GÖTEBORGS UNIVERSITET

IT Agility

A Conceptual Model and an Empirical Assessment of Organizations in Sweden

IT Agilitet

En konceptuell modell och empirisk undersökning av organisationer i Sverige

Michael Yousif

Master of Science Thesis in Informatics

Abstract

Enterprise agility in manufacturing, supply chain and other businesses have been addressed by researchers since the beginning of 1990s. With the increased diffusion of information technology (IT) in business both at the operational and strategic level, IT is often been brought up as a factor pushing for business agility as well as being a potential agility enabler. As a result, IT organisations need to better understand enterprise agility and changes affecting the business but also their own role in promoting and enabling firm agility. This research has developed a concept for IT agility and applied it through a quantitative survey in determining the IT agility level of organizations in Sweden.

The IT agility concept, developed through an extensive literature review, suggests that in order for organizations to be IT agile, they need to think and act in an agile way in a number of areas (dimensions) at the same time. Eight dimensions have been identified which constitute the cornerstones of the IT function and its interaction with the business namely; Strategic IT-Business Alignment, Management and Leadership, Organisation Structure and Culture, People and Skills, IT Infrastructure and Standards, IS Development & Delivery, System Capabilities, and Information Capabilities. Each dimension is described and operationalised through 5-10 agile characteristics.

The survey, being based on these dimensions and their agile characteristics, showed that IT agility is highly important for Swedish organizations; however their current IT agility level is only around 50 on a scale between 0 and 100. The amount of active work undertaken in Swedish organizations to achieve and improve IT agility is also modest.

In order to achieve higher performance and stronger competitive advantage, Swedish and other organisations should cultivate their IT workforce and IT capabilities in line with the characteristics of the eight dimensions of our IT agility model. In addition to being a useful conceptual framework for IT agility, our model can also be used as a powerful, tangible and practical tool for IT organisations to help with assessing and evaluating the degree of their IT enabled organisational agility, identifying existing gaps, and guiding in finding measures addressing those gaps.

Keywords: Agility, Enterprise Agility, Business Agility, IT Agility, Information Technology, IT Organisation, IT Function.

Abstrakt (Svenska)

Anpassningsförmågan (agilitet) hos organisationer inom tillverkningsindustri, supply chain och andra verksamheter har studerats av forskare sedan början av 1990-talet. I takt med en ökad spridning av informationsteknologi (IT) i näringslivet, på såväl operativ som strategisk nivå, har IT ofta tagits upp som en pådrivande faktor för behovet av agilitet samtidigt som IT fungerar som en potentiell möjliggörare för agilitet. En konsekvens av det är att IT-organisationer behöver få en bättre förståelse för verksamhetens agilitet, men också en ökad förståelse för sin egen roll i att främja och möjliggöra verksamhetens agilitet. Den här mastersuppsatsen utvecklar en konceptuell modell för IT-agilitet, som sedan används för en empirisk kvantitativ studie med syfte att utvärdera nivån av IT-agilitet i svenska organisationer

IT-agilitetsmodellen i denna uppsats utvecklas genom en omfattande litteraturstudie. Modellen bygger på att organisationer behöver tänka och agera agilt inom ett flertal områden (dimensioner) samtidigt om de vill uppnå en hög grad av IT-agilitet. Åtta dimensioner har identifierats som hörnstenar i IT-funktionen och dess samspel med verksamheten nämligen; Relationen mellan IT och verksamhet, Management och ledarskap, Organisationsstruktur och kultur, Personal och kompetens, IT-infrastruktur, Systemutveckling och systemleverans, Informationssystem, och Information. Varje dimension beskrivs och operationaliseras i form av 5-10 agila egenskaper.

Den empiriska undersökningen är baserad på dessa dimensioner och deras agila egenskaper. Resultatet av undersökningen visar att IT-agilitet är mycket viktigt för svenska organisationer; men att deras nuvarande nivå på IT-agilitet endast ligger runt 50 på en skala mellan 0 och 100. Mängden aktivt arbete som bedrivs för att uppnå och förbättra IT-agiliteten är också blygsam inom svenska organisationer.

För att uppnå en högre prestanda och bättre konkurrensfördelar, bör svenska och andra organisationer utveckla sina IT-medarbetare och IT-kompetenser i linje med egenskaperna hos de åtta dimensionerna i IT-agilitetsmodellen. Förutom att vara en användbar begreppsram för IT-agilitet, kan IT-organisationer också använda modellen som ett kraftfullt, konkret och praktiskt verktyg i syfte att bedöma och utvärdera graden av sin IT-organisationsbaserade agilitet, samt för att identifiera de brister som finns, och utveckla åtgärder för att hantera bristerna.

Nyckelord: agilitet, verksamhetens agilitet, IT-agilitet, informationsteknologi, IT-organisation, IT-funktion.

Acknowledgment

Table of Contents

APPENDICES

Appendix A: Dimensions and Characteristics of the IT Agility Model

Appendix B: Survey Launch Letter (Email)

Appendix C: Hard Copy of the Complete Electronic Survey

Appendix D: The Complete and Detailed Survey Results

List of Tables

List of Figures

1   Introduction

This chapter introduces the background (Section 1.1) and the problem description (Section 1.2) for the topic of this research, which is the topic of agility in IT. It then outlines the purpose of this research and the exact research questions (Section 1.3), followed by stating the scope and delimitation (Section 1.4) of this study. Finally the structure of the report is outlined (Section 1.5).

1.1   Background

It is often stated that businesses need to adjust and act swiftly in today's highly dynamic business environment (Van Oosterhout et al., 2006). The accelerating pace of globalization, fierce competition, constantly changing customer needs, and rapid technological development create an environment in which sustained competitive advantage is very hard, if not impossible, to achieve (Roberts and Grover, 2012). Industries that were once seen as relatively stable have now become fiercely competitive environments where established giants are challenged by dynamic start-up companies all over the world (Roberts and Grover, 2012). As a result, organisations must be alert to signals and indications from their internal and external environments, and also respond quickly and adequately (Seo and La Paz, 2008). They need to become agile (Van Oosterhout et al., 2006).

The use and application of the concept of agility started in the manufacturing industry in the early 1990s with the purpose of making already rather efficient and effective companies more flexible and adaptable to their environment (Strohmaier and Rollett, 2005). Since then, the concept and meaning of agility has received a growing attention where academic literature and professional press have, through many books and articles, attempted to define and describe business agility (Van Oosterhout et al., 2006). The term agility today is often applied to companies that perform well and are able to adapt adequately in a rapidly changing environments (Degroote and Marx, 2013).

A survey conducted by the Economist Intelligence Unit (Glenn, 2009) showed that a vast majority of executives (88%) regarded agility as one of their critical keys to global business success. The agility of the enterprise has been directly connected to profitability and market share growth, which are definitely critical factors for business success (Chen et al., 2014).

The agility concept in the meaning of sensing and responding quickly and adequately to internal and external changes requires re-alignment of business processes, firm resources and even business objectives if the changes are significant (Seo and La Paz, 2008).

One of the factors gaining an increasingly strategic role in contributing to and even in creating enterprise agility is Information Technology (Melarkode et al., 2004). Baskerville et al. (2005) state, in their introduction to Business Agility and Information Technology Diffusion, that: *"In a world in which change and uncertainty drive the needs for business agility, and digital information drives business, agility in IT is critical for business success"*. IT development has enabled businesses and organisations not only to automate and speed up many of their core and supporting business processes but it has also allowed them to be much better and quicker in sensing and responding to changes in the competitive environment (Gallagher and Worrell, 2008). For example, many organisations have been able to sense changing market conditions via data mining and analysis techniques (Gallagher and Worrell, 2008). Also, well designed IT infrastructure makes it possible for organisation to quickly customise and modify their systems and the products and services they support, thereby helping organisations to explore and exploit market opportunities (Gallagher and Worrell, 2008).

1.2   Problem Area

Even though there seems almost to be a consensus among researchers and practitioners regarding the need for organizational agility, there is no agreement as to what exactly agility is, and even more importantly how organizations could achieve and assess agility (Schrage, 2004). Also the need for agility has not been empirically studied sufficiently according to Van Oosterhout et al. (2006), i.e. what are the change factors that require organizations to become agile and what is the relative

importance of each factor. There is also little research that evaluates and assesses organizations existing level of agility.

As for IT agility and the way to get IT to play a strategic role in achieving enterprise agility, it is not plain sailing; a number of challenges and obstacles face the IT organization and its leadership (Melarkode et al., 2004). The construct of IT agility is still ill-specified and its contribution to organizational performance lacks further articulation and empirical validation (Sengupta and Masini, 2008).

Despite an agreement among researchers on how important IT is to the firm's agility, we know very little about how IT should operate in order to contribute to the overall organizational agility and in turn to competitive activity. Such insight is essential if we would like to go beyond understanding the way IT generates business value (Roberts and Grover, 2012). Also, researchers are not late to point out that IT is a double-edged sword that can both facilitate and hinder firm agility. The organization's range of responses can be limited due to poor system capabilities or wrong infrastructure (Gallagher and Worrell, 2008). It is often the case that the IT function operates in a silo, working with projects that do not always leverage strengths from each other, or simply do not meet business objectives (Melarkode et al., 2004). As a result of that, the business views the IT function as not possessing the adequate understanding of the business needs and priorities (Melarkode et al., 2004).

Many researchers within the IS/IT field have suggested that more research needs to be done on the linkage between organization-wide IT capability and business advantage (Bersin, 2014; Bhatt and Grover, 2005; Lu and Ramamurthy, 2011). This research is partly motivated by this call.

1.3   Purpose and research questions

The overall purpose of this study is to assess the level of IT agility among firms and organizations in Sweden, and thereby gain deeper insights as to how active these organizations work with IT agility, and what their main gaps are in achieving and improving IT agility. In doing so, the purpose of the study is broken down into two interdependent and consecutive parts as follows.

The first part aims at developing a comprehensive conceptual framework for IT agility that outlines the main dimensions of agile IT organizations and their key characteristics, and explains how these characteristics contribute to IT and enterprise agility. The framework is developed using literature review and analysis of prior research in the area of business and IT agility and the relation between the two. The approach to building this framework is by answering the following research questions (RQ):

> *RQ 1. How is the concept of Enterprise/Business Agility defined and how different it is compared to other similar concepts?*
>
> *RQ 2. What is meant by IT Agility and how is it studied and explored by the literature?*
>
> *RQ 3. How can we define and conceptualize IT Agility into a theoretical model, and what would such a model consist of in terms of dimensions and their characteristics?*

The answers to RQ1 and RQ2 form the foundation for Business and IT agility respectively, while the answer to question RQ3 is a definition and a framework for IT agility which together form a theoretical foundation for this term.

Using the IT agility model developed in part one, the second part of this study aims at investigating the importance of IT agility in organizations in Sweden and assess their current IT agility level. It also seeks to understand and measure how actively these organizations are working to achieve and enhance their IT agility. Thus, the research questions to be answered in this part are:

> *RQ 4. How important is IT agility for firms and organizations in Sweden?*

> *RQ 5. What is the current level of IT agility among firms and organizations in Sweden?*

> *RQ 6. How active are these organizations working to achieve and improve IT agility, and what are the main gaps in this regard?*

The second part of this study is conducted using a large-scale electronic survey which in turn is designed using the dimensions of the IT agility model and their characteristics as developed in the first part of the study.

1.4 Scope and Delimitation

The following three important scope delimitations are made with regard to this study.

1. The agility literature review conducted, the agility model developed, and the agility empirical investigation carried out by this research, they are all related to IT agility and its role in promoting and creating enterprise/business agility. Enterprise/business agility is addressed in Research Question No 1 to set the scene and to understand the context of business agility into which IT agility relates and contributes.

2. The scope of IT agility adopted by this research is primarily the IT function's agility and its role in and impact on enterprise agility. In other words, the focus point is agility in the IT function and how it can enable organizational agility.

