as it is. Another goal described by a respondent was that their IT Governance should give their company a clear view of where the company should be in near and distant future.

## **4.3 IT GOVERNANCE ORGANISATION**

The IT Governance organisation at Volvo Logistics has existed for a long time within the company. Since the company started in 1984, they have got a central IT department that addresses the company's IT related issues. They have not used any existing IT Governance models to help them with building up their IT Governance.

During several years Volvo Logistics CIO reported to their CFO, which was a common way to organize the IS/IT-business within most of the companies. It was also common that the IS/IT budget was considered as a cost and not as an investment. Since the CIO reported to the CFO, IS/IT were not directly represented in the executive management team. The CFO and some other persons brought pressure on the executive management and because of this, the CIO could participate when IS/IT questions were discussed in the executive management from the middle of the 90's. Today the CIO is a member of the executive management team and Volvo Logistics information systems are considered as the company's most important resource apart from their employees.

IS/IT has earlier been an isolated activity at Volvo Logistics and the reason for this is according to one respondent that there were few people who understood IS/IT. If someone from the IS/IT department would have stated something 20 years ago, no one would have questioned that statement. All respondents did not agree about if Volvo Logistics IT Governance is clear and easily understandable or not. Some respondents thought that they have a clear and easily understandable IT Governance and some did not think that they have it. All respondents knew that the CIO is a part of their IT Governance.

There were different opinions regarding who is responsible for what. Some respondents thought that it was completely clear and other respondents thought that this was an area that could be improved. One respondent said that they have defined roles and responsibilities but the respondent wondered if they really followed them. Many respondents thought that the CIO is responsible for IT Governance at Volvo Logistics. According to a respondent Volvo Logistics has to clarify the relation between IS/IT, processes and business and their responsibility when a large IS/IT system is implemented.

### **4.3.1 ROLES AND RESPONSIBILITIES**

#### **Board of directors**

Earlier, all requests for new IS/IT hardware such as workstations, had to be presented for the board of directors and then they accepted the investment or not. This is still required

and today even large IS/IT project investments do have the same procedure. Reasons for large IS/IT investments has to be stated and costs and revenues for an IS/IT investment, such as IRR calculations, has to be presented. If the executive management can show the board of directors that they are in an expansive phase and can obtain new customers along with the investment, the investment will be accepted.

### **Executive management**

Volvo Logistics global executive management is called GLM and it consists of the CEO, CFO, CIO, process owners and executives from the three regions Volvo Logistics Scandinavia and Overseas (VLSO), Volvo Logistics Europe (VLE) and Volvo Logistics North America (VLNA). GLM has meetings one afternoon every month and two days every second month. Among other things, they discuss and make decisions about IS/IT within the company. It can be IS/IT strategies, IS/IT budget, which systems to use in the future, or urgent problems regarding IS/IT. They do not get involved in daily IS/IT issues since the questions must be addressed by operational work.

The connection between the executive management and the board of directors is the CEO and the CFO. Except those two, relevant persons are invited to the board of directors to hold presentations about relevant and pressing issues. This is often made by one of the executives but if there is something within IS/IT that is addressed, the CIO comes along and presents the issue for the board of directors. The presentations are often about new assignments from customers or large investments.

During our interviews, we asked the respondents if they thought that the executive management team is engaged in IS/IT related issues. Their answer was that the executive team are engaged in IS/IT issues and that those issues are important because of their large cost for the company. They thought that the executive management team does not have to know about specific technologies. The executive management team has got together to discuss only IS/IT related issues. This resulted in that participants had to understand those specific IS/IT issues or at least get an opinion about them. According to one respondent there is a risk that the executive management team do not try to understand the area of IS/IT as much as they need to do.

Respondents that are not a part of the executive management thought that the executive management or parts of it is aware of the world around them and that IS/IT issues are early in their agenda. They also thought that the executive management has relevant knowledge about the importance of IS/IT and its high cost. One respondent thought that the executive management could get a better understanding of how important their IS/IT tools are. Not know all about their functionality but understand how important IS/IT is as a competitive tool.

### **Strategic IS/IT**

The Strategic IS/IT department consists of 13 persons. Volvo Logistics CIO is the head of the Strategic IS/IT department and is responsible for global IS/IT and formulates IT-strategies, e-business strategies and the IT-security policy. Global projects, Electronic Data Interchange (EDI) routines, and global applications are also under the CIO's responsibility. Strategic IS/IT is a part of Volvo Logistics global IS/IT organisation and as you can see in the figure 12.

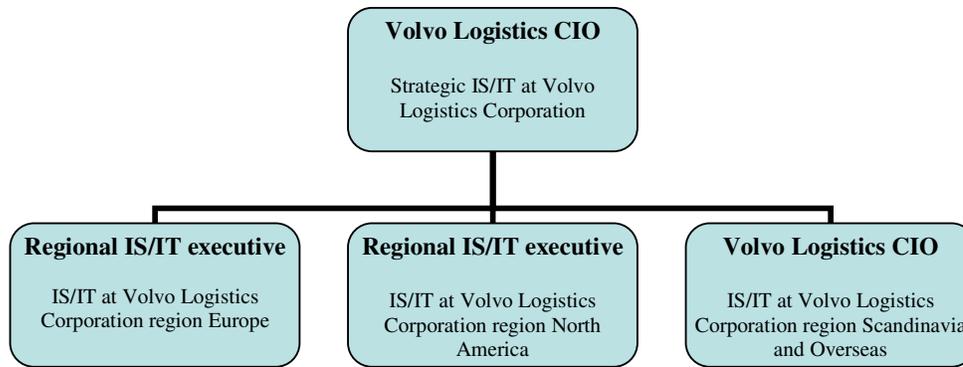


Figure 12 - Volvo Logistics global IS/IT organisation, Volvo Logistics internal material

The purpose of the department is to decide and be responsible for the IS/IT infrastructure and how systems should relate to each other. Earlier, the CIO was responsible for how their systems should work but today that is the processes responsibility. The CIO is also responsible for taking positions in IS/IT issues that affects the whole company. It could be issues like whether they should buy standard products or develop something themselves, which environment their systems should run in and so on.

Volvo Logistics CIO is responsible for compilation of their total IS/IT budget, forecasts and makes follow-ups quarterly. The CIO makes decisions about IT purchases that are within their budget. Decisions within regional budget about deviations are made by the actual region together with the CIO. The IS/IT managers within the regions are also responsible for allocated IT costs. If the decisions about deviation are above process level or the costs will exceed the total budget, decisions are made by the management team. The management team is also responsible for approval and decisions on the total budget and forecast. The project leader is responsible for the project budgets and that their follow-ups are made quarterly. The CIO makes decisions about small IS/IT investments but can not make decisions about large IS/IT investments without the executive management. The executive management makes decisions about large IS/IT decisions but the CIO has an important role and gives recommendations. IS/IT responsibilities within Volvo Logistics can be seen in table 6.

Table 6 - IS/IT responsible and participation within Volvo Logistics, Volvo Logistics internal material

<div style="display: flex; align-items: center;"> <div style="width: 15px; height: 10px; background-color: #808080; margin-right: 5px;"></div> = Responsible           <div style="width: 15px; height: 10px; background-color: #d3d3d3; margin-left: 10px; margin-right: 5px;"></div> = Participation         </div>	Volvo Logistics		Volvo IT
	Global/regional process	IS/IT	
IT Governance, IS/IT strategy			
Business case			
Project/enhancement initiation			
Business prioritisation			
Reengineer/improve business processes			
System analysis			
Logical/conceptual design			
Volvo IT development, test, launch			
Software development, test, launch			
Integration test Volvo IT developed			
Integration test software packages			
Education/manuals			
System support/ongoing operation			
Information quality monitoring			
Information quality execution			
IS/IT controller			
IS/IT purchase			
IS/IT benchmark			

Several of the respondents' thought that Strategic IS/IT responsibility is to make sure that the company always has the latest knowledge in IS/IT. This could be achieved by scanning the IS/IT market. Strategic IS/IT should also have a holistic view over all their systems and they should order new IS/IT to the company. Furthermore they thought that Strategic IS/IT should be responsible for the company's IS/IT systems and together with the processes make sure that their systems are developed. According to them, it is also necessary for Strategic IS/IT to have a close relationship with the rest of the company and have a continuous dialogue with them so that they know the company's short and long term needs. They also thought that the CIO is also responsible for making the company's IS/IT strategies by getting input from the processes. Some of the respondents had the opinion that of Strategic IS/IT as a supplier and the rest of the business as a recipient that has demands.

Many of our respondents thought that the IS/IT knowledge within Strategic IS/IT is possessed by only a few individuals. The reason for this is according to a respondent that Strategic IS/IT does not have enough resources. They have to hold down their head account and costs within Strategic IS/IT and this results in that they can not employ new personnel.

The employees within Strategic IS/IT work a lot and if one of the Strategic IS/IT department's employees leaves it would be difficult to replace him or her. Another problem for the Strategic IS/IT department according to some respondents is that it exists an unbalance between the number of own employees and external contractors. Many respondents thought that it should be better if Strategic IS/IT had more internal employees in order to keep relevant knowledge within the company.

A respondent thought that employees within Strategic IS/IT are very good at understanding Volvo Logistics business and systems but there is a little bit more to wish for when it comes to lead and present projects. Volvo Logistics has a general strategy for competence within the company and if it is applied to the area of IS/IT, the result is that they need more competence in project management skills and capabilities within simulation.

### **Boards**

There are several different boards within Volvo Logistics today. As described earlier Volvo Logistics is built from a process oriented organisation and every process has a board that is managed by the process owner. These process boards are the Emballage board, the Inbound board, the Outbound board and the newest board called the contracting board. The boards consist of the process owner and representatives from the regions. When these boards discuss IS/IT issues the CIO is usually invited to their meeting. The purpose of the boards is to discuss development of the processes and what is working and not within the processes. Their IS/IT related results are presented to the executive management by the CIO. One of the respondents thought that it should be clearer and easier to understand when the CIO should be invited to meetings within the boards.

To be able to deal with changes of existing global systems there are boards that are called change request (CR) boards. These boards consist of the CIO, process owners, application owners, region executives and super users from every region. The CR boards both discuss and make decisions about the changes. When requests for large changes come up, it is the executive management that handles these.

Volvo Logistics did have an IS/IT board earlier but it is no longer active. The goal of this board was to review IS/IT issues in detail before they were presented to the executive management. The CIO, the CFO and the process owners represented the IS/IT board and they examined how the development in IS/IT should be within the company. The board also addressed IS/IT issues within the regions and when they had agreed on issues the CIO presented their results to the executive management. The reason that their result was presented to the executive management was that the IS/IT Board could not make decisions since they were not responsible of the region budgets. The executives from Volvo Logistics regions were represented in the executive management and they did not “buy” the proposals from the IS/IT board without getting more resources or money. This resulted in that the IS/IT boards authority was questioned. The process owners did not have responsibility for the operational work since it was the regions responsibility and it was not right to make decisions about something that did not affect themselves.

### **Volvo Logistics business**

The business responsibility for IS/IT is to make sure that they have necessary IS/IT they need and make good demands for new IS/IT. They are also responsible for their IS/IT related costs. It is the daily operational in the business that are responsible for using their systems so that maximum value is delivered from them. They should also log problems with their systems. According to one respondent the business should order to much IS/IT and then it is up to Strategic IS/IT to choose what to order and what not to order.

## **4.3.2 IT GOVERNANCE CONNECTIONS**

### **Volvo Logistics IT Governance integration with their Corporate Governance**

The IS/IT-department and the Finance-department have a close co-operation when it comes to investments, and they discuss how investments should be financed, how to distribute costs for IS/IT projects and IS/IT operation. They do also discuss if they have enough resources to make an investment. These questions are also discussed with all the processes. All respondents thought that IT Governance at Volvo Logistics is an integrated part of their Corporate Governance but some of them thought that it can be better integrated.

### **Volvo Logistics IT Governance connection to AB Volvo IT Governance**

The IT Governance within AB Volvo has developed guidelines to all companies within The Volvo Group. This means that as long as the companies follow their guidelines, they do not have contact with AB Volvos IT Governance. The companies have a freedom to choose within AB Volvos IT Governance guidelines. If Volvo Logistics for example want another system then AB Volvo IT Governance recommends they have to discuss that with them. Then AB Volvo IT Governance makes the decision if they can have their wanted system or not. Volvo IT’s CEO is also CIO within AB Volvo IT Governance. A respondent thought that this person handles the situation well even if it is unusual that one person should have those assignments.

### **Volvo Logistics relation to other companies within the AB Volvo Group**

Volvo Logistics is a part of Group Information Board IS/IT that is a board within the Volvo Group that consists of 15 CIO’s from companies from the Volvo Group. Subjects like what systems do they have and how they can globalise are discussed and mapped out. Every CIO examines how they can globalise within their own company in order to get a global Volvo Group. Many of the companies within Volvo Group have started to view

systems from a global perspective with global support. Volvo Logistics has got this strategy for several years. Volvo Logistics and Volvo IT have a close relationship but Volvo IT is often only a supplier to them. Volvo IT has got a business consulting group and some persons from this group are placed in other Volvo companies. The reason for this is to ensure that the Volvo companies have a high competence when ordering IS/IT and to achieve job-rotation within the IS/IT-area.

#### 4.4 IT GOVERNANCE WORK

Volvo Logistics IS/IT mission is to enable Volvo Logistics business mission in process development and operation by providing IT-solutions matching the business needs in the most cost-effective way and act as an instrument in creating new business opportunities. Their business requirement and expectation from IS/IT is that it should generate business value to the organisation. All the involved parties in the whole supply chain are connected through an information flow in order to minimise manual work and administration. Data should only be entered once. All systems should be based on real time information when this is needed. IS/IT should secure Volvo Logistics operation and support their existing systems. Applications should directly generate deviation reports in order to be able to manage proactive, take early actions, and avoid costs.

Services delivered by Volvo Logistics IS/IT department are mainly to develop IS/IT strategies and routines. This work is made by their CIO. The CIO is also responsible for the IS/IT security policy. The IS/IT department makes business assessment and analysis, develop system specifications, perform system education and makes user manuals. They do also offer consulting services. Volvo IT delivers some of the software and hardware that is used at Volvo Logistics and their delivered services can be found in appendix IS/IT services on Volvo Logistics.

##### 4.4.1 IS/IT STRATEGIES

Volvo Logistics CIO, with help from Strategic IS/IT and regional departments, has formulated their present IS/IT strategies. When formulating these strategies, all parts in the figure 13 below must be considered.

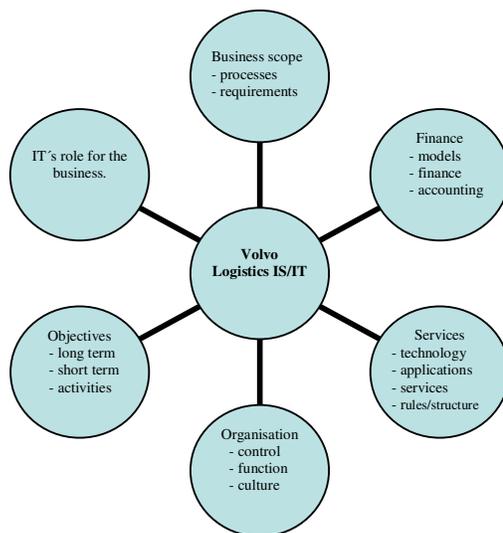


Figure 13 - Considered factors when Volvo Logistics IS/IT strategy was formulated, Volvo Logistics internal material

According to them IT should generate business value. There should be one global business solution for each business process at Volvo Logistics and similar functions should be integrated. A global platform for the business support systems should exist and new business objectives should be achieved through the development of new services and enhancement of strategic systems. Different application modules that facilitate the cost and time calculation for the implementation of new customers should be defined and priced. Volvo Logistics should have a commercial relation with their IT suppliers and there should be the best price agreements for enhancements, maintenance, and projects. There should be lower running costs for all applications based on the same volume and Volvo Logistics should have an efficient support organisation. They should have a balance between contractors and employees. Volvo Logistics should have competent project management and should benchmark important things so that they can measure possible improvements.

Regarding applications, Volvo Logistics application strategy follows AB Volvos IS/IT strategy. In the area of finance and human resources they will use the same applications as the whole Volvo organisation. Business support applications such as master data, quality, environment, freight control, risk management, result management, simulation, business intelligence, and billing should also be the same in the Volvo organisation. When it comes to logistics operation Volvo Logistics should have common application for each process and integrate similar functions. Volvo Logistics tool strategy is that the common tools within the Volvo organisation will be used. If there is no common recommendation, tools that Volvo IT has stated as strategic will be used. Finally, Volvo Logistics has a technology strategy. It is AB Volvo IT Governance that decides the technology infrastructure strategy and it is Volvo IT that is responsible for setting up this infrastructure.

Volvo Logistics CIO has made a present situation analysis and wanted position regarding IS/IT strategic objectives, commercial relations with IS/IT suppliers, application portfolio and has also documented their main services process requirements and expectations.

The IS/IT strategies are spread through the company by letting the CIO presenting them to the process boards, and the region management teams. The strategies are also spread through their intranet and local persons with responsibility for IS/IT can present the strategies further down in the organisation. When the CIO is presenting their IS/IT strategies, the listeners are given the possibility to give feedback. This feedback is then used to update their strategies and this is appreciated by the listeners. After the CIO has had all presentations, the IS/IT strategies are updated and presented to the executive management. When IS/IT strategies are discussed it is easier to get feedback from executives over departments than from the executive management. The reason for this is that the members in the executive management team already have been to one presentation of the IS/IT strategies before and because of this they do not have much further feedback. Volvo Logistics do not follow up their IS/IT strategies but one respondent thought that they should make a follow-up because “measure gives control”.

The respondents knew that they have IS/IT strategies and that they require a large amount of work to achieve this since they are a global company. All the respondents thought that their IS/IT strategies are good. Many respondents thought that Volvo Logistics IS/IT strategies are well aligned with their business strategies. One respondent saw it as a challenge for Volvo Logistics to make sure that they have the best possible systems to meet the future in a cost effective way.

Many respondents thought that the IS/IT strategies are spread through the company but some respondents thought that they are not as wide spread as they should be. In order to spread them more, one respondent thought they should make a shorter "popular version" of them.

#### 4.4.2 IT GOVERNANCE DECISIONS

The five key IT decision areas (See chapter 2.4) are showed in the figure 14 below and it is also showed who it is that comes with input and who makes decisions in the different areas at Volvo Logistics IT Governance. It also shows what kind of Governance Archetype they have in different decision areas.

**GOVERNANCE DECISION**

DECISION \ ARCHETYPE	IT Principles		IT Architecture		IT Infrastructure		Business Application Needs		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
<b>Business Monarchy</b>		Executive Management		Executive Management		Executive Management		Global Applications: Executive Management		Global Investments: Executive Management
<b>IT Monarchy</b>	CIO, AB Volvo IT Governance		CIO, AB Volvo IT Governance, Volvo IT		CIO, AB Volvo IT Governance, Volvo IT			Local Application: CIO	Strategic IS/IT, IS/IT projects	Local Investment: CIO
<b>Feudal</b>							Business-units			
<b>Federal</b>										
<b>Duopoly</b>										
<b>Anarchy</b>										

GOVERNANCE ARCHETYPE

Figure 14 - The matrix show which Governance Archetypes are used by Volvo Logistics for different Governance Decisions.

IS/IT principles are followed but are not written down and communicated in a clear way. Some IS/IT principles are documented in Volvo Logistics IS/IT strategy. Strategic IS/IT personnel possess the knowledge about how systems connect and relate to each other and the CIO participates in discussions about architecture. There are no routines for the IS/IT architecture in IS/IT projects and Volvo Logistics are quite informal when they review systems. For big projects like ATLAS however, they have started with audits done by experts from Volvo's IS/IT-governance. The CIO is always a part of IS/IT projects steering committee since the CIO has relevant knowledge about the IS/IT architecture.

Making IS/IT related decisions have changed over time in Volvo Logistics. Before it could take several hours to discuss a machine investment for a couple of ten thousands SEK but when it came to IS/IT investments, decisions could be made in five minutes even if the IS/IT investments had a cost of several millions SEK. The reason for this according to a respondent was that no one really understood the workload behind an IS/IT investment and they did not have the knowledge of IS/IT to question the IS/IT department. Today, they have more knowledge of IS/IT. When a decision is made about IS/IT it is the CEO that has right to make the final decision. The company's board of directors makes decisions about

larger investments. We have found some opinions that thought that the more local decisions can be made, the better it is in order to improve alignment between business and IS/IT. One respondent thought that wrong persons make decisions about resources and that it is not very clear who it is that should make those decisions.

#### **4.4.3 IS/IT INVESTMENTS**

Volvo Logistics two greatest assets, their employees and their systems, are also their greatest costs. All IS/IT projects at Volvo Logistics have a steering committee and the CIO, CFO, and the owner of demanding process are always a part of it. The IS/IT projects always consist of project leaders, IS/IT leaders, local business leaders and people responsible for IS/IT from every region. Those IS/IT investments that give the best result are those where the business and IS/IT work well together. Large IS/IT projects with projects leaders from the business have not been working very well since they lack necessary IS/IT knowledge.