3. The assessment of the IT agility level of Swedish organizations is carried out primarily from the perspective of those who work in IT functions as well as in IT-business interfacing layers. This implies that this population constitutes the target population of the empirical study.

1.5 Thesis Layout

Figure 1 illustrates the structure of this report in terms of its building blocks and the chapters contained in them.

Introduction	Chapter 1 Introduction	Chapter 2 Methodology	
Theory	Chapter 3 Enterprise Agility	Chapter 4 IT Agility	
Literature Review Results	Chapter 5 Literature Review Findings	Chapter 6 Towards a Comprehensive Concept for IT Agility	
Empirical Study Results		Chapter 7 IT Agility Survey Results	
Analysis, Conclusions, & Contribution	Chapter 8 Analysis & Discussions	Chapter 9 Conclusions	Chapter 10 Contribution & Further Research
Appendices	Appendix A Dimensions and Characteristics of the IT Agility Model	Appendix B Survey Launch Letter (Email)	Appendix C Hard Copy of the Complete Electronic Survey / Appendix D The Complete and Detailed Survey Results

Figure 1: The structure of this thesis report

2   Methodology

This chapter outlines the overall logic of this research which is composed of a literature study followed by an empirical study (Section 2.1). It then presents the chosen methodologies for conducting these two sub studies as well as the rationale behind selecting these methods (Section 2.2). The methods are a literature review followed by a quantitative data collection approach. The literature review method is then described in detail (Section 2.3) followed by a detailed description of the quantitative data collection method (Section 2.4).

2.1   Study Logic and Research Methods

The work with this paper is conducted in two phases corresponding respectively to the two parts of the purpose of the study, as illustrated in Figure 2. Phase 1 is carried out using a thorough review of prior literature in the area of IT agility leading up to a conceptual IT agility model outlining the key dimensions of IT agility and their main characteristics. Phase 2 is based on the outcome from phase 1 to conduct an empirical study in which an electronic web survey, designed using the IT agility model, is used to collect data from Swedish firms and organizations. The findings and conclusions of the study are based on the IT agility model, the results of the empirical study, as well as on comparing those results with the IT agility model.
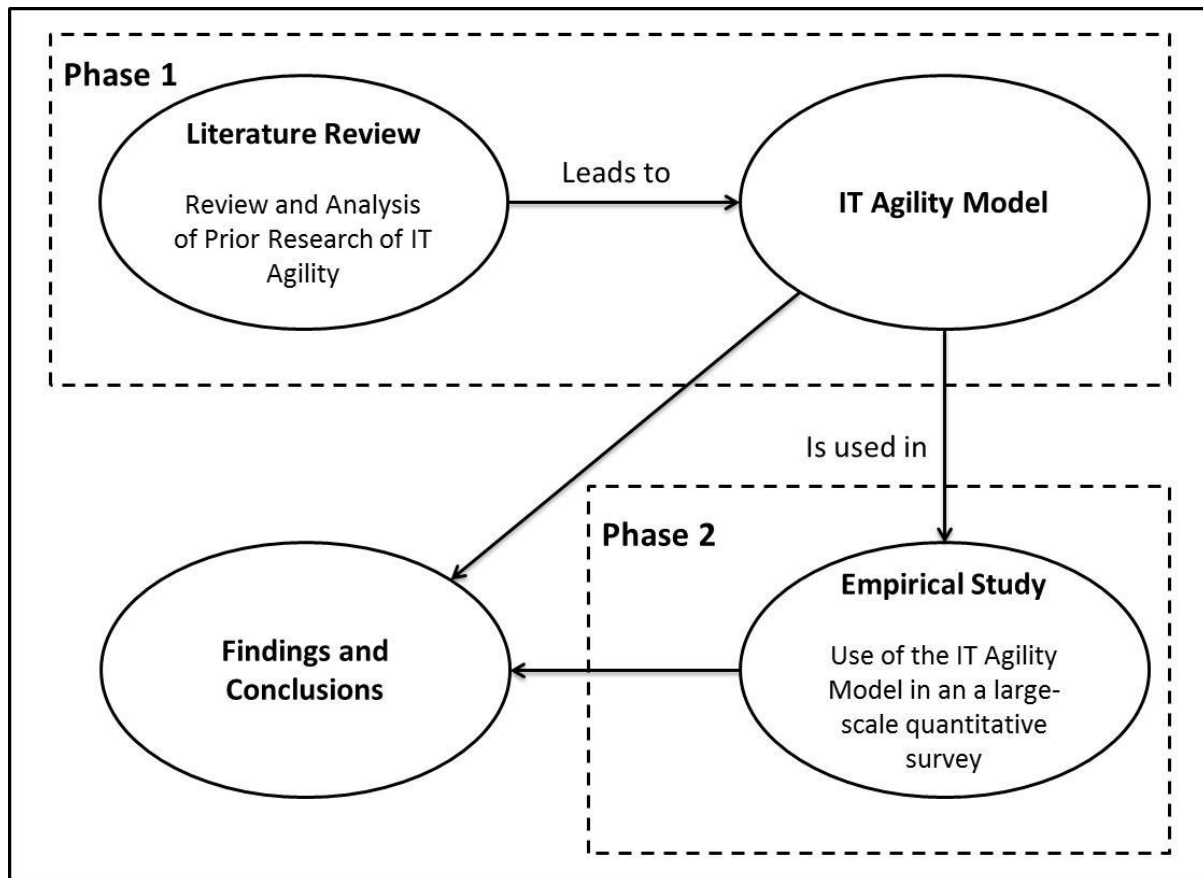
Figure 2: The logic and phases of this research

2.2   Selection of Research Methods

The topic of organizational agility in general and especially with regard to IT is relatively new. It was first used in the manufacturing industry in the early 1990s (Strohmaier and Rollett, 2005) and was gradually adopted by other industries as well as by the field of IT. Despite a growing interest in this concept there is no agreement among researchers and practitioners as to what exactly organizational agility is (Schrage, 2004). This is even more true in the field of information technology. Since the ultimate aim of this research is to assess how agile Swedish organizations are from an IT perspective, it is critical that the concept of agility with regard to IT is clearly defined and described

so that it could be used in a consistent manner to make such an assessment. Scanning and reviewing the literature of agility in IT revealed many different approaches and meanings to this term. However, we could not find an appropriate agility framework or model that could be applied practically and consistently to conduct an evaluation of IT agility in Swedish organizations. In a way, this didn't come as a surprise because the IT agility topic is somewhat still emerging and immature, and it also lacks a good theoretical foundation. Those two reasons led us to choose the research method of literature review of prior research for the first part of this research. Literature review is a thorough, objective summary, and critical analysis of the relevant available research and non-research literature of the topic studied (Hart, 1998) and is helpful in developing and deriving conceptual or theoretical frameworks (Coughlan et al., 2007). Using literature review is a way of tackling an emerging topic that would benefit from exposure to potential theoretical foundations. In such a case, the research contribution would arise from the fresh theoretical foundations proposed in developing a conceptual model (Webster and Watson, 2002). Such a contribution was one of the main drivers behind taking the literature review approach for the first part of this research.

With the outcome of part one of this research which is a theoretical IT agility model with eight clearly defined and described dimensions, we could either choose a qualitative or a quantitative approach in conducting part two i.e. the assessment of IT agility in Swedish organizations. Qualitative research is about exploring issues, understand phenomena, and answering questions by analysing and making sense of unstructured data. It builds a complex and holistic picture of the phenomenon of interest, and is conducted in a natural setting. It aims at interpreting phenomena in terms of meanings people bring to them by developing and understanding of a problem from multiple perspectives (Bryman, 2012). Quantitative research, however, deals with testing a theory composed of variables, measured with numbers, and analysed using statistical methods. It aims at developing generalization that contributes to theory that can enable the researcher to predict, explain, and understand a phenomenon in an "objective" way (Bryman, 2012). Both methods would have worked but we found the quantitative approach to be more appropriate in this case for the following reasons:

- The scope of our assessment is organizations in Sweden covering the entire country. Thus, it is much easier to reach respondents all over Sweden with a web based survey containing the same set of questions compared to personal interviews.

- Our desire to reach so many organizations and respondents as possible which is much easier using a web survey.

- The IT agility model developed in part one of this research has eight well defined dimensions, where each dimension has 5-10 well-articulated characteristics. These dimensions with their characteristics lend themselves very well for a consistent and "objective" approach to data collection and data analysis.

To compensate for some of the depth than might be lost when not using a qualitative approach, open comment questions are added to the quantitative questions. However, answers to these questions are not used in the analysis but we have treated them as extra information that can help in understanding and explaining findings and results from the survey.

In a possible continuation of this research we think it would be a good approach to complement the quantitative method of collecting data with a qualitative approach using interviews and direct interactions with respondents.

2.3   Literature Review

The review of prior literature was conducted in a systematic way and was mainly inspired by the approach recommended by Webster and Watson (2002) when it comes to searching for and identifying relevant literature. Their approach to determine the source material consists of three steps. In the first step, relevant articles are searched from the leading journals where the major contributions are likely to be found. They also recommend looking outside the IT domain as IT is an

interdisciplinary field. Step two continues with a backward review of the citations for the articles identified in the first step. The search is then completed in the third step by using the Web of Science Citation Index to identify articles citing the key articles identified in the first two steps and determining which ones to include. As for carrying out the actual review, analysis, and synthesizing of the literature, Webster and Watson (2002) recommend a concept-centric review before an author-centric review which they mean fails to synthesize the material adequately. Inspired by Webster and Watson (2002) as described above, here is how we exactly carried out the search for and identification of the relevant source material, the way we analysed and synthesized the selected material, and how the agility model was developed. It was done in the following four steps:

2.3.1   Step 1 - Initial Agility Literature Review

To start with we made an initial scan and review of literature related to the concept of enterprise agility and its connection to IT. Already at this stage, we adopted a view of agility in IT as being the IT function's overall role in promoting and creating business agility which created a good basis for searching for the relevant literature.

2.3.2   Step 2 - IT Agility Literature Search, Screening and Selection

The process that led to the selection of relevant IT agility source material was carried out in the following three iterative sub-steps.

- **Search for Articles** - In this first step, articles were searched in the major databases and journals using the search engines of Chalmers and University of Gothenburg. These search engines have access to a wide range of databases, journals, catalogues, printed and electronic books. Search was also done using Google Scholar. The key words and phrases used in this search were all related to agility in the IT context and its link to enterprise agility and firm performance, such as Agility, Agile, Flexibility, Information Systems, Information Technology, Organisation, and Enterprise. Combinations of these key words as well phrases containing these key words like "IT-enabled enterprise agility" were used to scan for and find relevant articles.

- **Screening Articles for Selection** - In this second step, found articles were screened first by title, then by abstract, followed by conclusions, and finally by full text. In the case of electronic books, they were screened first by their title, then table of contents, and finally some relevant text selections. Articles were then selected based on our early adopted scope of IT agility as being "the overall role of the IT function in enterprise agility". E.g. articles that only dealt with enterprise or business agility without the involvement of IT were excluded; however some of these articles were used to address the first research question related enterprise agility.

- **Search for Articles among the References** - In this third step, the references from the articles selected in the second step were scanned using the same key words and phrases as in the first step. These articles were then screened for selection in the same way as in the second step above.

After a couple of iterations of these three steps articles started to repeat themselves and we finally arrived at 42 articles. Table 1 lists the final number of articles included per journal/source.

Table 1: Source and number of articles included in the final literature review and analysis

Journal/Source	Number of articles
2nd European Conference on Information Management and Evaluation, ECIME 2008	1
Books	4
Business Strategy Review	1
communications of the ACM	3

Journal/Source	Number of articles
European Journal of Information Systems	3
European Management Journal	1
Executive Excellence Publishing	1
Harvard Business Review Operations Department	1
IEEE Transactions on Engineering Management	1
Industrial Management and Data Systems	1
Information & Management	1
Information Systems Management	3
Information Systems Research	1
Information Technology and Management	1
International Journal of Information Management	2
International Journal of Operations & Production Management	1
Journal of Information Technology	1
Journal of Intelligent and Robotic Systems	1
Journal of Management Information Systems	3
Journal of the Association of Information Systems	1
Journal of the Healthcare Financial Management Association	1
MIS Quarterly: Management Information Systems	6
MIT Sloan Management Review	1
The Journal of Strategic Information Systems	1
XRDS: Crossroads, The ACM Magazine for Students	1
Total	**42**

2.3.3   Step 3 - Analysis of Selected IT Agility Source Material

In this step we adopted the concept-centric review as recommended by Webster and Watson (2002) where selected articles were reviewed, scrutinised, analysed and synthesized in terms of the different perspectives and viewpoints in which they brought up, discussed, investigated, and offered solutions for IT agility. In the end, eight rather well-defined fields or perspectives emerged where each article contributed to one or several of these perspectives. Please refer to Table 3 in Chapter 5 for the synthesizing of these articles in terms of the agility perspectives they brought up.

2.3.4   Step 4 – The Development of the IT Agility Model

The eight perspectives in the previous step make up the foundation of the agility model developed in this final step of the literature review. These perspectives are then renamed to Dimensions where each dimension is given a background, scope, definition and a role in relation to IT agility and ultimately to business agility. Each dimension is described in terms of the agility properties and characteristics that it has or should have. Please refer to Chapter 6 for the build-up of the IT agility model.

2.4 Empirical Study

The core element of our empirical study is an electronic survey targeted mainly for IT people working in Swedish organizations. A web-based online survey sponsored jointly by the Swedish Computer Society and the Department of Applied IT at the University of Gothenburg was used to collect data. The members of the Swedish Computer Society constituted our respondent target group as being a good representation of our target population. Electronic surveys have distinctive technological, demographic, and response characteristics that affect their design, use, and implementation (Sohn, 2001). Based on electronic survey literature review, Preece et al (2003) have compiled a number of quality criteria for five important components of electronic surveys in order to reach what they call hard-to-involve online population. These are survey design, participant privacy and confidentiality, sampling and participant selection, distribution and response management, and survey piloting. Figure 3 shows how our survey was developed, designed, tested, conducted, and analysed, in which we as much as possible followed the guidelines and recommendations of Preece et al. (2003) for quality web surveys.
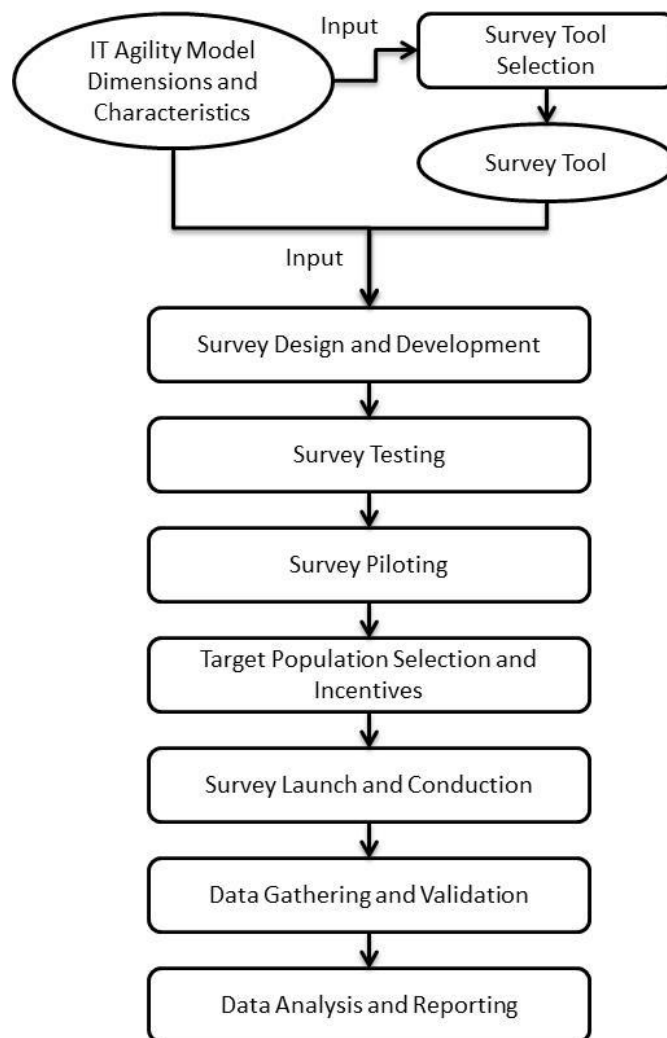
Figure 3: The process of building and conducting the empirical study

2.4.1 The Basis of the Survey – Survey Input

The IT agility framework developed in the first part of this study formed the foundation for the empirical survey. The framework consists of eight dimensions where each dimension has 5-10 characteristics expressed as statements adding up to 60 statements in total. The questions in the survey are direct 1-1 mappings of these 60 statements as described below in Survey Design.

2.4.2 Selection of Survey Tool

More than fifteen survey tools were reviewed and tested to find the most suitable tool for this survey. We looked mainly for tools that could handle so called matrix questions i.e. multiple rows (questions) with multiple columns (evaluation aspects) in a good way. After a period of testing and reviews the tool FluidSurveys was chosen.

2.4.3 Survey Design and Development

The survey is divided into 4 sections. 1) An introduction section, 2) a section to gather facts about the respondent, 3) a section for the assessment of IT Agility Dimensions which is the core part of the survey, and 4) a closing section for capturing comments and feedback, incentive offerings, and material download.

Section 1 - Survey Introduction Section

The introduction section includes survey background, scope, purpose, expected time for completion, confidentiality information, and participation incentives.

Section 2 - Facts About the Respondents

The survey then goes on with seven questions to gather the following facts about the respondent and his/her organization: 1) The industry section of the respondent's organization, 2) the size of the organization, 3) whether the organization operates only in Sweden or on a global basis too, 4) where in the organization the respondents work, 5) his/her hierarchical position, 6) length of employment, and lastly 7) whether the respondents works for an IS/IT consultancy company or not.

Section 3 - Assessment of IT Agility Dimensions

The IT agility model consists of eight dimensions; each dimension has 5-10 agile characteristics or properties expressed as statements. They add up to 60 statements reflecting either a) activities taking place in the organisation, b) states of how things are or should be in an agile organisation, or c) features describing various aspects of the agile IT organization and its relation to business. In the survey, a dimension is called Area, and the characteristics of the dimensions are called Situations. Thus the respondent is asked to assess 8 Areas including all in all 60 Situations related to IT and IT-Business interaction in his/her organization.

For each situation the respondent is asked to assess the following three aspects:

- Importance; i.e. how important this situation is to his/her organization

- Status; i.e. the extent to which this situation exists in his/her organization

- Active Work; i.e. the extent to which his/her organization works actively to achieve and/or improve the situation

Each Area together with its Situations is presented on a page as a matrix. The situations make the rows of the matrix and the three evaluations questions (Importance, Status, and Active Work) and their possible answers make the columns of the matrix. Figure 4 illustrates graphically how this is done.
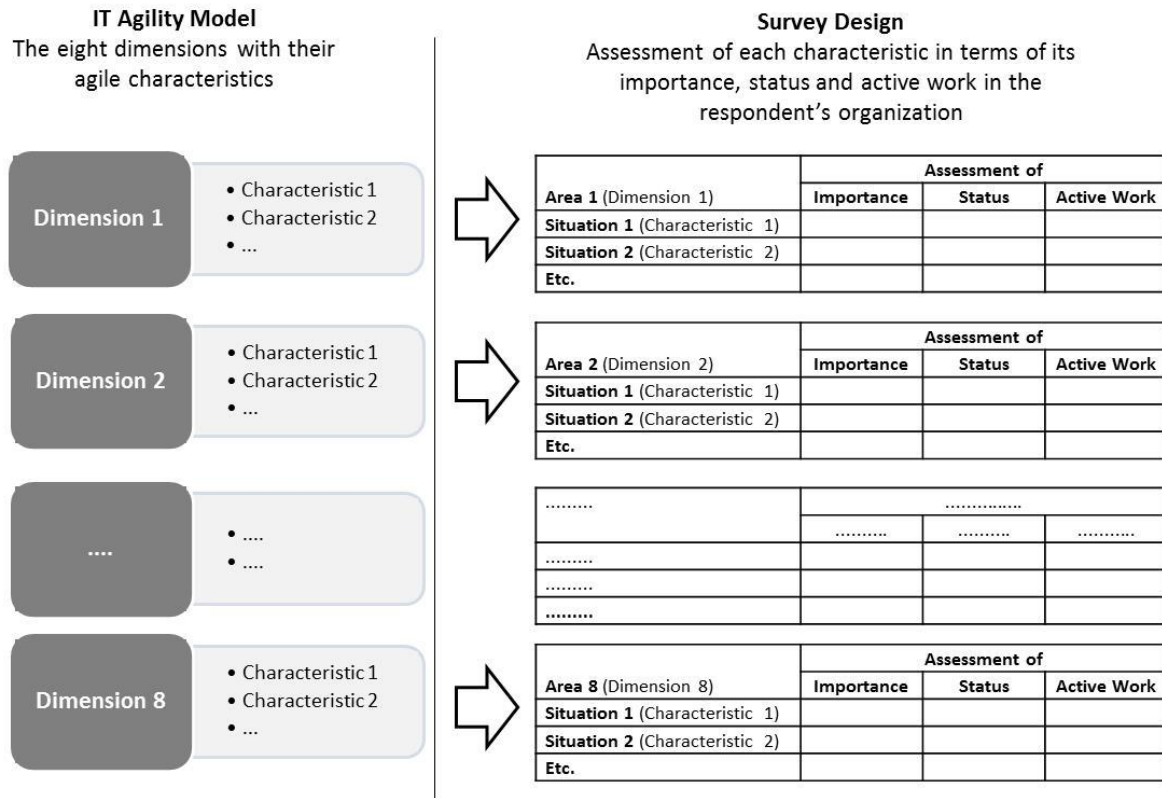
Figure 4: The mapping between the IT agility model and the survey

The exact formulation of the assessment questions related to Importance, Status and Active Work and response alternatives (using Likert scale) are shown in Figure 5.

Figure 5: Assessment questions and their response alternatives

As also shown on Figure 5, a four-point Likert scale has been used for the response alternatives of the three assessment questions, complemented with a *Don't Know*-alternative in case the

respondent doesn't know the answer or the situation is not applicable for his/her organization. The purpose of selecting a four-point "forced choice" survey scale is to eliminate the "neutral middle" option when respondents are unsure and also to force respondents to be on either side of the middle point of the scale.

This section of the survey has its own introduction in order to give respondents some useful information about the upcoming questions, how they are structured, and how they are supposed to answer them. To read the introduction page of this section, please refer to Appendix C - Hard Copy of the Complete Electronic Survey.

Section 4 – Comments, Feedback and Downloading of Material

This section gives respondents the opportunity to add final comments to their answers, leave any feedback they might have about the survey, and decide about the various offerings and incentive offered. Here they can also download a brief version of the model behind the survey as well as their survey answers.

To see the full survey please refer to Appendix C - Hard Copy of the Complete Electronic Survey.

2.4.4 Survey Testing

A group of 5-6 colleagues and school mates continuously tested and reviewed the survey during its development and provided very valuable feedback on all aspects of the survey such as, layout, readability, language, logic, instructions to respondents, user friendliness, etc. This was done in an iterative way.