Risks are analysed for all IS/IT projects at Volvo Logistics and they usually choose safe techniques to reduce risks. Every CR (Change Request) and support questions do Volvo Logistics follow up.

A problem for Volvo Logistics is according to a respondent that they have not got enough employees with relevant knowledge and understanding of both Volvo Logistics business and IS/IT. This competence would be very good for a project leader. A respondent thought that it is better to hire an experienced project leader with IS/IT competence as a project leader than having an employee from the company that lacks the necessary competence. Today, much depend on a few persons. To be a good project leader it is also important to be able to collaborate according to one of the interviewed.

According to a respondent IS/IT projects often result in great changes within the company but when they make the first estimation of the project cost they are often too optimistic. IS/IT projects often change the way operational work is performed and the greatest challenge is often to implement a technique that benefits the company for many years since the payoff time usually is seven to eight years according to a respondent. It is also very important that there is a clear and well-defined responsibility for IS/IT projects and that the implementation is well prepared so that users are involved. Often, it is the operation that gets credit for successful IS/IT investments and if it is not successful the IS/IT-department is to blame. One respondent said that this way of thinking is not strange since it is human to be "a part of all good". According to a respondent IS/IT investments are often very big and one reason for this is could be that the investigated areas often have been neglected for a long time. This means that a great part of those costs are there because of old sins. Another reason for high IS/IT costs is that IS/IT projects sometimes have been managed in a wrong way and by people not focusing on the right tasks.

Many respondents thought that if Volvo Logistics should consider all the resources that a global IS/IT project demand it is possible that they never would run the project. One respondent thought that because of visionary executive managements they are a successful logistics company today. Looking back, they have dared to take great steps without knowing exactly how to solve everything and not followed narrow calculations. Strategic IS/IT should handle all requests for IS/IT within Volvo Logistics and normally it works in this way.

### **The pre-study of IS/IT projects at Volvo Logistics**

There are different kinds of information for helping the decision making for IS/IT investments. The larger the IS/IT project is the more information is needed for the pre-study. Examples of information for helping the decision making are IRR calculations and Business cases. The purpose with these tools is often to show how much money to save with the investment. Volvo Logistics also take consideration to qualitative benefits. One example of this is the ATLAS project. It was necessary for Volvo Logistics Inbound process in order to maintain their market position.

The pre-study for an IS/IT investment is showed for the executive management and sometimes for the board of directors. This is not necessary if the investment is pretty small. If the executive management and the board of directors think that the result of the pre-study look good, the project gets started. The board of directors has profit demands for the IS/IT projects but can lower these demands if they think that it is necessary. It is possible to ask for money for global IS/IT projects from AB Volvo Governance IT. They give money to IS/IT projects if they think that outcome from the projects can be used by several companies in the Volvo Group. Volvo Logistics has not been given any money from them to either A4D (system used Outbound process) or ATLAS (system under development for Inbound process).

There is no special money for IS/IT at Volvo Logistics and their CIO makes a plan and a prognosis for IS/IT within the company. To be able to do this the CIO has meetings with both processes and region. They discuss what they think they need for IS/IT during the next year. The CIO then makes a prognosis for the departments IS/IT costs which they include in their business prognosis. The executive management does not get any information for decisions about smaller IS/IT investments since there is a budget in the company to do small changes of systems in order to maintain their operational work.

Some respondents from the executive management though that projects pre-study are deficient for many IS/IT investments and that the complexity of systems already in operation is underestimated. Many respondents thought that they often are aware of that the cost estimated in the IS/IT investments pre-study often is not the final cost. A respondent had a feeling that if they show a high cost in a pre-study, the investment will not be made. This is a problem because they have to do some investments anyway.

### **Priorities of IS/IT investments at Volvo Logistics**

It is the executive management at Volvo Logistics that priorities IS/IT investments. Many smaller IS/IT investments are difficult to prioritise since all of them should be made at the same time. Some respondents thought that they have a problem with their priorities because there is nobody saying “we can not do this now”. Some other respondents thought that they are quite good at priorities and that they have found a good structure for this.

According to a respondent there are too many people from the business that are interested in working with IS/IT. Those people sometimes try to create solutions for their problems themselves when the IS/IT-organisation does not have time for it. The result is often that they take it too far or make it wrong. It can result in that their work will be reworked by the IS/IT-organisation or are passed on to Volvo IT without reviewing because of shortage of time. The consequence can be bad system functionality. According to a respondent this has to do with Volvo Logistics difficulties to priorities and the business feel that they have to wait too long for new functionalities. Strategic IS/IT can often make things at the same

time as long as those things are in different processes, according to a respondent. It is when there are several changes in the same process that problems occur since it affects the same person at Strategic IS/IT. According to a respondent it is the Strategic IS/IT department that experience this as a problem and they do not feel that the business are aware of this problem and understand the workload they have when they still try to solve their tasks.

### **Resource management, implementation of projects and evaluation of IS/IT investments at Volvo Logistics**

Volvo Logistics usually use resources from Volvo IT but not from any other company in the Volvo Group.

The greatest problem with the implementation of a new system is to fill the system with the right information. Users need good system education to understand how they shall use the system and there are almost always user problems when implementing a new system.

Volvo Logistics documents things like what has happened in a project, what went well, and what did not and so on for all their projects. This is only done to the implementation and then they do not perform any follow-ups.

Follow-ups of Business cases and IRR calculations from projects pre-study are not preferred. Conditions from the time when a project was initiated to its implementations phase has changed and costs are higher than pre-studies show. It is not necessary to calculate the costs to realise this. The bigger and more unspecified a project is the greater possibility it is that it will cost more than estimated. How well costs from the pre-study correspond to true costs depend on when the calculations from the pre-study were made and who the project leader were.

According to some respondents Volvo Logistics should be better at performing follow-ups and some respondents thought that Volvo Logistics should follow-up all their large investments which includes IS/IT investments. This is something that should be expressed better. Some respondents felt that the IRR (Internal Rate of Return) calculations have to look good in order to get projects started and they thought that it can be good to be a little bit optimistic in calculations. Some projects have to be started anyhow and even if they see that some costs are too low from the beginning nothing is done since they are worried that the board of directors will not let the project start. Some respondents thought that they sometimes lie to themselves to get some things done and that they do not have any options since the IS/IT investment is necessary for the company to advance. According to a respondent IS/IT has been neglected for so long that it is difficult to state reasons for an IS/IT investment in a traditional way. Some respondents thought that consideration has to be taken to the fact that they have not invested in the actual area for a long time. IS/IT is followed up too much as a cost and too little as something that gives benefits for the company according to one respondent. This respondent wanted to see performance calculations for IS/IT and not just cost calculations. One important benefit given by IS/IT is the enhanced value for their customers and Volvo Logistics would not have all their customers without some of their systems. One respondent thought that their systems are their biggest market value.

The long-range trend of new IS/IT systems at Volvo Logistics was according to one respondent that the number of employees follows the number of their work orders and that this relation can not be changed through something like a more efficient system. This

increased efficiency gives a likely improved deal and hopefully with lower logistics costs for their customers and higher profit margin for Volvo Logistics.

Normally the IS/IT project does not have the responsibility of achieving the promised benefits in the business but many respondents thought that this should be a good idea. Who should have this responsibility is not very important but this person should according to one respondent come from the operation. Some respondents thought that the CIO should be responsible for follow up things like functionality and that the operation should be responsible for utilising benefits. It often takes too long to utilise the benefits from an IS/IT investment according to some respondents since the operations are less good at utilising the benefits. If Volvo Logistics discover a running IS/IT project that should be cancelled it is the project leaders responsibility to do so, often after having consulted the CIO.

### **Service Level Agreements**

Many respondents thought that they do not really know what they have ordered regarding IS/IT and that the time schedules for the order never are correct. As a result of this they want to start making clear and understandable agreements. Things like what they have ordered, who is responsible for what, how much it will cost, and when it should be delivered. Some respondents thought that there is a risk it would be too bureaucratic for Volvo Logistics. Volvo Logistics have agreements with their external suppliers. One respondent thought that it is not as obvious who is responsible for when there something going wrong and whose responsibility it is to fix the problem when it comes to Volvo IT as other external suppliers.

#### **4.4.4 IS/IT EDUCATION AT VOLVO LOGISTICS**

The initial education of a new system is always a part of the IS/IT project but the continuous education is handled by the regions. Earlier, it was the CIO's responsibility but now it is the regions responsibility. The company tries to let the regions calculate a local implementation cost and it is almost as big as the development cost. New employees that not have got the initial education have sometimes to learn how to work in Volvo Logistics systems themselves and this means that they do not work in the best possible way.

Earlier, the company had a couple of selected users that tested a new system and they learned the system well. Unfortunately, the majority of the users did not get the same experience and it was first when the system was implemented that they got a possibility to learn the new system. It is always difficult when users do not have a complete system or a complete application to test. Volvo Logistics now tries to implement new things in steps and this is the ideal way when it is possible to do so.

One respondent felt that education of new systems are important and if anything goes wrong in the beginning it is difficult to fix it later. If a user wants more education in a system that affects them, the company will provide this. According to some respondents Volvo Logistics always include education and training of new systems in their budget. According to a respondent this education and training is usually not good enough and the result of this is that many users feel insecure about using the system. The reason for this is according to a respondent that user often already has so much work to do that they do not have time for education. It is also a difference between generations. Younger generations often think that it is easier and adapt faster according to a respondent. It is often the education part that suffers when IS/IT projects take longer and cost more than expected. The respondents thought that it is important with education because it is not until the users really use their systems that the company achieves business value. A respondent felt that

Volvo Logistics systems are so complicated that it is necessary to get education about them in order to work effective with them.

Many respondents thought that since large IS/IT investments affect a lot of employees and that it is important to make them feel as a part of the IS/IT project in an early stage. The reason for this is to give them an understanding of what the project should deliver and how they can benefit from it. Many respondents thought that if the company has a couple of large weekend courses just before the implementation it is too late.

Some respondents thought that information about for example updates of systems are not well communicated. One respondent thought that applications should be made so simple to use that they should not require any special education to use them. Educations was seen as a very important thing and one respondent thought that 90% of a IS/IT projects budget should go to education.

## **4.5 AREAS THAT INFLUENCE IT GOVERNANCE**

### **4.5.1 BUSINESS AND IS/IT ALIGNMENT**

Today IS/IT is considered as an integrated part of the business at Volvo Logistics and technical knowledge is generally high. It is considered important to have responsibilities but it is necessary to have authority when having responsibilities. Earlier, IS/IT was a part of the business and historically it had a life of it own. Respondents thought that they can affect those IS/IT investments that affect them. One respondent thought that it is difficult to increase the understanding of IS/IT in the executive management. One way of getting something on the agenda that usually works is to show that they lose money from something, that they have a negative cash flow, or that employees do not feel well. If this is done action plans are developed.

Connections between Strategic IS/IT and the business consist of, for example, that Strategic IS/IT has IS/IT staff that works in different departments of the business. IS/IT staff in the business is one way for the CIO to reach the business. Strategic IS/IT has IS/IT coordinators in the business and wants them to belong to Strategic IS/IT and this is the case in the Inbound process. This is not the case in the Outbound and the Emballage processes.

One respondent thought that an IS/IT coordinator should be an analytical person that always learns new things and sees possibilities. IS/IT coordinators should give users advice and know what is going on in the area of IS/IT. Some respondents thought that the business can be better when it comes to letting Strategic IS/IT be a part of changes in the business in an early stage. They also thought that they are demanding things like system changes from Strategic IS/IT but that Strategic IS/IT has a long waiting list and if their demands do not have a high priority, they will take long time to get. A respondent thought Strategic IS/IT often initiate IS/IT projects and that the business then becomes a part of the project. The same respondent thought that the business does not always see the need for a change in the beginning and that Strategic IS/IT know and understand the business since they have built their systems. The executive management interest for IS/IT has improved since the CIO became a part of it. A respondent believed that some business people in Volvo Logistics regions think that they can and want to run IS/IT projects themselves and see the IS/IT-organisation as a supplier. The regions select project leaders that think it is fun to work with IS/IT but lack the adequate competence. One respondents thought that the

regions understanding of IS/IT is not really there and they think IS/IT is simpler than it is. According to one respondent a project leader that is not experienced will make mistakes and that there is a shortage of project leaders that have an understanding for both IS/IT and the business. Volvo Logistics have some external project leaders from external firms because they think it is better to have project leaders that can make projects go forward and let them find people in the company that understand the business than having a project leader that understand the business but can not manage projects.

According to a respondent the reason that Volvo Logistics brings in external consults instead of employing new personal is because they have directives from AB Volvo regarding how many employees Volvo Logistics can have. This means that Volvo Logistics CEO cannot decide to employ more personnel. Earlier Volvo Logistics did not report how many consults they had in the company to AB Volvo but now they have to report both the number of employees and external consultants.

One respondent thought that if the business had agreed about how their processes should look like before discussing IS/IT solutions it had been easier to decide upon which tool to use or develop. The same respondent also thought that the business do not have an understanding of IS/IT and what Strategic IS/IT works with. If someone from Strategic IS/IT always was a part of IS/IT projects from the projects start and communicated what they were doing in the project this would increase the understanding of IS/IT in the company. One respondent thought of Strategic IS/IT as the businesses engineers. The respondent also thought that they are Volvo Logistics IS/IT demanders and that it is important to have knowledge about both IS/IT and the business to be the demanders. According to a respondent the Strategic IS/IT department have sometimes seen IS/IT orders that have not passed through them. When someone responsible for IS/IT receive such information they cancel the order, but they are not always happy that they have to act like a police against the business. IS/IT coordinators in the business however, are allowed to order IS/IT from Volvo Logistics IS/IT suppliers.

A respondent thought that the business responsibility for IS/IT is to use their system the way they are intended to. If Volvo Logistics has defined how the work should be done it is then the business responsibility to work like that. The business is also responsible for reporting when something with IS/IT do not work and for educating new employees. A respondent saw Strategic IS/IT as Volvo Logistics demanders against their external IS/IT suppliers. The business informs Strategic IS/IT about their needs and what they want. If they need a new system it is Strategic IS/IT that should design it. The order process is the following for a new system. Business and processes make demands about the system to Strategic IS/IT and they make an extensive analysis about the new system and then order it from their external IS/IT suppliers. Both Strategic IS/IT and the business order the new system but on different levels.

According to a respondent there is a certain shortage of understanding for IS/IT related costs in the business and that the business think that costs for IS/IT are too high. The business often do not realise that costs like support, software and network infrastructure even though all these costs are showed to them according to a respondent. If the business has ordered a new system and this has been developed the business can not come afterwards and say that they do not want the system because it is to expensive. A respondent believed that the business do not know or think about Volvo Logistics IT Governance. One respondent thought that not all of the executive management have the

understanding of why different system are connected to each other and how important it is how systems communicate, where information is stored and how systems are designed. It is not until a conflict occurs and the CIO has to describe why something is like it is that the executive management increases their understanding for Volvo Logistics systems. A respondent thought that the business sometimes has a greater interest for IS/IT than they should have. Sometimes, this results in that they build their own things and they are usually made in some database or spreadsheet program with no connection to the IS/IT systems. The business has a possibility to employ a person if they have a business case for this person. This business case should show that Volvo Logistics would get a new customer or a new assignment that generates money to them. This is a possibility that a respondent thought that Strategic IS/IT do not have since IS/IT is only considered as a cost. The same respondent thought that Volvo IT do not have to know much about Volvo Logistics business and that their task is to construct systems the best possible way, it is not possible to be too broad and know everything.

A respondent wanted more IS/IT employees to every process since Strategic IS/IT never has the time to study how work are really performed in the processes. No IS/IT employee has time to talk to the business. Strategic IS/IT hear most things anyway and are updated but a respondent thought it would be better if they had more time to analyse and reflect on the business.

According to a respondent the business does not think that it is necessary with more employees at Strategic IS/IT. The business do not think that they would get their wanted IS/IT faster just because of more staff at Strategic IS/IT. One problem with IS/IT investments according to a respondent is that when users first hear about it takes several years before it is implemented. When employees are educated in new ways of working in a system they still continue to work like they always have done. It is too easy for the employees to complain to their management about the system and get the management to believe that it is something wrong with the system instead of how they are using it.

A respondent saw a problem within Volvo Logistics and it is that someone should make sure that employees work like agreed. This is the responsibility of middle managers in the business. Volvo Logistics business thinks that they understand Strategic IS/IT and their work according to a respondent. They also think that the company's IS/IT follows Volvo Logistics rationalisation goals and thereby are aligned with the company's goals. One respondent said that the business thinks that their biggest overarching systems have been demanded by themselves and that Strategic IS/IT can give suggestions about different technical solutions that improve their work. They see people responsible for IS/IT in the business as a part of the communication with Strategic IS/IT but said that the communication always can be better. Since all persons interpret information different maybe it would is a good idea to check and assure that all have the same understanding.

There is a shortage of confidence for Volvo Logistics IT Governance and keeping IS/IT costs on track in the business according to a respondent. IS/IT is the business second largest cost after costs for employees and it is believed that they not are under full control. A respondent said that the business sees that they pay large amounts of money for IS/IT every year but they do not see that they get value for their money. They do not think that they have enough understanding of IS/IT but those persons who has experience from large IS/IT projects has more understanding for IS/IT. These persons know that it is not always

easy to hold the budget for an IS/IT and that it is difficult to foresee all factors when making estimation.

According to a respondent the business sees Strategic IS/IT as a support function for the different processes at Volvo Logistics. Earlier, the business thought Strategic IS/IT tried to control the business but this is not the case now. There is a border between processes and IS/IT. The business thinks this border can be made more invisible than today said a respondent. This could be achieved if Strategic IS/IT had more IS/IT employees in the business than the IS/IT coordinators. The business is not very willing to give Strategic IS/IT more resources but the business would be more willing to this if Strategic IS/IT could show that the business total IS/IT costs would decrease by for example employing one more person. Some respondents thought that Strategic IS/IT does not follow the business development. They thought that Volvo Logistics should invest more in persons with knowledge about both IS/IT and project leadership. One respondent said that they have begun to employ project leaders with some IS/IT knowledge in order to approach Strategic IS/IT. Another respondent thought that Strategic IS/IT has an imbalance between own employees and consults. It is considered as a drawback since they are vulnerable if consultants decide to quit or move on to another company.

The business thinks they bring in Strategic IS/IT in an early stage when they make changes in the business said a respondent. The business also thinks that they get demanded systems and that it is important to demand systems themselves and not gets systems pushed out to them. Furthermore, they think that Strategic IS/IT has an understanding for their business but that this understanding never will be as high as it is at people working in the business. One respondent said that the more local it is possible to decide about IS/IT the better.

#### **4.5.2 DECISION MAKERS KNOWLEDGE ABOUT IS/IT**

IS/IT issues are discussed in holistic way when the executive management discuss them. One respondent thought that many people do not understand the complexity with building industrial systems but this understanding has improved lately. After all, it is there IS/IT tools that make them attractive to new customers. Now, the executive management can say that their systems help them attract new and old customers and that was something that they would not say a couple of years ago.

According to a respondent, it is important to make a good evaluation before choosing standard products and for a unique process it can be better to have own developed systems to be able to increase their competitiveness. IS/IT is a complex area and one respondent said that if members of the board discuss something from the respondents area of work, approximately eight out of ten will give a clear answer. If the CIO asks something about IS/IT the result will not be the same. A respondent believed that many persons see the IS/IT staff as technical people. The same respondent saw the IS/IT staff as investigators and business engineers. External IS/IT suppliers do not know enough about Volvo Logistics business and users do not have enough knowledge about IS/IT to communicate with external suppliers. This is here Strategic IS/IT get in the picture. They understand the business and have relevant IS/IT knowledge.

#### **4.5.3 ORGANISATION**

According to some respondents the trend within Volvo Logistics is to move to a more top-down managed organisation but much is still delegated within the organisation. Earlier,

Volvo Logistics believed in decentralisation but now they want to have a centralised organisation according to several respondents. One respondent said that it is good that they move to a more top-down managed organisation and as it is now people do as they want in the organisation even if they have decided about a change. According to this respondent it is obvious that they listen to point of views in the whole organisation but when they finally make a decision this decision should be followed. If it has been decided how people should work this should be followed and own ways of work should not be allowed then. Decisions have to be made clearer in the organisation and those responsible for the operation have to govern more.

IT Governance at Volvo Logistics should have a certain amount of flexibility. One respondent thought that central strategies are needed but that their IT Governance also has to satisfy local demands. A reorganisation is discussed within Volvo Logistics today. Ideas about a common Europe organisation has been around for a long time but the consequence of this is that almost the whole company (about 80-90%) should be a part of the Europe organisation. Another suggestion was to create a so called satellite organisations that are built up by different sites. A person in Göteborg should keep this satellite organisation together.