2.4.5 Survey Piloting

Before launching the survey a formal piloting was conducted with a new group of 5-6 colleagues and school mates who were asked to take the survey as if they were respondents. However, they were provided with a list of items to assess once they have completed the survey. They could also give any other feedback that was not covered by the check list. This piloting activity resulted in a number of changes and improvements to the design of the survey mainly to increase readability, give respondents a better understanding of what this survey is about, and why they need to respond to questions like these. The pilot group reviewed the final version of the survey after their proposed changes were taken into consideration.

2.4.6 Target Population Selection

In order to delimit this survey we made an intentional decision of targeting mainly IT people sitting in IT departments and groups as well as IT staff operating in various interfaces between IT and business units. As for business people, we believe that their view on and input to IT agility is definitely worth capturing, but because of time and scope limitations we chose to start with IT people at this point in time, and plan to target them in the next phase of this research. Having said that, our survey ended up having roughly 10% of participants being business people, with interest in IT.

The preferred size of organizations suitable was identified as being medium to large organizations operating both on a national and a global level. Based on the identified target population, it was decided that the Swedish Computer Society would be the most suitable and representative sample population for this survey. The rationale for that is; a) they are the biggest and oldest computer association in Sweden with around 13000 members, b) their members are mainly IT staff in various roles and structures, c) these members work mostly for medium to large organizations, and d) the association covers the entire country as they have six local representations spanning over the whole of Sweden.

Contact was taken with the Swedish Computer Society who responded positively and accepted to promote and send out the survey to their members. This is how the Swedish Computer Society presents itself shortly on its website (Society, 2015).

The Swedish Computer Society (Dataföreningen i Sverige) is the independent body for the ICT (information and communications technology) professionals in Sweden.

The association holds 13 000 members with local representation in all parts of the country. As well as providing an extensive events programme for our members, we work with the government, the industry and the community on issues such as enhancing digital literacy.

We acknowledge people and organisations that work to improve the use of ICT for the benefit of the society through our annual Diamond awards (Dataföreningens Diamanter).

It was agreed with the Swedish Computer Society that the survey will be presented to their members as a collaboration project between the University of Gothenburg and the Swedish Computer Society, with the purpose of studying and assessing the level of flexibility, responsiveness, and agility of IT functions and departments in Swedish organizations. It was also agreed that the survey will be sent out three times; the first launch and two reminders. To read the survey letter that was sent out containing a link to the survey, please refer to Appendix B - Survey Launch Letter (Email).

2.4.7 Participation Incentives

We realized early that the survey was quite demanding for potential respondents in terms of required time and efforts, and that was something that our test and piloting groups also confirmed. It was therefore extra important that the survey is introduced to the target group in a way that attracted their interest and made them willing to spend the time and effort needed to completing the survey. In addition to having the Swedish Computer Society behind the survey and sending it out directly to their members' email addresses, we wanted to give respondents some benefits and incentives if they chose to participate. Here are the incentives offered:

- Upon completing the survey, respondents could immediately download a brief version of the theoretical model behind this survey as a help for their organization to better understand what agility of the IT function is about.

- They could also download a report with their own survey answers which together with the brief version of the theoretical model, could be used to assess their own IT function's agility level, and identify gaps and improvement measures.

- Respondents are also offered to get a copy of the survey results and the final study report so that they can compare their own organization with the rest of the country and conduct some useful benchmarking.

- Last but not least, respondents can also participate in a draw with the chance of winning an Android smart phone, restaurant meal for two, or cinema tickets.

For the introduction of the survey and for the way the incentives have been presented to potential respondents, please refer to Appendix C - Hard Copy of the Complete Electronic Survey.

2.4.8 Survey Launch and Conduction

The survey was launched on April 30, 2015 by the Swedish Computer Society. It was sent out as an email letter sponsored jointly by them and the University of Gothenburg to all members having an email address. The first reminder was sent out 3 weeks later and the second reminder another 3 weeks after. In total, 10354 members received the email with the survey. Of these 35.1% (3637) opened the email. 16.5% (599) of those opening the email clicked the link of the survey to read the introduction of the survey. Of these 599 members, 79% (472) started the survey by answering the first question. Of these 472 members starting the survey, 44.5 % (210) completed it. In summary, the response rate for completed answers was approximately 2% of the Swedish Computer Society's members, or 5.8% of those members who opened the email.

2.4.9 Data Gathering and Validation

Data was gathered by the survey tool used (FluidSurveys) and was then extracted to Microsoft Excel. All incomplete responses were removed. All completed responses were retained except for one whose answers to all the evaluation questions were *Don't know*. Thus, the number of completed responses that were used in analysis and reporting was 209. There were no missing data as questions were either mandatory to answer or respondents were offered to respond *Don't know*.

2.4.10 Data Analysis and Reporting

The analyses and reporting done on the results of this study are descriptive statistics, frequency distribution, and correlation analysis.

Analysis Tools and Validation

Data is processed, analysed and reported using mainly Microsoft Excel 2010. To validate the results, the same reports and analyses are also done partly in Microsoft Access and partly in SAS (Statistical Analysis System) ensuring the same results are obtained. Other manual tests have also been carried out to ensure that no systemic mistakes have been committed across the tools.

Analysis and Reporting of Likert Scale Data

Likert scale data is so called Ordinal data which means that ordering or ranking of answers is possible but no measure of distance between any two consecutive points is given as opposed to Interval data which is generally integer data in which ordering and distance measurements are possible (Allen and Seaman, 2007). Analysing ordinal data, particularly data related to Likert scales in surveys is not a straightforward procedure and is a subject of considerable disagreement in the literature (Sullivan and Artino Jr, 2013; Allen and Seaman, 2007). The difficulty lies in the way data is transferred into a quantitative measure for analysis purposes (Boone and Boone, 2012). Numbers assigned to Likert-type items imply a "greater than" relationship; however, how much greater is not indicated. Generally, descriptive statistics recommended for ordinal measurement scale items include a mode or median for central tendency and frequencies for variability (Boone and Boone, 2012). Thus mean and standard deviation are of limited value.

Having said that, it is not uncommon that ordinal data from Likert scales is still treated as interval data and analysed as such, mainly because of the availability of more powerful analysis procedures, the so called parametric analysis methods and tests (Allen and Seaman, 2007). But this is a long standing controversy among researchers and scientists, because using parametric procedures without examining the nature of the dataset and the objectives of the analysis can mislead and misrepresent the conclusions of a survey (Allen and Seaman, 2007; Sullivan and Artino Jr, 2013).

However, there seems to be a shared view among many experts that Likert scales data can be used with interval procedures (e.g. mean for central tendency and standard deviation for variability) if the sample size is adequate (at least 5–10 observations per group) and if the data are normally distributed or nearly normal (Sullivan and Artino Jr, 2013; Allen and Seaman, 2007). Using mean and standard deviation is also recommended for a Likert scale that is composed of a series of four or more Likert-type items which are combined into a single composite score/variable during the data analysis process (Boone and Boone, 2012; Sullivan and Artino Jr, 2013). This last condition is applicable when calculating the composite (aggregated) score of each dimension in our agility model used in the survey.

This study will use both non-parametric procedures (median and mode for central tendency and frequencies for variability) and parametric procedures (mean for central tendency and standard deviations for variability) for the calculation of the level of importance, status, and active work for the eight agility dimensions (areas) as well as for the individual characteristics (situations).

However, and based on the recommendations above this study will mainly rely on the following measurements:

- For the composite/aggregated score of each dimension mean and standard deviation will be used in the first place.
- For the individual characteristics, the median value will be used in the first place, supported by the mean value when the distribution is normal or close to normal.

After calculating these values, it appeared that there was a good alignment of the results across both the parametric and none parametric methods which made the question of which method to use less controversial in our case.

Descriptive Statistics and Frequency Distribution

As outlined above the values of Mean, Standard Deviation, Median, and Mode are calculated. Here is how they are exactly calculated:

For the mean value, the Likert scale response alternatives for the three assessment questions (Importance, Status, and Active Work) are converted to numbers and then scaled up to 100 as follows:

Table 2: Coding of the response alternatives to the three assessment questions in the survey

Assessment question	Response alternatives	Code	Response Value = Code scaled up to 100
Importance: Is this situation important to your organization?	Not Important	0	0 X 33.3334
	Slightly Important	1	1 X 33.3334
	Important	2	2 X 33.3334
	Very Important	3	3 X 33.3334
	Don't Know	-1	Not included
Status: Does this situation exist in your organization?	Not at all	0	0 X 33.3334
	To a little extent	1	1 X 33.3334
	Quite a lot	2	2 X 33.3334
	To a large extent	3	3 X 33.3334
	Don't Know	-1	Not included
Active Work: Is your organization working actively to achieve/sustain this situation?	Not at all	0	0 X 33.3334
	To a little extent	1	1 X 33.3334
	Quite a lot	2	2 X 33.3334
	To a large extent	3	3 X 33.3334
	Don't Know	-1	Not included

The mean value is then calculated for individual statements as well as aggregated per dimension.

The median value is calculated for individual statements as well as aggregated per dimension.

The mode value is calculated for individual statements as well as aggregated per dimension.

Frequency diagrams and histograms for the various answers are also presented.

Correlation Analysis

Correlation is a statistical technique used to measure and describe the strength and direction of the relationship between two variables. This study uses the so called Pearson Correlation Coefficient which is a measure of the *linear correlation* between two variables, which is a value between +1 and −1 inclusive, where 1 is total positive correlation, 0 is no correlation, and −1 is total negative correlation. This coefficient indicates the direction and strength of the relationship. Alongside the correlation coefficient, a scatterplot is also used to describe the form and shape of the relationship. The strength, direction, and the form of the correlation together tell us about the dependence of two variables on each other.

Correlation analysis between the importance, status, and active work of the eight dimensions is performed. Correlation analysis is also done between the importance, status, and active work within each dimension.

3 Enterprise Agility

This chapter presents the theoretical foundation for the concept of Enterprise Agility. It starts by a short introduction and background to the concept of Enterprise Agility (Section 3.1), followed by a presentation of the main definitions and themes of agility (Section 3.2). It then describes how the concept of agility is related to other related terms like flexibility and lean (Section 3.3). Section 3.4 outlines the major driving factors for agility while section 3.5 describes the major agility enablers and providers. Finally, Section 3.6 presents a couple of frameworks that break down and explain relevant aspects of agility.

3.1 Introduction

Degroote and Marx (2013) state that the agility concept originated in the early 1990s in the manufacturing sector in an attempt to respond more effectively to the changing competitive landscape. In today's business, the term agility is often used when describing organisations that adapt to and perform well in an increasingly changing environment (Degroote and Marx, 2013). Hence, most researchers describe agility as the ability to sense and respond to environmental changes in a timely manner (Degroote and Marx, 2013). In order to respond timely and adequately to these environmental changes, there is often a need to extend coordination and collaboration beyond the single organisations, including partners in the supply chain (Degroote and Marx, 2013).

IT is and can be applied effectively in identifying, gathering, analysing and communicating internal and external environment information, but also to develop and coordinate responses to this information throughout the supply chain. Consequently, IT has a critical role in arranging and managing a coordinated a response to the supply chain by improving the organisation's ability to sense and respond to market changes (Degroote and Marx, 2013).

3.2 Definitions and Themes of Enterprise Agility

There is much written on the subject of agility and what agility means or should mean for various businesses. Despite that, no consensus has emerged as to how to define organisational agility (Van Oosterhout et al., 2006). However there are a number of common key themes that appear in many of these definitions, such as sensing, responding and coping with unexpected changes.

Based on the literature research made within this study, we have grouped the definitions found by their key theme or themes in an attempt to help understanding the similarities and differences in the way enterprise agility is approached. Important to note is that many definitions have multiple themes which creates some overlap between them but in grouping them we have chosen to focus on the primary themes in the definitions. Here are the groupings including some of the definitions within each group.