Volvo Logistics has been a company built up on a lot of delegation and humans own responsibility. Since it is a more top-down management today chiefs and the executive management have to know about everything and things that earlier was discussed in the lower parts of the organisation now are discussed in higher levels of the organisation. Some respondents thought that top-down management can be used as a tool to make changes through the organisation. Because of Volvo Logistics organisation today, the CIO has no-power to steer the region IS/IT managers because they report to their local management. This results in that some issues have to be decided by the executive management, which could have been decided within the IS/IT-organisation.

#### **4.5.4 ORGANISATIONAL COMMUNICATION**

##### **Communication of decisions taken**

Decisions taken have to be communicated to employees within Volvo Logistics and are communicated in different ways. They can be communicated by for example news letters, Volvo Logistics own magazine, their intranet or by the executive management. Communication of decisions taken is an area that could be improved according to some opinions. One respondent thought that Volvo Logistics IT Governance goals and purposes should be communicated to all their employees. According to one respondent, investigations have shown that Volvo Logistics chiefs are good at communication. One respondent thought that you can not expect to just get all information and that you have to search for it yourself. Some respondents felt that Volvo Logistics IT Governance is becoming more communicated but that it has to be even more communicated through the company to get a clear and good understanding for it.

##### **Information to employees at Volvo Logistics about IS/IT changes in the world**

To be able to inform employees at Volvo Logistics about IS/IT changes in the world, something called technical watch is used. Volvo Logistics and Volvo IT run it together and Volvo IT has a department just for this area. A respondent thought that this function does not have to be built at Volvo Logistics because of this. The business and processes get information about IS/IT changes in the world in seminars that are held twice every year.

### **Communication between regions**

Communication between regions often goes through Volvo Logistics process boards. As described earlier these process boards have representatives from every region and this makes it possible to communicate between regions. This kind of communication happens in every process. In the Göteborg office there is a close cooperation between Strategic IS/IT and the business. According to a respondent other regions do not have the same understanding for global systems and they are used to local systems. This makes it important to communicate why it is important with global systems within Volvo Logistics. It is also important to listen to local needs and one respondent believed that it is important to meet and talk to each other. Another respondent thought that Volvo Logistics has to be better at making sure that people have understood and listened to arguments in order to accept decisions.

### **4.5.5 CONFLICTS, CRITICISM AND CULTURE**

In Sweden, managers are good at delegating decisions down in the company according to a respondent. One respondent thought that they might delegate something to someone who does not have the right competence for it. One region has a different view of it. They have a stronger connection to hierarchy and those who have leading positions do everything themselves. This region does delegate some routine to other persons but they have to be convinced that they have the right competence first. If they commit themselves to a change like a new system they often work better than the employees in Sweden, but it takes time to reach this level according to a respondent. The reason why their way is long to get there can be that they are more traditional than the Swedes' and that they are not used to work in a process oriented organisation. In Sweden employees accept more according to one respondent.

One respondent thought that they are better at solving conflicts now than before and that conflicts can be good since they can lead to a better solution. Conflicts in the company often has to do with a part of a region wants to be equal to the governing part in Göteborg according to one respondent. Regions have difficulties with separating Volvo Logistics governing part that is located in Göteborg and the operation part; VLSO that is located in the same area. Historically, the other region was a part of Volvo Cars but now belongs to Volvo Logistics. One respondent said that the Gent business never really wanted to belong to Volvo Logistics and that this is a factor that affects their unwillingness to changes. This unwillingness to changes when it comes to IS/IT systems and routines can also depend on the fact that Volvo Logistics has a female CIO according to one respondent. This difficulty has to do with that they have another culture in this region than in Sweden. According to one respondent Gents unwillingness to changes is that they feel that solutions are designed and constructed in Gothenburg and then pushed out to their business. This result in that they do not feel like they have participated enough and this is an area that has to improve according to a respondent. It has happened that regions say they have changed their way of work and then do not change it said a respondent. This problem is usually solved after a year or to.

Cultural differences between regions can be seen during meetings. Some regions have a tougher attitude during the meetings and express themselves more powerful than Swedes. This respondent thought that they have to learn how to handle these cultural differences.

Some respondents had some ideas how to decrease cultural problems. One thought that Volvo Logistics should have the courage to acknowledge the area with office in Göteborg

as headquarter and that it is from this location that the company is governed. Another solution according to one respondent is to create a common organisation for Europe. The drawback is that it would be so big. One respondent thought that decisions should be made in their process boards since all regions are a part of them. According to one respondent changes should be made in small steps.

### **Criticism and organisational culture**

As long as people come with concrete criticism one respondent thought that it is a sign of that they have people who are active and think. It is important to listen to criticism because it can be good. A respondent thought that criticism not should transform to conflicts and that the worst thing is when people do not say anything. If that is the case it is often something dangerous going on, something that eventually will come up to the surface.

Ideas can come from lower part of the company and they have often have freedom to make own initiatives. One respondent thought there is some shortage of openness during executive management meetings and that the open attitude they should have is not really there.

## **4.6 RESULTS FROM THE BENCHMARKING DECISION RIGHTS AND ACCOUNTABILITY**

Five respondents conducted the IT Governance benchmark and according to their answer Volvo Logistics IT Governance get 79 points out of 100 points. We positioned who is responsible for what regarding IS/IT in Volvo Logistics and the result can be seen in the Governance Arrangements Matrix in figure 14 in chapter 4.4.2.

The respondents thought those areas where IT Governance works best are the following (not ranked):

- Infrastructure and applications ordered from processes.
- Volvo Logistics locally
- The Emballage process.
- IS/IT strategy
- IS/IT steering works good but not perfect, locally. The reason for this is that knowledge for business needs are located there.

IT governance is not effective in the following areas according to the respondents (not ranked):

- Changes in local systems.
- Volvo Logistics globally
- In the Inbound process.
- Data quality. The quality level of the input data has to be managed on a daily basis.
- General systems and their basic cost. They are too expensive. Volvo Logistics has not been successful in their common systems.
- Time planning
- Budget forecast

## 5 DISCUSSION

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*In this chapter we discuss both theoretical and empirical findings and compare them with each other.*

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### 5.1 IT GOVERNANCE CONCEPT

It has been difficult to understand what IT Governance really is since it appears to be confusion in the area. When we have come across IT Governance the meaning of it has been varying but we think IT Governance Institute (2003) definition (see chapter 2.2.1) best describes IT Governance. This definition describe who is responsible for IT Governance, how IT Governance should relate to the corporate governance and what IT Governance should consist of in order to help a company to reach its goals. The IT Governance Institute definition is pretty wide and many of the other definitions described in chapter 2.2.1 can be recognised in this definition. We think that a more proper name than IT Governance should be IS/IT Governance, since both IS and IT should be governed.

Volvo Logistics have not used any IT Governance model available today when building their IT Governance. During our empiric study we did not find any respondent that has extensive knowledge about any IT Governance model available today. Despite this, Volvo Logistics have established several parts that are mentioned in IT Governance models available today.

### 5.2 IT GOVERNANCE ORGANISATION

IT Governance should be an integrated part of a company's corporate governance and according to Weill and Ross (2004) joint governance mechanisms do not only increase integration but also lead to a less amount of mechanisms which create more value. Volvo Logistics IT Governance has connections to all key assets since the executive management makes decisions of them and the CIO is a part of the executive management team. Its strongest connection to any of the six key assets in the corporate governance is to finance and this is not strange since IS/IT often is a large cost. By having shared mechanisms between a company's key assets, we think that it is possible to create a good and clear priority process of investments. Both IT and business should be represented in this priority process, in order to avoid that IT projects are separated from a company's other projects.

Historically, Volvo Logistics CIO reported to the CFO and was not a part of the executive management and this can contribute to the strong connection. Volvo Logistics CFO thinks that they can not only focus on IS/IT as a cost and that they should consider IS/IT more as an enabler. This opinion has arisen from conversations with the CIO according to the CIO and we think it is great that they appear to work very well together. It is important that all persons who are a part of IT Governance can describe Volvo Logistics IT Governance. How can they otherwise make effective decisions about it? We have noticed that several respondents have different understandings about their IT Governance and it would be a good idea to clarify what it is and how it is organised so that all persons within their IT Governance have the same understanding for it.

Volvo Logistics IT Governance has strong connections to the AB Volvo Group and can not make all decisions by themselves. The reason for this is that the AB Volvo Group is responsible for all their companies IT Governance and they want synergy between them. We think that this connection work well since AB Volvo Group has make guidelines and the companies has freedom to act within these guidelines. This makes it possible to make some own decisions and still get synergy effects within the group. We think that more can be made in this area and that all companies within the AB Volvo Group should learn more from each other. One example of this involves Volvo Logistics and Volvo Parts. We think that parts of Volvo Parts business and Volvo Logistics business are similar. If the AB Volvo Group wants to separate similar tasks in their companies' maybe they both can use the same kind of information system if this is not the case. It might also be a good idea for all CIOs within the AB Volvo Group to create a closer relation with each other in order to exchange experiences.

As described earlier IS/IT within Volvo Logistics is a very important resource for the company and it would not be possible for them to make business without IS/IT. Because of this we think it is very important to have someone that represent IS/IT in the executive management and this is the case at Volvo Logistics. An effect that we found from having a representative from IS/IT in the executive management team is that the attention for IS/IT has increased among the executive management team and they discuss IS/IT issues more today. We think this result in that the executive management team's knowledge and understanding for IS/IT increase and that this probably give them better possibilities to make good decisions about IS/IT. It is the company's CIO that represent IS/IT in the executive management team and is the IS/IT expert among them. We have also found that the CIO is given an opportunity to gain more knowledge about other areas within the company since they are discussed in the executive management teams meetings. This can result in that the CIO can find areas that IS/IT can support within the company that would not be noticed otherwise since the CIO would not have the necessary knowledge. The CIO is involved in strategy development since the CIO is a part of the executive management team and according to Luftman and Brier (1999) this is an enabler in order to achieve alignment between the business and IT. We think letting the CIO be a part of the executive management team is an enabler for letting IS/IT support the business to reach its business goals. Unfortunately, this is not always considered among companies and we believe it is an important success factor for a company. This opinion is shared with Pearlson (2001) who thinks that a CIO should participate in decision making in executive-level. The CIO working tasks (see chapter 2.7.3) are of a nature that demands that a CIO has to be a part of the executive management in order to promote IS/IT within a company. We think that Volvo Logistics CIO has taken one step away from technology since we have found that the CIO focus on how IS/IT can support the business and it is in this direction we think CIOs of today must strive. Lesser technology focus gives the CIO a greater possibility to focus on promoting development of the company with IS/IT. Further, we have found indications in the line of IS/IT business, that the demand for documenting all within IS/IT steering will increase and this would be a good idea for Volvo Logistics to do, since it will clarify the area.

### **Responsibilities**

To be able to achieve effective IT Governance, we think it is important to have clear and understandable roles and responsibilities within an organisation. By having this, it is possible to minimise the risk that any area is left without any one having responsibility for it. During our empirical study we have found respondents who think there is some

confusion regarding responsibilities within Volvo Logistics. Even if responsibilities are defined it is unclear if they are followed. We think it is important to clarify responsibilities if there are uncertainties within the company and follow defined responsibilities. A risk that might occur is that its responsibility is not clearly defined for tasks, no one will do them. If someone is clearly responsible for a task it is more likely that this person takes responsibility for it since the surrounding expects it.

### **5.3 IT GOVERNANCE WORK**

The most famous IT Governance model today is probably the CobiT model. It is easy to use and it provides things like checklists for its four different areas (see chapter 2.5.1). Both IT Governance Institutes model and the CobiT model make it possible to avoid missing important parts and to both maintain and manage a well functioning IT Governance that generates business value and minimises risks. It can be a good idea to examine these two and other models in order to get ideas about what to do in the future but we do not think that Volvo Logistics need to apply the whole CobiT model or IT Governance Institutes model on their company. We do not think that there is a perfect IT Governance model and think that what is perfect IT Governance in one company is not perfect IT Governance for another company.

#### **Risk Management**

Risk Management is a very important area within IT Governance and will probably get more important in a near future. The reason for this is that demands on companies who have business in U.S. have increased since accounting scandals like Enron. This has resulted in the Sarbanes-Oxley (SOX) act that has been discussed much lately. Risk Management within Volvo Logistics is according to us not as developed as possible. As described in our theoretical framework Risk Management should be considered as a strategic business process that is integrated with Volvo Logistics other corporate governance. We have not found this integration. Risk Management should be considered as a part of the daily work. Risks should be managed in a common way and not be isolated from each other. By integrating risks on all possible levels Volvo Logistics can become aware of possible risks and get a holistic view. If this is done better input for decision making can be attained. A good enterprise-wide Risk Management can not only result in reduced costs but also increased competitiveness within the market. We think Risk Management should be given a higher priority within the company and that Volvo Logistics should develop a strategic action plan to bring together all risks within the company.

#### **IS/IT strategies**

It is important to focus on strategic alignment in order to deliver value of IS/IT to the business. As described in our theoretical framework, strategic alignment is about how to align IS/IT strategies with the business (IT Governance Institute, 2001). During our empirical work, we found Volvo Logistics IS/IT strategies and business strategies well aligned. We think it is very good that Volvo Logistics CIO presents a draft of their new IS/IT strategies for relevant employees and then use their feedback to make them better. This way of working probably make their IS/IT strategies better and more established in the company. Employees see that their opinions are important and that they can affect things to the better. This way of working should make their IS/IT strategies more accepted in the company. Volvo Logistics IS/IT strategy planning is standard practice and their IS/IT strategies have a strong connection to their business strategy.

### **IS/IT principles**

If a company has clear, understandable and communicated IS/IT principles, all affected employees have an opportunity to get the same understanding for them and why they exist. Volvo Logistics should write down all there IS/IT principles in an understandable way with explanations of what they mean and why they have them. It is possible for a company to assign a IS/IT principles task force to make their IS/IT principles (see chapter 2.3). We also think it would be a great idea to establish a control function to maintain and manage IS/IT principles. To establish a control function mean that it should be necessary for IS/IT investments to show that they fulfil all IS/IT principles that the company have. It is important to spread the IS/IT principles to all concerned parties within the company and we recommend that they are presented in a pedagogical way so all can understand them. It can be a good idea if affected persons could reach them on the intranet so that they always can reach them.

### **IS/IT investments**

Large IS/IT investments at Volvo Logistics often affect large parts of the company and it is not unusual that these IS/IT investments take several years to implement. We think it is very good that Volvo Logistics tries to divide large IS/IT projects into smaller parts to get a smaller and more manageable IS/IT projects. Often, working processes are changed when supported by a new IS/IT. We think Volvo Logistics should be very exact in defining their working processes before designing IS/IT systems for them. Otherwise, working processes change during the design and development of their IS/IT systems. This results in that the IS/IT systems has to be changed which takes time and increase the costs.

It is important for Volvo Logistics to be open with IS/IT costs and discuss them with each other. We believe that most people in the executive management realise that costs shown in pre-studies for IS/IT projects often are to low. We think they feel these investments have to be made and if true costs are shown the investments would not be made. It is important to realise that the costs for IS/IT in an area will increase if this area has been neglected for a long time and almost no IS/IT investments has been made there.

As described in chapter 4.4.3 IS/IT investments the most successful IS/IT investments are those where IS/IT employees and business employees works well together. This shows the importance of making the business involved in IS/IT investments. It is also important to have experienced project leaders with an understanding for Volvo Logistics business.

It is very good that Volvo Logistics perform pre-studies in projects but they can be made more extensive in order to give a better reflection of reality. If a general template is used for business cases it would ensure that all relevant information is included. Volvo Logistics could also be better at follow-up effects from made IS/IT investments. We think that this is necessary in order to prove effects from the IS/IT investments. There is a risk that the only thing that the executive management and the board of directors are aware of from the IS/IT investments are the costs, which can result in that future IS/IT investments will not be made. These follow-ups should be documented even if projects fail since success and failure are two sides of the same coin. It is also important to select who should be responsible for making a follow-up. If the same person makes all follow-ups they will be made the same way which makes them more comparable. The reason for why it is important to manage and govern IS/IT projects in an effective way is that effective IT Governance requires reliable and relevant information according to us. How can good decisions be made if the background information for decisions is deficient?

Volvo Logistics do prioritise their IS/IT investments which is very good. They seem to have some problems with prioritising smaller IS/IT investments since they all should be made at the same time if possible. Since the IS/IT departments do not have enough resources for this it is necessary for them to prioritise these investments. If wanted IS/IT investments take too long for users to get it is possible that they try to develop things themselves. This is not a good idea since the result often is deficient. Therefore, as mentioned above, we think it is necessary to give Strategic IS/IT the resources they require in order to fulfil demands. Resources within the AB Volvo Group should be used when possible. Today, Volvo Logistics use Volvo IT as an IS/IT supplier. We think this is very good and recommend that Volvo Logistics use more resources within the AB Volvo Group if possible and that companies within the AB Volvo Group use Volvo Logistics services when possible.

When introducing new systems within Volvo Logistics it is necessary to reserve both time and resources for this. Users have to get time to learn new systems. If they do not use systems as intended, systems expected business value will not be created. One respondent wanted Volvo Logistics to measure IS/IT performance and not only see IS/IT as a cost. We think this is an excellent idea and hope that Volvo Logistics begin this measurement since effective IT Governance according to us, needs measurement data in order to see changes.

Some respondents think that they do not always know what they have ordered and when it should be delivered. This issue can be solved by introducing Service Level Agreements (SLA). This means that the demander and the IS/IT department make an agreement that contains information like what is ordered and when it should be delivered. This information should be written in a way that all parties understand. Volvo Logistics has great knowledge about agreements and according to one respondent this knowledge could be used if SLA is introduced. We think this is a great idea. A drawback with SLA is that it can decrease the feeling of IS/IT as a part of the business and be considered as too formal. According to us, the IT Governance function is not to make all agreements but to make sure that understandably agreements that both parties understands.

### **Keeping necessary knowledge about IS/IT within the company**

It is possible to outsource IS/IT to another company and if this is done it is important to make it clear for the insourcing company what their responsibility for IS/IT is. If all IS/IT in a company is outsourced the insourcing company should be responsible for strategic part of IS/IT. The strategic part of IS/IT is similar to product development. One great problem with outsourcing can be keeping important competence within the company. Consultants in a company often easier change workplace than a regular employee. There is a risk that another customer to the consultant firm wants a consultant with a specific competence that your company has and pays more for the consultant. Maybe your company do not need a specific competence when IS/IT is outsourced and you loose this competence. This can result in that you even loose IS/IT ordering competence and that is dangerous. Not many companies would consider outsourcing their product development so why would they consider outsourcing their strategic IS/IT? We think that important competences should be held within the company and that this is an issue for the company's IT Governance since their role is to govern IS/IT.

IS/IT is strategically a very important resource for Volvo Logistics but is despite this not a part of their core process. This results in that they do not need to have all IT activities

assembled within the organisation and can outsource some parts, but one should try to keep the strategic side of IS/IT within the company and maintain a high order competence. Parts that can be wise to outsource are e.g. maintenance of systems to companies with expertise in this area.

If a company should choose to outsource all IS/IT within the organisation this will probably lead to the loss of the ordering competence necessary to be able to order the IS/IT that the organisation needs. The reason for this is that the business does not have enough time or knowledge to order new IS/IT. We think that the Strategic IS/IT department should exist within Volvo Logistics and that their functions should be making good IS/IT for the business. Together with the business they have the necessary knowledge that is needed to order IS/IT that creates value for the company. We think that the Strategic IS/IT department at Volvo Logistics has to find the businesses need, explain for the business what they can order, make orders and then explain for the business what they have ordered and how they can benefit from their new IS/IT investment.

Volvo Logistics has outsourced parts of their IS/IT and mainly to Volvo IT. Since Volvo IT is a company within the AB Volvo Group we only consider their outsourced IS/IT as a low degree of outsourcing.

## **5.4 AREAS THAT INFLUENCE IT GOVERNANCE**

There are many things that influence and affect IT Governance. We have examined some of some of them, and they are: business and IS/IT alignment, shortage of resources within the Strategic IS/IT department, decision maker's shortage of knowledge, communication, conflicts, criticism, and culture.

### **Business and IT alignment**

The purpose of IS/IT within a company is to support the business and IT Governance's role is to make sure the company gets most business value possible from IS/IT. A condition for being successful with IT Governance is that alignment between business and IT exists. We have found a close cooperation between the business and IS/IT within Volvo Logistics today and this is noticeable when interviewing respondents. Both respondents from the business and IS/IT think IS/IT is an integrated part of the business. Volvo Logistics has increased the alignment by having an IS/IT coordinator in the Inbound process that belongs to the Strategic IS/IT department. It would be a good idea to let the other processes IS/IT coordinators belong to Strategic IS/IT and not to the processes as they do today. The executive management teams interest in IS/IT has increased since the CIO became a part of the team and according to Luftman and Brier (1999) is the executive management support for IT the most important enablers to achieve alignment between IT and business. Letting the CIO take a place in the executive management is important and Volvo Logistics has realised this.