3.2.1 Sensing and responding to changes

The organisation's ability to sense and respond to environmental changes is by far the most common elements used in defining enterprise agility. Definitions using these two capabilities are also the most cited ones in the literature. Here are some examples:

> *Agility is the ability to **sense and respond to environmental changes** in a timely manner* (Overby et al., 2006; Van Oosterhout et al., 2006).

> *The ability of firms to **sense environmental change and respond readily*** (Overby et al., 2006)

> *An agile organization has the ability to **sense changes** in the environment, triage important information from spurious signals, alter strategies and tactics to **respond** to new opportunities and threats, and redirect resources to carry out its new plans* (Glaser, 2008).

> *The ability of an enterprise to **respond quickly and successfully to change*** (McGaughey, 1999).

> *The ability of a firm to **respond quickly and flexibly** to its environment and to meet the emerging challenges with innovative responses* (Bessant et al., 2003).

*A set of processes that allows an organization to **sense changes** in the internal and external environment, **respond** efficiently and effectively in a timely and cost-effective manner, and learn from the experience to improve the competencies of the organization* (Seo and La Paz, 2008).

3.2.2 Coping with the unexpected/unpredictable

Other researchers focus on the fact that the changes organisations face are often unexpected and potentially disruptive market events which makes their ability to cope with the "unexpected" critical as we can see in the following definitions.

*Agility is primarily concerned with the ability of enterprises to **cope with unexpected** changes, to survive **unprecedented threats** from the business environment, and to take advantage of changes as opportunities* (Sharifi and Zhang, 1999).

*There are a number of definitions of business agility, but the key element in all of them is the ability that agile enterprises have to **react quickly and adequately to the unexpected**.* (Verstraete, 2004).

*The ability to respond to **unanticipated change** (response ability) but also to act proactively with regard to change* (Arteta and Giachetti, 2004).

3.2.3 Ability to make swift changes

Scholars also highlight the ability for swiftly implementing change as in the following definitions:

*Business agility is being **able to swiftly change** businesses and business processes beyond the normal level of flexibility to effectively manage unpredictable external and internal changes* (Setia et al., 2008).

*Agility is the capacity to anticipate changing market dynamics, adapt to those dynamics, and **accelerate enterprise change faster** than the rate of change in the market, to create economic value.* (Melarkode et al., 2004).

3.2.4 Thriving and growing in a competitive environment

When defining agility, many researchers focus on the desired expected outcome from being able to sense and respond in a dynamic business environment that features continuous innovation and change. Such an outcome would be success and thriving in the competitive environment, as in these definitions.

*Agility is the ability of an organization to **thrive in a continuously changing, unpredictable business environment** (Dove, 2002).*

*The ability to manage and apply knowledge effectively, so that an organization has the potential to **thrive in a continuously changing and unpredictable business environment** (Dove, 2002).*

*The capability of **surviving and prospering in a competitive environment** of continuous and unpredictable change by reacting quickly and effectively to changing market conditions driven by customer-designed products and services* (Cho et al., 1996).

*The ability of a business to **grow in a competitive market** of continuous and unanticipated change, to respond quickly to rapidly changing markets driven by customer-based valuing of products and services* (Sarhadi et al., 1999).

3.2.5 Discovering and seizing new opportunities

The ability to discover and utilise new possibilities and opportunities is another focus area for defining agility as in the following definitions.

*An organization's ability to (1) **discover new opportunities** for competitive advantage; (2) harness the existing knowledge, assets, and relationships to **seize these opportunities**; and (3) adapt to sudden changes in business conditions* (Setia et al., 2008).

*The ability to **detect opportunities for innovation and seize those competitive market opportunities** by assembling requisite assets, knowledge, and relationships with speed and surprise* (Sambamurthy et al., 2003).

*Comprehensive response to the business challenges of profiting from **rapidly changing, continually fragmenting, global markets for high-quality, customer-configured goods and services*** (Goldman et al., 1995).

3.2.6 Managing and applying knowledge and competencies

Many articles point out the importance of competence development, capability building and knowledge management as a way of becoming agile, as in the following definitions.

*The ability to **manage and apply knowledge effectively**, so that an organization has the potential to thrive in a continuously changing and unpredictable business environment* (Dove, 2002).

*The ability to sense and respond to changes in an organization's internal and external environment by **quickly assembling resources, relationships, and capabilities*** (Setia et al., 2008).

3.2.7 Others

There are a couple of other definitions that do encompass most of the views above like the following one:

*Agility is the ability to **thrive in a competitive environment** of continuous and **unanticipated** change and to **respond** quickly to **rapidly changing**, fragmenting global markets that are served by networked competitors with routine access to a worldwide production system and are driven by demand for **high-quality, high-performance, low-cost, customer-configured products and services** (Goldman et al., 1995).*

Finally there are few other definitions that are rather abstract and are expressed rather differently compared to the above mentioned, like the following two.

Agility is the successful exploration of competitive bases (speed, flexibility, innovation pro-activity, quality, and profitability) through the integration of reconfigurable resources, and best practices in a knowledge-rich environment to provide customer-driven products and services in a fast-changing market environment (Sarhadi et al., 1999).

Agility is the continual readiness of an entity to rapidly or inherently, proactively or reactively, embrace change, through high quality, simplistic, economical components and relationships with its environment (Conboy and Fitzgerald, p. 37).

3.3 Agility and Some Related Topics

When describing business agility other close terms like flexibility, lean, effectiveness, innovation and others are mentioned also. The researchers seem to be in agreement that even though these terms do related to agility, organisation agility is different and does have some other dimensions that are not found in these terms.

3.3.1 Flexibility and Agility

Looking at flexibility, organisations need to be flexible in situations where the change is predictable and thus the expected response is mostly predefined (Van Oosterhout et al., 2006). Consequently, flexibility can in most cases be built in into the processes and systems of the organisation. But in the

case of unknown and unexpected change, it is unlikely that the response required has been predetermined. This kind of flexibility cannot be engineered easily into the organisation's ways of working (Van Oosterhout et al., 2006). Here is where agility adds another dimension to flexibility which is being able to cope quickly with such unanticipated changes, not only on the operational level but many times at the strategic level as well (Van Oosterhout et al., 2006). In other words agility extends the notion of flexibility and aims at being able to deal with unanticipated changes (Lu and Ramamurthy, 2011). Therefore, agile organisations have to be more radical and innovative in their response to these unpredicted changes (Van Oosterhout et al., 2006). Exactly the same view is expressed by Wadhawa and Rao (2003) where they define flexibility as a predetermined response to a predictable change, while they see agility is an innovative response to an unpredictable change.

Another way of relating these two concepts into each other is seen in the way (Alberts, 2011) breaks down agility where he sees flexibility as one of six components constituting agility. The other five are Robustness, Resilience, Responsiveness, Innovation and Adaptation (See Section 3.6.1).

3.3.2 Lean vs Agile

Comparing agility to the concept of lean, which has gained lots of popularity in recent years, Verstraete (2004) states that "*Where 'lean' is focused on executing the established processes efficiently, 'agile' is focused on adequately responding to disruptions in those processes*".

He explains this further by adding that when companies are only driven by cost reduction their focus is put on increasing efficiency and becoming lean. However, when they see new business opportunities coming up, companies do their best to enhance their responsiveness to be among the leaders in benefiting from these new opportunities. "That is when agility kicks in" says Verstraete (2004). Having said that, Verstraete (2004) points out that companies will have to determine their balance between lean and agility depending on the business sector they operate in.

3.4 Drivers and Factors Requiring Agility

What influences the business required level of agility according to Van Oosterhout et al. (2006) are internal or external change factors. Similarly Sarhadi et al. (1999) claim that the main driving force behind agility is change. Change is brought about in many different ways, for many different reasons and also depending on the business environment an organisation is operating in.

Sarhadi et al. (1999) give a historical perspective to the kind of changes that have led the manufacturing industry to respond to existing and upcoming market circumstances and conditions. They summarise and list them in the way they emerged historically and how the manufacturing industry gradually responded to them. Staring with **automation and price/cost consideration** after the World War II period reflecting relatively high demands and an inability to supply which drove mass production of goods at lower prices. Automation however was rigid and did not offer enough flexibility so with **widening customer choice and expectation**, the beginning of 1980's saw an enormous focus on quality but with maintained competitive prices. The strong appetite for high quality products was a key reason behind many of the well-known quality concepts like TQM and others. Later on and in the 1990's several **competing criteria** for competitiveness appeared like responsiveness, delivery, flexibility, new product introduction, environmental concern and global competition which turned the market place into "battlefields". Successful manufacturers turned then to **customer integration and proactivity** to help understand customer needs and problems but also obtain new capabilities just ahead of need. The historical overview above shows that one competitive factor is not enough to win the battle for any company. They need to maintain high quality, lower cost, short lead times, and at the same time be proactive and innovative. So **achieving and exploring competitive advantage in synergy** has now become the main drivers for manufacturing companies wanting to be successful.

In another study conducted on a mix of companies, Van Oosterhout et al. (2006) conclude two main groups of change factors requiring agility; external and internal change factors.

External change factors are broken down into:

- **social/legal** like deregulation, legal and political pressures, increased need for financial transparency, and environmental changes and emergencies/disasters

- **business network** such as competitors' mergers in the market, takeovers by competitors, consolidations in the business network, and partnerships and collaboration between competitors

- **Competitive environment**, e.g. increasing pressure on cost in the market, responsiveness of competitors to changes, increasing rate of change in product models and product lifetime shrinkage, and threat of entry of new players.

- **Customer needs**, like demand for customized products and services, need for quicker delivery time and time to market, increasing expectation of quality, sudden changes in order quantity and specification, and fundamental shifts in customer tastes.

- **Technology**, e.g. introduction of wireless connectivity, emerging technologies to easily connect to partners' information systems, and increasing number of viruses.

Internal change factors such as internal strategy to be active in mergers and acquisitions, restructuring of internal IT systems and support, and implementation of new performance management systems.

3.5   Agility Enablers and Disablers

Van Oosterhout et al. (2006, p. 134) describe agility enablers and disablers as *"the reasons behind the existence or nonexistence of agility gaps"*. Depending on how these reasons are dealt with they can serve both as means or barriers for the organisation to improve business agility. According to Van Oosterhout et al. (2006), they can be grouped into the following six categories: Business Network Governance, Business Network Architecture, Information Technology, Organization Governance, Organization Architecture (processes & products), and Organizational Culture & Personnel.

In a similar way (Sharifi et al., 2001) define these enablers or providers in the area of supply chain as follows:

- **Organization** – It is about organisation structure and new ways of working and co-operating with competitors and merging with complementary companies. It is also about the use suitable tools and techniques.

- **People** – It is related to the workforce and their empowerment, as well as team working.

- **Technology** – It is about investing in new and suitable technologies as well as the use of flexible manufacturing systems.

- **Information** – It is about improving information systems and technologies as well as improved system and information integration with customers and suppliers.

- **Innovation** – It is related to Increasing customization and the move to mass customization

3.6   Business Agility Models and Frameworks

In order to cover various aspects of the concept of agility, two different frameworks are presented here outlining how agility can be seen in different contexts.

3.6.1   Six Components of Business Agility by Alberts

Based on studying agility in military forces and the role of information age on national security, Alberts (2011) has concluded that one way of strengthening agility of an organisation is to establish or improve one or several of the following six components, components of agility as he calls them; Responsiveness, Versatility, Flexibility, Resilience, Innovativeness and Adaptability.

Responsiveness – *the ability to act within windows of opportunity*

Responsiveness refers to the time and ability to recognise and react to a change or anticipated change in circumstances. A change can either be a stress that can negatively affect the performance of the organisation or an opportunity that the organisation can embark on to enhance performance or remain competitive. Albers describes the process of responsiveness in great details starting from the time even before detecting the change going through detection, decision, acting, to obtaining desired outcome. Even though speed is important in this process, the ability of controlling the pace of this process is vital. Thus, a critical consideration in developing agility is the trade-off between response time and nature of response. Examples of aspects that can increase responsiveness throughout the process are improved shared awareness, good ability of sense making and faster decision making. Another is important factor here is to see problems/opportunities early and address them in a timely and an efficient way.