It is important that Volvo Logistics business realise that all IS/IT in the company should be made by the IS/IT departments and not by themselves. According to us IS/IT issues are not as easy as many people think and IS/IT professionals should be given an opportunity to do their job. It is also important that all orders to external suppliers for new IS/IT should go through the IS/IT department and not by the business themselves. The reason for this is that if all orders goes through the IS/IT department and IS/IT professionals makes the orders a holistic view over all IS/IT orders in the company can be obtained. Volvo

Logistics should make sure that the business knows that they have an IT Governance function and what they do.

Luftman and Brier (1999) describe the six most important enablers and inhibitors for aligning business with IT. They suggest a six-step approach (see chapter 2.6.1) to maximize enablers and minimize inhibitors and we recommend Volvo Logistics that they work through these six steps to reach the alignment between the business and IT.

### **The Strategic IS/IT department's shortage of resources**

Every part of Volvo Logistics business has a possibility to employ a person if they have a business case for this person. It should be proved that Volvo Logistics can get a new client or a new assignment because of this person in the business case. The CIO do not have this possibility since IS/IT often only is considered as a cost. We think that this is wrong and that IS/IT departments at Volvo Logistics should have the same possibility. Since they should be an integrated part of the business and not a separated part of it that only is considered as a cost and we recommend that Volvo Logistics put together both benefits and risks by bringing more resources to IS/IT departments. We also think it is dangerous that only a few persons have some specific important knowledge and competence within Volvo Logistics and that some of them are consultants.

### **Decisions makers knowledge of IS/IT**

It is very important to have the right people engaged in order to get a well functioning IT Governance and we described the importance of roles and responsibilities within IT Governance in chapter 2.4. These persons can be a corporate executive or come from the business management or IS/IT management. During our interviews with respondents we have found some indications that if the general knowledge about IS/IT increased a little bit it would be easier for decision makers to make good decisions about IS/IT. It could result in that people feel more secure about asking questions about things they do not understand and not decide anything until they do understand what it really means. One thing that might improve the executive management teams knowledge about IS/IT is to appoint someone who is not a part of the executive management team, to be a technical advisor. This person should only be a technical expert and not have any right to vote in meetings. There are many companies within the AB Volvo Group, and every company has an executive management team. This is a very good resource to use, and by letting board members from different companies share their IS/IT experiences with each other, they can gain an understanding of how the other companies within the AB Volvo Group handle their IS/IT issues. It is important to realise that the decision makers should not know all about IS/IT and it is important that IS/IT related tasks are presented in an easy and understandably way.

We believe it is important that IS/IT issues are brought up to the executive management and this belief is shared with Luftman and Brier (1999) who show that senior executive support for IT is an enabler. By doing this it is possible to achieve a greater acceptance for IS/IT in the whole company. As described in chapter 2.4 it is not the executive management's role to know about technical IS/IT details but to understand IS/IT capability to create business value. Of course, they also have to get good and relevant information to make good decisions and this is an area that Volvo Logistics have an opportunity to become better.

### **Communication**

To be able to achieve business value from IS/IT in a company it is important to have an IT Governance function that works. As we describe in our theoretical framework there should be a clear connection between business, management and IS/IT. Our empirical study has showed that Volvo Logistics have these connections but we have found some difficulties with communication between some regions. These difficulties should be addressed and managed according to us in order to improve the communication between these regions.

The business, management and IS/IT have different time perspectives. The management has a very long time perspective and this can reach as far as ten years. This is not strange since their task is to see and make decisions where the company should be in the future. Both the business and IS/IT has shorter time perspectives. The business, management and IS/IT also have different ideas about the company, the future for the company and what it is most important to focus on. We think that people often think that the most important area to focus on is the area that is closest to them selves. By focusing on different areas, communication difficulties can arise between people. Problems with communication can arise when employees within a company use different vocabulary such as technical language and do not understand each other. Another issue is since global companies have employees from different countries that speak and writes in different languages this can cause problem when communicating even when they work in the same business area.

### **Conflicts, criticism, and culture**

People see power as something important for their own wellbeing and personal advancement (see chapter 2.6.2). This results in that decisions taken not always support the organisation in the best possible way and it is important to be aware of this issue. It is also important that Volvo Logistics encourage a desired behaviour among their employees.

It is difficult for a large company to establish a common organisational culture. One respondent think there is some shortage of openness during executive management meetings and we think that this important to act upon.

Volvo Logistics is a global company and the employees have different cultures in different countries. It is important to be aware of this so mistakes can be avoided. It is also important to make it known that decisions are made by the company headquarter as well as decisions are made by the AB Volvo Group. Volvo Logistics organisation has been discussed for a time within the company. We think it is important to consider IS/IT as a process that contain all other processes. If IS/IT was considered as a process Volvo Logistics would not have problem with hierarchies within IS/IT. Today, the CIO does not have any control over all regions IS/IT since they report to the region executives. If IS/IT was considered as a process, the CIO would be the process owner and this would not be a problem. It is very good that Volvo Logistics do not consider criticism as just negative. They consider it as something that can be good since it can be a sign of something is wrong. It is better to act before it transform to a conflict.

## **5.5 THE IT GOVERNANCE BENCHMARK**

When we conducted the benchmark of Volvo Logistics IT Governance we used a benchmark model that have been applied on 256 large enterprises, located in 23 countries. The average company had 850 IT professionals and 90% of CIO's that completed the survey had company wide responsibility.

Volvo Logistics IT Governance got 79 points out of 100 points and this is a good result. Only one top third of all participating companies had a result over 74 points and 17% of all participating companies got 80 points or more in the benchmark. By positioning who makes decisions about what and who gives input to the decision makers in their Governance Performance Matrix (see figure 9), Volvo Logistics gets a holistic view over their IS/IT decisions. By comparing Volvo Logistics positioning in the Governance Performance Matrix with the most common patterns for all 256 enterprises from the survey that Weill and Ross (2004) have made, it is possible to see differences. If we compare Weill and Ross's most common input patterns and decision patterns (see figure 10) with Volvo Logistics result (figure 14) we can see that the only common pattern between them is decision taken about IT investments. One reason why Volvo Logistics differs a lot from the most common pattern can according to us, depend on Volvo Logistics position within the AB Volvo Group. Figure 14 shows that input to the areas IT principles, IT architecture and IT infrastructure comes from the CIO and AB Volvo IT Governance. Input to IT architecture and IT infrastructure also comes from the company Volvo IT. We think that one reason for differences with the average patterns is because they get their input from other places than within the company. It can be discussed if it is right to place the combination of the CIO, AB Volvo IT Governance, and Volvo IT as an IT monarchy but we think this is the most suitable alternative. This can result in deviations from the average pattern.

Respondents consider many areas within their IT Governance works well but there are areas (see chapter 4.6) that could be better. We recommend that those areas should be examined more by Volvo Logistics to make it possible to reduce them.

## **5.6 FURTHER RESEARCH**

This work can be expanded by conducting the same kind of work with all Volvo Logistics regions. The IT Governance benchmark should be conducted by more respondents since we only had five respondents making it and Weil and Ross (2004) recommended that ten respondents perform the benchmark. All the research we have conducted could be conducted at all companies within AB Volvo Group in order to clarify how IS/IT is governed in their different companies. The companies could learn from each other and it is possible that AB Volvo IT Governance would get ideas how improve their IT Governance for all companies within the AB Volvo Group.

## 6 CONCLUSIONS

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*Our research question is “What should a global logistics company consider regarding IT Governance?” and we have come to the following conclusions.*

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In our research we have found that it appears to be confusion about the term IT Governance since its definitions has been varying. We think Volvo Logistics IT Governance is successful even though they have not used any model when building and managing their IT Governance function. IT Governance should be an integrated part of a company’s corporate governance and the CIO should represent IS/IT in the executive management, and this is the case at Volvo Logistics. IT Governance should be clarified for all employees affected by it, and this is something that Volvo Logistics could improve. It is also important to document all about IT Governance and since Volvo Logistics have not documented their IS/IT principles, we recommend that this is done. When making IS/IT strategies, it is important to focus on strategic alignment in order to deliver value of IS/IT to the business. Volvo Logistics CIO use feedback from relevant employees to improve their IS/IT strategies and this should result in increased acceptance for them in the company.

It is very important that Volvo Logistics business processes first decide how their working process should be designed before developing IS/IT for it. Someone like the CIO should be a part when designing the work processes in order to suggest how IS/IT can affect the working process. Costs for IS/IT should be discussed openly and honestly, so that real costs are shown before making decisions about IS/IT investments. We have found that this is not always the case at Volvo Logistics. It is also important to make good pre-studies and follow-ups of IS/IT projects and we recommend that Volvo Logistics makes a general template for pre-studies and perform more follow-ups. Follow-ups of IS/IT projects who failed is also important to do since failure and success are two sides of the same coin. It would also be a good idea to introduce Service Level Agreements (SLA) between the business and IS/IT departments in order to clarify IS/IT orders. Managing risks within the company in order to reduce costs and increase competitiveness is important and Volvo Logistics could improve this area. Some IS/IT within Volvo Logistics is outsourced and we think it is necessary for them to maintain some IS/IT knowledge within the company in order to maintain an ordering competence and to be able to address strategic IS/IT issues.

Business and IS/IT alignment is important since this is a condition for being successful with IT Governance, and we have found a close cooperation between Volvo Logistics business and there IS/IT. We do want to emphasise that all IS/IT orders should go through the Strategic IS/IT department and that it would be a good idea to employ all IS/IT coordinators under the Strategic IS/IT department. The Strategic IS/IT department must get more resources according to us. They should decrease the amount of external consultants and recruit more people to themselves. It is important that decision makers have an understanding for IS/IT so they understand how IS/IT can benefit the company. They should get good and relevant information in order to make good decisions. This information should be presented in a way that is easy to understand. Decisions about IS/IT should be communicated through a company and Volvo Logistics do this well according to us. Global companies face the difficulty of holding together a company with many

different cultures and local deviations. Volvo Logistics also seem to have some difficulties with this issue and we recommend that they address this problem in order to solve it.

The Governance Arrangements Matrix show who makes decisions about what and who give decision makers their input at Volvo Logistics. In the Governance Performance Survey, Volvo Logistics got 79 points and this is a good result since only the top one third of all participating companies got more than 70 points.