While necessary, responsiveness on its own is not sufficient to provide agility for an organisation. It must be combined with one or several of the other components. E.g. Innovativeness and Flexibility in decision-making will have a positive impact on responsiveness. Also the speed and quality of responsiveness can be improved by Versatility and Adaptability.

Versatility (previously called robustness) – *significant changes to missions and tasks*

Versatility as described by Alberts (2011) in this model allows the organisation to achieve a sufficient performance level in carrying out the new/altered task or mission. The importance of this component is due to the fact that in time of change organisations are exposed to new and unfamiliar situations either partly or fully. Quite often the task required to be undertaken in the new/unfamiliar situation is not the task that gets done. As an example from military organisations in the past, Alberts (2011) mentions that there has been resistance to accept the new responsibility and perform the new task/mission as it has been considered as *mission creep*. One way to assess a military force's versatility is to place it in a variety of situations and see how well and how quickly they can adjust.

Flexibility - *the ability to accomplish missions in multiple ways*

Flexibly is the ability of the organisation to perform a certain task in more than one way which enables the organisation to try other alternatives instead of sticking to the current way of doing things which might be inefficient and infeasible. Thus, in addition to availability of alternatives, Flexibility requires a recognition that the current option is not working. Being flexible as described above is about the ability to succeed in different ways and the capacity to move fairly effortlessly between them. In times of change and uncertainty it is essential to be able to see multiple paths of actions and not just one. According to Alberts and Hayes (2003) another critical factor is to be able to recognize changes quickly and to predict multiple future scenarios, and not only multiple alternative actions.

Resilience – *the ability to rebound from damage or misfortune*

Resilience is the ability to repair, replace, patch or reconstitute lost performance or capability caused by misfortune, damage or a destabilizing environment. Military organisations in the past were hierarchical entities and relied on large quantities of supplies and facilities which made them very venerable in case of loss. Their resilience in today's information age is much higher because of their network organizations that make them more mobile and enable them to keep key assets out of harm. Also, communications systems are networked with the ability to self-heal and function during battle. The Internet is a very good example of a highly resilient communications system relying on simple principles to maintain operations even when under considerable stress.

Resilience is also a trait of individuals. Research has shown that some individuals can cope better under stress than others. They react more quickly when they can (1) see cause and effect as arising from local conditions rather than global conditions, (2) see themselves as having more control over events than others, and (3) see problems as temporary rather than permanent (Albert & Hayes,

2005, pp 168). Applying this to organizations, a more resilient organization is one that (a) can withstand greater pressure and larger shocks and (b) are in disrupted form less time (Albert & Hayes, 2005, pp 168).

Innovativeness – *the ability to do new things or old things in new ways*

Innovativeness is a discovery or invention that allows the organisation to develop or come up with a new approach or tactic of accomplishing a task or mission (Alberts, 2011). It does not only include doing things in new ways but also undertaking new tasks and achieving desired outcomes. It also includes the ability of learning over time (e.g. in military learning from previous missions and engagements) and take advantage of lessons learned. Alberts and Hayes (2003) stress that being innovative and successful in the past doesn't guarantee future success so creative and innovative changes will be needed to exploit new opportunities, avoid emerging threats, and thereby sustain competitiveness. In the military for example the enemy learns over time from previous operations and it can't be assumed that they will always react the same way next time. New and creative ways deny them advantage from their learning and cause confusion and disruption. It is not easy to measure innovation and creativity because of the focus of established norms but simulation and observation might be helpful in this regard.

Adaptability – *the ability to alter process and organization to improve effectiveness or efficiency*

Adaptability allows the organisation to change itself meaning that it can change its strategy, structure, processes, and ways of working to become/remain well suited for the challenges it faces. This component of agility has an inwards focus whereas the previous five components are focused outwards. Despite that, the ability to adapt and change internally has a positive effect on the organisation's responsiveness, flexibility and level of innovation. Example of changes that adaptive military and other organisations do are new ways of distributing information, involving new participants and partners in planning sessions, new ways of dealing with partners and providers, flatten organisation structures, and develop new work processes based on previous experience or on new opportunities. The kind of changes mentioned above can be used as indicators to measure how adaptable an organisation is.

3.6.2   Business Agility as a Triadic Problem

Another and different way of approaching business agility is what Strohmaier and Rollett (2005) present in what they call Triadic Problem of Business Agility. In their model business agility is a triadic (Time, Control, Information Systems) problem oriented towards specific goals as illustrated in Figure 6.
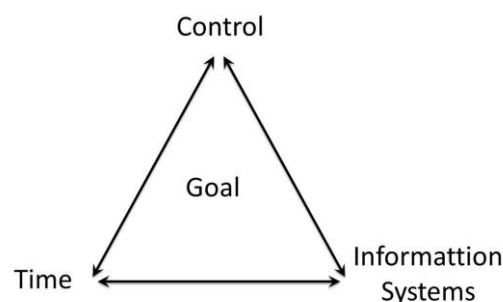
Figure 6: Business Agility is a triadic problem (Strohmaier and Rollett, 2005)

Business Agility is a Time Problem

Time is clearly one of the critical measures of achieving success when it comes to business agility. This is one of the factors that makes business agility a novel concept compared to other concepts according to (Strohmaier and Rollett, 2005). Quite often the reason why organisations fail to be agile is their failure to react adequately in time. There are a number of powerful examples showing the

criticality of the time aspect and why any evaluation of organisational agility has to include the time restrictions imposed by given circumstances. Such an example is the failure of a telecommunication company that did not offer broadband internet service in time by the end of nineties. Another one is a software firm that was not able to introduce web services technology in time for their clients to integrate with internal systems. On the basis of this argumentation Strohmaier and Rollett (2005) define business agility to be a time problem.

Business Agility is a Control Problem

Strohmaier and Rollett (2005) claim further that lack of control or discipline prevents organisations from implementing adequate actions in time. An example of that is a start-up company with weak or not yet established control procedures that fails to timely execute adequate business strategy. Thus, the control aspect is about "*the adequateness and effectiveness of actions with respect to a certain goal*" (Strohmaier and Rollett, 2005, p. 2). On this basis, Strohmaier and Rollett (2005) define business agility to be a control problem.

A well-established research field that explores control in a broad sense is called *cybernetics* which is defined as *"the science of communications and automatic control systems in both machines and living things"* (Strohmaier and Rollett, 2005, p. 2). From a cybernetics perspective, a control system only reacts to disturbances of its own goals and contain the activities; perception, information processing, action and dynamics as shown in Figure 7.
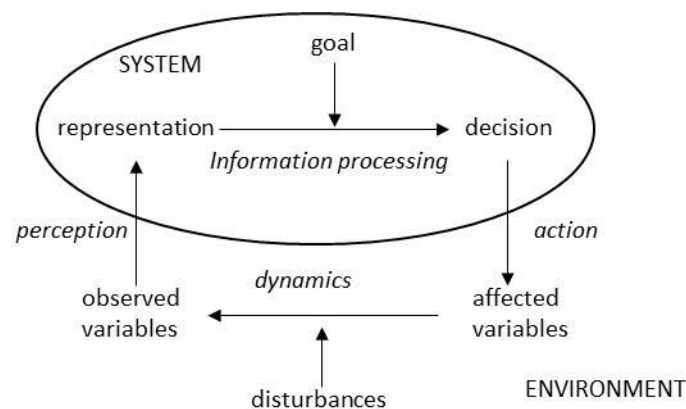
Figure 7: Components of a control system (Strohmaier and Rollett, 2005)

The control system feels the changes and modifies its representation of the environment. In the context of business agility, cybernetics is an important theory that helps with understanding control in a complex business environment (Strohmaier and Rollett, 2005).

Business Agility is an Information Systems Problem

The increased use of knowledge and information in business operations is transforming the way organisations do business. In this environment, information systems are gaining an increased role and ability to support knowledge-intensive work and thereby becoming a critical factor for companies to sustain and enhance competitiveness. It is also well-known that misalignment between organisational systems and information systems can cause disruption and even failure in business operations. Business agility requires not only alignment between the two but also taking into account the effect of change over time. An example of that is the agility failure of a global consulting company that was not able to build an adaptive and business-aligned knowledge management system. Information systems have both descriptive and normative organisational components, and also represent an important interface to the organisation. They also have an impact on the way an organisation perceives its environment and therefore indirectly impact decision making. They are also considered in defining the borders of an organisation.

Information systems can act both as enablers and disablers of business agility so their implications on business agility are critical. Therefore, Strohmaier and Rollett (2005) define business agility as information systems problem.

Conceptualizing Business Agility based on the Triadic Problem and Cybernetics

Using 1) the cybernetics thinking approach, and 2) tying together the three dimensions of the introduced triadic problem, and 3) since business agility is goal oriented, Strohmaier and Rollett (2005) have developed a conceptualization Business Agility as illustrated in Figure 8.
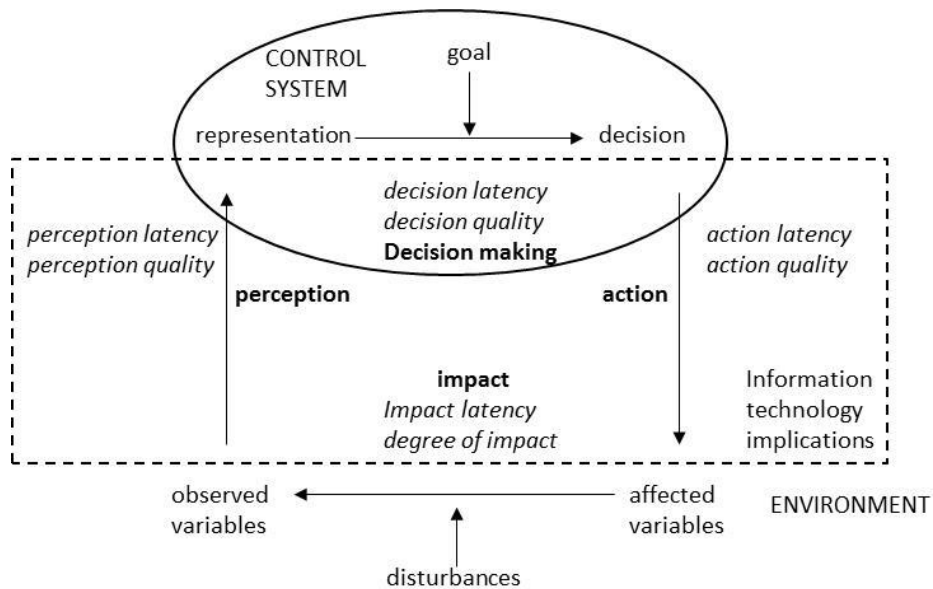
Figure 8: Business agility conceptualization and parameters (Strohmaier and Rollett, 2005)

According to this model, maximum level of business agility can be obtained by minimizing latency and maximizing quality parameters (Strohmaier and Rollett, 2005).

4 IT Agility

This chapter presents the theoretical foundation of the concept of IT agility. It starts by a short introduction of the role of IT with regard to business agility (Section 4.1), followed by presenting how the concept of IT agility is defined and described in the literature (Section 4.2). Section 4.3 outlines how and why IT can be both an agility enabler and disabler, while Section 4.4 presents a couple existing IT agility frameworks.