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# APPENDIX A - GOVERNANCE ARRANGEMENTS MATRIX

## Decision

*IT principles* – Clarifying the business role of IT

*IT architecture* – Defining integration and standardisation requirements

*IT infrastructure* – Determining shared and enabling services

*Business application needs* – Specifying the business need for purchased or internally developed IT application

*IT investment and prioritisation* – Choosing which initiatives to fund and how much to spend

## Archetype

*Business monarchy* – Top managers

*IT monarchy* – IT specialists

*Feudal* – Each business unit making independent decisions

*Federal* – Combination of the corporate centre and the business units with or without IT people involved

*IT duopoly* – IT group and one other group (for example, top management or business unit leaders)

*Anarchy* – Isolated individual or small group decision making

### GOVERNANCE DECISION

ARCHETYPE	IT Principles		IT Architecture		IT Infrastructure		Business Application Needs		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy										
IT Monarchy										
Feudal										
Federal										
Duopoly										
Anarchy										
Don't Know										

(Weill and Ross 2004, p.11)

## APPENDIX B - GOVERNANCE PERFORMANCE SURVEY

The goal of this survey is to assess the effectiveness of your enterprise's IT governance. We define IT governance as *specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT*. Please answer these questions for the part of the enterprise for which you are responsible.

1. How important are the following outcomes of your IT governance, on a scale from 1 (Not important) to 5 (Very important)?

Governance Outcome	Not Important				Very Important
	1	2	3	4	5
Cost-effective use of IT	<input type="checkbox"/>				
Effective use of IT for growth	<input type="checkbox"/>				
Effective use of IT for asset utilization	<input type="checkbox"/>				
Effective use of IT for business flexibility	<input type="checkbox"/>				

2. What is the influence of the IT governance in your business on the following measures of success, on a scale from 1 (Not successful) to 5 (Very successful)?

Success Measure	Not Successful				Very Successful
	1	2	3	4	5
Cost-effective use of IT	<input type="checkbox"/>				
Effective use of IT for growth	<input type="checkbox"/>				
Effective use of IT for asset utilization	<input type="checkbox"/>				
Effective use of IT for business flexibility	<input type="checkbox"/>				

3. What are the areas where IT governance works best? Why?
4. What are the areas where IT governance is not effective? Why?

(Weill and Ross 2004, p.239-240)

## APPENDIX C – INTERVIEW TEMPLATE IN SWEDISH

### BAKGRUND OM INTERVJUPERSONEN

1. Hur länge har Ni jobbat inom Volvo Logistics?
2. Vilken roll har Ni inom företaget
3. Vilket ansvar har Ni inom företaget?

### IT STYRNING

1. Anser Ni att det finns en klar och tydlig IT Governance inom VLC? (eller förknippas den som samma sak som IT management)
2. Anser Ni att Ni har en tillräcklig förståelse för Volvo Logistics IT styrning (Governance)?
3. Anser Ni att Ni är en del av IT Governance?
4. Vad tror Ni är målet/syftet med Volvo Logistics IT styrning?
5. Är Ni införstådd med Er roll inom VLCs IT Governance (styrning) och är Ni införstådd med Ert ansvar som Ni har inom IT styrningen?
6. Anser Ni att IT styrningen är en integrerad del av företagets styrning och i så fall hur?
7. Anser Ni att Ni kan påverka företagets IT styrning och IT investeringar?
8. Tror Ni att det finns bristande förtroende för IT styrningen inom Volvo Logistics och i så fall varför?

### ANSVAR OCH ROLLER

1. Vem anser Ni är ansvarig för VLCs IT Governance?
2. Anser Ni att det finns klara ansvarsfördelningar inom Volvo Logistics IT styrning?
3. Kan Ni se ett eller flera områden där det inte är klart och tydligt definierat vem som är ansvarig för det?
4. Kan Ni se om det finns ett eller flera områden där flera har ansvaret för samma sak?
5. Klargör Volvo Logistics organisation rollerna mellan leverantör och beställare med avseende på IT investeringar?
6. Vilket ansvar anser Ni att IT-avdelningen har för IT?
7. Anser Ni att verksamheten har något ansvar för IT på Volvo Logistics?
8. Vad skulle Ni vilja förbättra med avseende på ansvar och roller och kan Ni ge exempel på hur detta skulle kunna förbättras.

### STRATEGIER

1. Hur väl känner Ni till VLC's IT-strategier?
2. Anser Ni att IT-strategierna ligger i linje med företagets affärsmål?
3. Ser Ni att VLC's IT strategier är väl spridda inom organisationen?
4. Anser Ni att man inom Er region/process har förstått VLCs IT strategier och mål?
5. Anser Ni att IT-avdelningen hänger med i verksamhetens utveckling?

### ÄGARSKAP

1. Vem anser Ni äger systemen?
2. Vem anser Ni äger informationen i systemen?
3. Vem anser Ni äger IT projekten som bedrivs inom företaget?
4. Vad skulle Ni vilja förbättra med avseende på ägarskap och kan Ni ge exempel på hur detta skulle kunna förbättras.

## LEDNINGEN

1. Anser Ni att ledningen är engagerade i IT relaterade frågor och i så fall på vilket sätt?
2. Vad skulle Ni vilja förbättra med avseende på ledningen och kan Ni ge exempel på hur detta skulle kunna förbättras.

## KOPPLING MELLAN IT OCH AFFÄRSVERKSAMHETEN

1. Finns det kopplingar mellan IT verksamheten och den övriga verksamheten och hur se de i så fall ut?
2. Kontrolleras det att IT verksamhetens leveranser uppfyller verksamhetens behov och i så fall hur?
3. Sker det verksamhetsförändringar där inte IT verksamheten deltar i alls?
4. Sker det verksamhetsförändringar där inte IT verksamheten deltar redan i planeringsstadiet?
5. Anser Ni att IT verksamheten/affärsverksamheten förstår IT verksamheten/affärsverksamheten? (exempelvis mål, syften, roller, arbetsmetoder, arbetsuppgifter osv.)
6. Hur väl anser Ni att IT ligger i linje med företagets mål?
7. Hur säkerställer IT Governance att IT ligger i linje med företagets mål?
8. Vad skulle Ni vilja förbättra med avseende på kopplingen mellan IT och affärsverksamheten och kan Ni ge exempel på hur detta skulle kunna förbättras.

## KOMMUNIKATION

1. Sker kommunikation mellan IT verksamheten och affärsverksamheten och hur yttrar den sig i så fall?
2. Hur får Ni reda på IT relaterade förändringar(ledningen informerar, kommitté informerar, webbaserad portal)?
3. Om Ni informerar om IT relaterade förändringar (beslut som tagits inom IT Governance) hur går Ni tillväga? Exempel på sätt att informera; (ledningen informerar, kommitté informerar, webbaserad portal)
4. Har Ni något förslag på hur kommunikationen skulle kunna förbättras?

## VERKSAMHETSFÖRÄNDRINGAR OCH PROJEKT (FRAMTAGNING AV NYA SYSTEM ELLER MODIFIERINGAR AV BEFINTLIGA SYSTEM)

1. Vem är det som begär verksamhetsförändringar (nya system och förändringar i system)?
2. Hur duktiga är verksamheten att själva beställa av nya system eller förändringar av befintliga system?
3. Vad skulle Ni vilja förbättra med avseende på verksamhetsförändringar (framtagning av nya system eller modifieringar av befintliga system) och kan Ni ge exempel på hur dessa skulle kunna förbättras.

## UPPFÖLJNING AV VERKSAMHETSFÖRÄNDRINGAR OCH PROJEKT

1. Sker uppföljning av genomförda verksamhetsförändringar och projekt som är IT relaterade?
2. Hur sker denna uppföljning i så fall och vilka verktyg använder Ni?

## UTBILDNING

1. Anser Ni att Ni får tillräcklig utbildning för att kunna använda ny IT?

## KULTUR

1. Finns det kulturskillnader mellan regionerna som kan orsaka problem och hur yttrar de sig i så fall?
2. Ser Ni någon tendens till att regioner som inte tillhör Sverige har en viss tendens att sätta sig emot beslut som tas om IT alternativt om verksamheten?
3. Hur skulle Ni beskriva Volvo Logistics företagskultur?
4. Vad skulle Ni vilja förbättra med avseende på kultur och kan Ni ge exempel på hur detta skulle kunna förbättras.

## **APPENDIX D – VOLVO LOGISTICS PROCESSES**

### **The Contracting process**

The Contracting process is responsible for purchasing of transport and logistics services. Contracting is performed for external transport- and logistics needs, on behalf of the processes Inbound, Outbound, Aviation, and Emballage of Volvo Logistics for its customers. (text received from Volvo Logistics CIO)

### **The Inbound process**

This service helps customers with their material supply so that they can get a well organized material flow. Volvo Logistics makes an analysis of customer's specific situations and needs before the creation of a material flow. Volvo Logistics buy in all transport service from selected transport companies but monitor all deliveries and ensure that they arrive in time with an Inbound service called Transport management. Another Inbound service that they offer is called Traffic development and it is about maintaining and fine-tuning e.g. transport systems. They can also assist their customers with services like storage and pre-assembly. Volvo Logistics is currently developing an e-tool named ATLAS (Advanced Tool Logistics for Automotive Supply) that will help collect information about material flows worldwide. (Volvo Logistics Corporation)

### **The Outbound process**

Volvo Logistics Outbound service helps customers with their distribution. The service focus on delivering undamaged vehicles in promised time. Volvo Logistics can help support a products design phase, logistics development, damage prevention, transport purchasing, operational management, follow-up and report together with their customers. With help from distribution e-tool named A4D (Application for Distribution) it is possible to get a good overview over the entire process. This e-tool can e.g. calculate delivery date for an order at the moment a customers order a vehicle. Customer's orders are integrated with production systems and give up-to-date information about each vehicle. (Volvo Logistics Corporation)

### **The Emballage process**

The Emballage service helps customers with packing materials in order to minimize costs. By using this service customers can take advantage of a global system of recyclable packing and maintain a very high standard that minimizes the number of damaged or scrapped products. Customers can choose between using Volvo Logistics standard range of packing or having custom-made packing. If customers choose the standard range Volvo Logistics own the packing and customers only need to pay when they use it. Customers can get information from about their packet material account from Volvo Logistics web-based service called Emballage Pool Online. (Volvo Logistics Corporation)

### **The Aviation process**

Volvo Logistics Aviation service offers support to customers in the area of aviation. From maintenance, manufacturing, repair, overhaul, distribution to flight operations. Volvo Logistics works closely together with their customers and provide knowledge about logistics. They manage flow of components, materials and finished goods within the whole supply chain. Volvo Logistics creates tools to reduce costs and improve their customers business. They can also provide customers with complete and individually designed warehouse solutions. Volvo Logistics together with Volvo Aero Services, provide Boeing with a complete aftermarket network for parts from sale to delivery. (Volvo Logistics Corporation)