4.1 Introduction

As we have seen so far technology and in particular information technology is a critical and strategic factor affecting the agility of the business. There is an overwhelming belief among researchers that business agility can be enabled and improved through the right IT capabilities (Melarkode et al., 2004; Gallagher and Worrell, 2008; Baskerville et al., 2005). For example, data mining and analysis techniques have enabled many organizations to sense new and changing market conditions (Overby et al., 2006). Also, organizations have been able to quickly customise their system capabilities to meet new demands on their products and services through their well-designed IT infrastructure capabilities (Lee et al., 2007; Sambamurthy et al., 2003; Van Oosterhout et al., 2006; Weill et al., 2002). The basic principle for this belief is a responsive organization that can configure and re-configure its resources and people quickly and flexibly to sense and respond to a changing environment, enabled by IS in general and IT infrastructure in particular (van Oosterhout, 2010). The outcome is that business agility is enabled and sometimes even created by agility of information technology (IT agility) (Overby et al., 2006; van Oosterhout, 2010; Sambamurthy et al., 2003; Byrd and Turner, 2001).

4.2 What is IT Agility?

Reviewing the existing literature, there does not seem to be an established common term around agility with respect to IT and/or the role of IT in business agility. Several terms and phrases are used in different contexts like *IT Agility*, *Agile IT*, *Agility in IT*, *IT Enabled Enterprise Agility, IT Organisational Agility, IT Driven Organisational Agility*, *The Role of IT in Organisational Agility, Link between IT and Business Agility, Agile IT Organisations, Agile Information Systems, IT Infrastructure Agility, and IT Infrastructure flexibility*. Many researchers and professionals use these terms and phrases without making an attempt to define what they include in them. Here is a summary of IT related agility definitions we have found in our literature review:

Starting with a couple of definitions that target IT infrastructure agility and flexibility, Byrd and Turner (2000, p 172) define **IT infrastructure flexibility** as *"the ability to easily and readily diffuse or support a wide variety of hardware, software, communications technologies, data, core applications, skills and competences, commitments, and values within the technical physical base and the human component of the existing IT infrastructure"*.

IT infrastructure agility is defined by Ahsan and Ngo-Ye (2005, p 419) as *"the ability to build a system that can easily be reconfigured, scaled, deconstructed and reconstructed as needed, to adapt to unanticipated changes"*.

Moving over to information systems, Lui and Piccoli (2006) describe **agile information system** as *"one that enables the firm to identify needed changes in the information processing functionalities required to succeed in the new environment, and which lends itself to the quick and efficient implementation of the needed changes"*.

Looking at definitions targeting the overall IT with regard to agility, Sambamurthy et al. (2007) define **IT-enabled organizational agility** as *"an IT-enabled intermediate driving force of a firm's competitive success"*. They see two types of IT-enabled agility with different roles in generating sustainable competitive advantage; *IT-enabled entrepreneurial agility* which aims at creating new ideas and their applications beyond the boundaries of the organization, and *IT-enabled adaptive agility* which is about the organization's capability of coping with uncertainty and recover rapidly from disruption.

Information technology agility as defined by (van Oosterhout, 2010, p 38) is *"the ability of Information Technology to support an organization to swiftly change businesses and business processes beyond the normal level of flexibility to effectively manage highly uncertain and unexpected, but potentially consequential internal and external events. In order for Information Technology to be agile it needs to support and align the three dimensions of business agility -- sensing, responding and learning".*

Tapanainen (2012) uses the term **IT agility** to refer to *"the overall role of IT in organisational agility"* and defines it as "*the ability of the IT function to sense external changes and respond internally and externally to requirements so arising*". Based on this, he sees IT agility as an umbrella concept being composed of *IT Function Agility* (internal response dimension) and *IT Business Partnership Agility* (external response dimension). An agile IT function according to Tapanainen (2012, p. 14) is "*one that can sense changes in the organizational environment (and beyond), and is capable of adjusting and responding internally to those changes"*. The internal nature of the adjustment is the focus here. An agile IT business partnership is an aligned partnership that continues to develop according to environmental requirements in order to provide the external response component in IT agility (Tapanainen, 2012).

Finally, Sengupta and Masini (2008) define **IT agility** as "*the ability of a firm to adapt its IT capabilities to market changes"* (Sengupta and Masini, 2008, p. 43). They further explain what they mean by adding; "*Stated in an extremely simple way, IT agility is all about reconfiguring or replacing your information technology systems when new marketplace realities change the way you have to do business".*

This research adopts a view of IT agility which is more in line with the definitions of Tapanainen (2012) and van Oosterhout (2010).

4.3 The Agility Enabling and Disabling Role of IT

Agility enablers and disablers as described by Van Oosterhout et al. (2006, p. 134) are *"the reasons behind the existence or nonexistence of agility gaps"*. Depending on how these reasons are dealt with they can serve both as means or barriers for the organisation to improve business agility.

Researchers as well as practitioners are in agreement that the role of IT with regard to business efficiency, effectiveness and agility can be both positive (enabler) and negative (disabler). The respondents in Van Oosterhout's et al. (2006) study confirmed that IT can both inhibit agility, as well as be a mean to achieve agility. Similarly Wang et al. (2014) claim that IT is a double-edged sword that can facilitate or hinder firm agility. Since IT as enabler for business agility is the main topic of this study and will be addressed extensively in this report, we will focus this section on the disabling role of IT, giving examples of that and analysing why IT can become a barrier impeding enterprise efficiency and agility.

In his study Van Oosterhout et al. (2006) state that most organisations have complicated IT environments with large and complex information systems and complex links and connections between them. These legacy systems are often inflexible requiring increased time and money for support and maintenance. Also, business processes are often either hard coded in or embedded with these systems. The IS landscape is often organised in silos of technology solutions from different partners. Making rapid changes to an environment like this takes long time to specify and implement. Furthermore Van Oosterhout et al. (2006) highlight the fact that over the past 10 years most companies have made big investments solving the millennium problem and the euro conversion resulting in less investment done on new and innovative IT platforms that can enabler change required for business development. Practically, Van Oosterhout et al. (2006) claim that organisations and their internal/external customers are often constrained by the limitation of IS/IT. The analyses done by Attaran (2004) on a number of BPR cases showed that IT had these problems

and was therefore the main barrier to radical and rapid change as it was not able to redesign information systems adequately and in time.

I their article *Dark side of IT* Seo and La Paz (2008) have a long list of IT related issues being a hurdle for organisation agility such as lack of integration between perception information systems and sources, un-standardized data, inaccurate information, information overload for decision makers, Inflexibility of IS, technology dependence and lock-in effects, and lag between system introduction and business value realisation. Seo and La Paz (2008) conclude that theses dark sides of IS must be recognized and dealt with in order to make a balanced and wise use of IS.

Lu and Ramamurthy (2011) have tried to better understand this IT agility contradiction, i.e. being both an enabler and disabler. Their suggestion to resolve the conundrum of contradictory effect of IT on agility reads "*while more IT spending does not lead to greater agility, spending it in such a way as to enhance and foster IT capabilities does*" (Lu and Ramamurthy, 2011, p. 949).

4.4 Existing IT Agility Frameworks

We will here present a couple of relevant concepts and models for IT agility and flexibility.

4.4.1 Flexibility of IT infrastructure by Duncan

IT infrastructure flexibility as seen by Duncan (1995) is the degree to which IT infrastructure resources are sharable and reusable. Such flexibility would help organizations in responding rapidly and effectively to emerging needs or opportunities. In her attempt to make IT infrastructure flexibility more useful, tangible, and in some way even measurable, Duncan (1995) has identified three core elements to be worked with to improve this flexibility. These are 1) the alignment of IS plans to business objectives, 2) information technology plans or architecture, and 3) the skills of all personnel involved in IT resource management as shown in Figure 9.
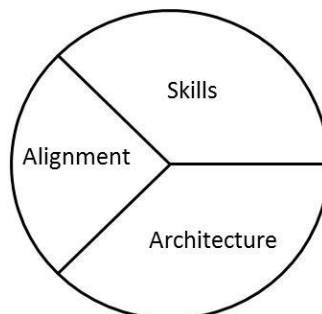
Figure 9: Elements of IT infrastructure flexibility (Duncan, 1995)

Alignment – For IT infrastructure to be flexible it should enable strategic innovations in business processes.

Architecture – Flexibility in this area is reached through high level of modularity, compatibility, and connectivity.

Skills – Flexibility here depends on IT professionals having a good mix of technology and business acumen.

4.4.2 IT Function Agility by Tapanainen

In their literature review Tapanainen et al. (2008) identified 24 articles, published between 1991 and 2008, targeting agility in the IT function. They grouped these articles into the following five categories which constituted the elements of their IT agility model as illustrated in Figure 10:

Figure 10: The elements of IT function's agility (Tapanainen et al., 2008)

- **IT organization structure** - e.g. skilful management of outsourcing and centres of excellence

- **IT workforce** - e.g. the capability of IT professionals to be sensitive to changes and act accordingly

- **IS development processes** - e.g. an iterative approach in the development of information systems

- **IT management and leadership** - close relationship between IT and business management

- **IT infrastructure** - e.g. modularization to foster interoperability, and linking people together with technology

5 Literature Review Findings

This chapter presents the key findings of the literature review conducted on the topic of IT agility. Such a finding is the need for a more comprehensive and practical concept for IT agility (Section 5.1). Another finding is a list of IT agility themes extracted as a result of topic centric synthetization of the reviewed literature (Section 5.2). The outcome of the concept-centric synthetization of the source material is then listed in Section 5.3.

5.1 A Need for a More Comprehensive and Practical IT Agility Concept

As mentioned before, this research's literature review is based on 42 sources (articles and books) related to IT agility carefully and systemically selected as described in the Methodology chapter. These sources target IT agility in many different ways and from a number of different perspectives and angles. They target several technical and non-technical subject areas, several organisational dimensions, different people aspects, and other themes all of which are related to the IT function and its relation to business and business agility. These areas are explored both vertically and horizontally, and at the operational and strategic level. The different IT agility definitions discussed in the previous chapter are all reflected in this selection of literature. The areas and dimensions captured by the frameworks of Duncan (1995) and Tapanainen et al. (2008) are also found here. Having said that, we made two key observations as we evaluated this literature. These are:

- Firstly, even though existing IT agility definitions and frameworks are encompassing more and more relevant IT agility subjects, themes and organization dimensions, there are few if any concept that have a holistic approach containing all the complexity and diversity of this topic. Tapanainen's framework (developed also through literature review seven years ago) makes a good built on previous models and is quite comprehensive, but our literature review reveals that there is even more into IT agility that needs to be made visible, and maybe even more important, there are some subtle elements which are already captured but need to be elevated higher up and made more explicit.

- Secondly, we were not able to find an appropriate IT agility framework that we could use as is and map fairly straightforwardly into a set of consistent questions to put in a survey. Since one of the key objectives of this research was to assess how agile Swedish organizations are from an IT perspective, it is almost imperative that we have a holistic agility framework or model with sufficient depth that can be applied practically and consistently in conducting such an evaluation. Tapanainen's model could not provide us with that depth. A number of other models and designs with some clear and well-crafted IT agility hypothesis and properties were found but they were not deemed to be comprehensive enough as mentioned above.

5.2 Topic Centric Synthetization of Literature

Quite early in the literature review process we could discern a number of apparent areas in which IT agility was brought up and addressed by researchers such as IT infrastructure, system development, and IT leadership. These themes and a couple of others were also found in the models of (Duncan, 1995) and (Tapanainen et al., 2008) as described above which led us to study these two frameworks in a bit more detail. Based on our adopted topic centric approach for analysing the literature (Webster and Watson, 2002) an initial list of relevant topics was created. As we continued to analyse the literature, break down the articles into various themes, and link them to each other, the items in the list of topics were continuously expanded, collapsed, and/or regrouped before we arrived at our final list containing eight topics which we called dimensions. For a topic to be part of the final list it was essential that the topic was well-substantiated in the literature and brought up by several researchers. Furthermore, we wanted to be able to define the topic in a clear way and explain how the topic is and can be related to IT agility.

Similar to Duncan (1995) we could also conclude the importance of IT infrastructure capabilities, the skills of IT personnel, and IT-business alignment for an agile IT organisation. Duncan's focus with the last two area was infrastructure, while our focus was the whole of IS/IT making our scope of those

dimensions wider. Our list of topics also shares the additional three dimensions found in Tapanainen's (2008) model, i.e. organisation structure, IS development, and IT leadership, albeit with some variation of the content. E.g. the topic of organisation structure as put forward by Tapanainen et al. (2008) has little mentioned about the culture of the IT organisation and its importance to improve agility, whereas aspects related to organization culture and organization identity are considered critical in our view. In addition, our literature review clearly showed the importance of system and information capabilities both to the sensing and responding components of agility which is why our list of topics also contained these two elements, concluding the number of topics in our list of synthesizing the literature to eight. These are: Strategic Business-IT Alignment, Management and Leadership, Organization Structure and Culture, People, Skills and Capabilities , IT Infrastructure, IS Development and Delivery, System Capabilities, and Information Capabilities.

5.3 Literature Synthetization Outcome

Table 3 lists the reviewed source material and the way it has been synthesized into the eight IT agility related topics as described above.

Table 3: Concept-centric synthetization of the source material

Article/Source Reference	Article/Source Title	Strategic Business-IT Alignment	Management and Leadership	Organization Structure and Culture	People, Skills and Capabilities	IT Infrastructure	IS Development and Delivery	System Capabilities	Information Capabilities
1. Allen and Boynton (1991)	Information architecture: in search of efficient flexibility							X	
2. Bassellier and Benbasat (2004)	Business Competence of Information Technology Professionals: Conceptual Development and Influence on IT-Business Partnerships				X				
3. Bersin, 2014									X
4. Bhatt and Grover (2005)	Types of Information Technology Capabilities and their Role in Competitive Advantage: An Empirical Study				X				
5. Boar (1998)	Redesigning the it Organization for the Information Age							X	
6. Breu et al. (2002)	Workforce agility: the new employee strategy for the knowledge economy			X	X				X
7. Byrd and Turner (2000)	Measuring the Flexibility of Information Technology Infrastructure: Exploratory Analysis of a Construct					X			
8. Conboy (2009)	Agility from First Principles: Reconstructing the Concept of Agility in Information Systems Development						X		
9. Coronado Mondragon et al. (2004)	Assessing the value of information systems in supporting agility in high-tech manufacturing enterprises							X	

Article/Source Reference	Article/Source Title	Strategic Business-IT Alignment	Management and Leadership	Organization Structure and Culture	People, Skills and Capabilities	IT Infrastructure	IS Development and Delivery	System Capabilities	Information Capabilities
10. Crocitto and Youssef (2003)	The human side of organizational agility		X	X					
11. Degroote and Marx (2013)	The impact of IT on supply chain agility and firm performance: An empirical investigation								X
12. Desouza (2006)	Agile Information Systems: Conceptualizations, Construction, and Management. Book Preface, pp Xi-Xvii.		X		X				X
13. Fink and Neumann (2007)	Gaining Agility through IT Personnel Capabilities: The Mediating Role of IT Infrastructure Capabilities				X	X		X	X
14. Gerth and Rothman (2007)	The Future IS Organization in a Flat World		X						
15. Glaser (2008)	Creating IT agility	X	X		X	X	X	X	
16. Goldman et al. (1995)	Agile Competitors and Virtual Organizations: Strategies for Enriching the Customer					X		X	
17. Huang et al. (2012)	The role of IT in achieving operational agility: A case study of Haier, China								X
18. Kidd (1994)	Agile Manufacturing: Forging New Frontiers. Wokingham, England		X						
19. Kim et al. (2000)	A methodology of constructing a decision path for IT investment		X						
20. Lacity et al. (1995)	IT outsourcing: maximize flexibility and control		X						
21. Largent (2010)	Getting and staying agile						X		
22. Larsen and McInerney (2002)	Preparing to work in the virtual organization						X		
23. Lee and Xia (2005)	The ability of information systems development project teams to respond to business and technology changes: a study of flexibility measures						X		
24. Lee et al. (2006)	Aligning IT Components to Achieve Agility in Globally Distributed System Development						X		
25. Lu and Ramamurthy (2011)	Understanding the Link between Information Technology Capability and Organizational Agility: An Empirical Examination					X			
26. Luftman and Ben-Zvi (2011)	Key issues for IT executives 2011: Cautious optimism in uncertain economic times	X							
27. Lui and Piccoli (2006)	Degrees of agility: Implications for information systems design and firm strategy			X	X				

Article/Source Reference	Article/Source Title	Strategic Business-IT Alignment	Management and Leadership	Organization Structure and Culture	People, Skills and Capabilities	IT Infrastructure	IS Development and Delivery	System Capabilities	Information Capabilities
28. Lyytinen and Rose (2006)	Information system development agility as organizational learning						X		
29. Markus and Benjamin (1996)	Change Agentry - the Next IS Frontier				X				
30. Melarkode et al. (2004)	Delivering Agility Through IT	X							
31. Prager (1996)	Managing for flexibility: The New Role of the Aligned IT Organization	X		X	X	X		X	X
32. Prastacos et al. (2002)	An Integrated Framework for Managing Change in the New Competitive Landscape		X	X					
33. Roberts and Grover (2012)	Leveraging Information Technology Infrastructure to Facilitate a Firm's Customer Agility and Competitive Activity: An Empirical Investigation						X		
34. Rockart et al. (1996)	Eight Imperatives for the New IT Organisation	X			X	X			
35. Seo and La Paz (2008)	Exploring the Dark Side of IS in Achieving Organizational Agility	X		X					X
36. Tallon (2008)	Inside the adaptive enterprise: an information technology capabilities perspective on business process agility	X	X						
37. Tallon and Pinsonneault (2011)	Competing Perspectives on the Link between Strategic Information Technology Alignment and Organizational Agility: Insights from a Mediation Model	X					X		
38. Tapanainen et al. (2008)	Towards an Agile IT Organization: A Review of Prior Literature				X		X		
39. Truex et al. (1999)	Growing Systems in Emergent Organizations						X		
40. Tsourveloudis and Valavanis (2002)	On the Measurement of Enterprise Agility				X	X	X		X
41. Van Oosterhout et al. (2006)	Change factors requiring agility and implications for IT						X	X	
42. Wang et al. (2014)	Achieving IT-Enabled Enterprise Agility in China: An IT Organizational Identity Perspective			X					

6 Towards a Comprehensive Concept for IT Agility

This chapter conceptualizes IT agility into a model and presents the way this model is built up by different dimensions and their characteristics (section 6.1). After walking through the model, an IT agility definition in line with the findings of this research is presented (section 6.2).

6.1 IT Agility Model

Based on the extensive literature review, analysis, and synthesizing carried out in this research we have, as stated in the previous chapter, found that IT agility and its relation to enterprise agility has been understood, studied and investigated in connection to the following eight dimensions:

1. Strategic IT-Business Alignment
2. Management and Leadership
3. Organisation Structure and Culture
4. People, Skills and Capabilities
5. IT Infrastructure and Standards
6. IS Development & Delivery
7. System Capabilities
8. Information Capabilities

These eight dimensions together constitute our model for IT Agility as illustrated in Figure 11. This IT Agility Model consists of the amalgamation of the agility of these eight dimensions. Each dimension is described below in terms of what it means, its key agile characteristics and how these characteristics impact IT driven business agility. It is important to note however, that these dimensions are not mutually exclusive. There is some overlap and redundancy between them and in many cases they are interdependent, intertwined, and impact each other. As for the agile characteristics and properties of these dimensions, there might also be some overlap even though they are driven from different perspectives. Also worth noting is that these agile characteristics are articulated as *statements* reflecting either a) states of how things are or should be in an agile organisation, or b) features describing various aspects of an agile IT organisation and its relation to business, and c) important activities that should take place if an organization ought to be agile.
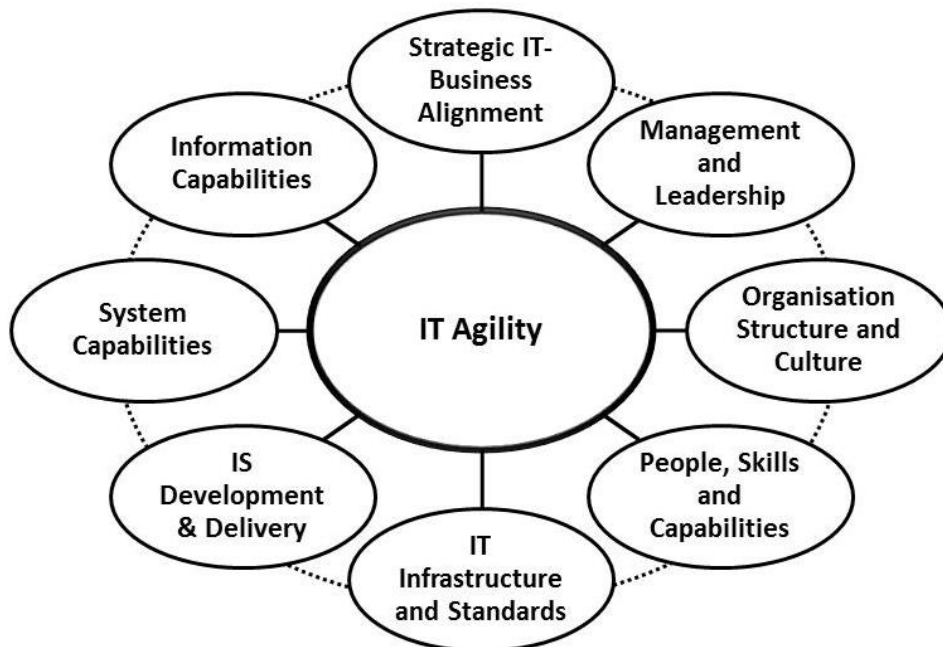
Figure 11: IT Agility Model

6.1.1 Strategic IT-Business Alignment

Strategic alignment, defined as "*the extent of fit between information technology and business strategy*" (Tallon and Pinsonneault, 2011) is one of the top topics addressed by information systems researchers and professionals. It focuses on how to align business strategies and IS/IT strategies, often in order to drive IT effectiveness (Avison et al., 2004) or in other words it is about *"the "arrangement or rearrangement of IS in keeping with business environmental changes"* (Seo and La Paz, 2008, p. 137). Numerous studies have concluded that such an alignment has a positive effect on vital aspects of the organisation's performance such as profit, productivity, sales growth, and reputation (Avison et al., 2004; Tallon and Pinsonneault, 2011). Consequently organisations are encouraged to work hard to further increase the extent of fit between IT and business strategy (Tallon and Pinsonneault, 2011).

With the emergence of organisational agility and its importance when it comes to dealing with unexpected changes, researchers have had to compare the alignment and agility literature to understand and assess how the objectives of these two aspects and the means of achieving them are related to each other (Tallon and Pinsonneault, 2011). In other words the question is whether business agility is facilitated or impeded by IT-business alignment. The literature has arguments in supporting both two contradictory views, i.e. showing both positive and negative association between alignment and agility (Tallon and Pinsonneault, 2011).

E.g. the continuous knowledge sharing that takes place in IT-Business aligned organisations between IT and business leaders is seen as an important factor in sensing changes, threats and opportunities in the business environment before deciding on a joint response (Preston and Karahanna, 2009). Provided that this assumption is true, then agility could be improved by alignment. On the other hand, there are other researchers who claim that continuous knowledge sharing and too close engagement between business and IT may result in a constricted vision and keeping the status quo which may hinder the exploration of new opportunities, potentially hurting agility (Tallon and Pinsonneault, 2011). Organisations, where IT and business are aligned and engaged in extensive and long-term investments or where there is significant leadership effort put into certain activities, run the risk of wanting to maintain a stable situation in an attempt to extract as much value as possible from current investments (sunk cost) and thereby making little or no change to IT or business strategy. Trying to secure status quo in such a scenario will definitely have a negative impact on agility. Also, as IT investment timelines slipping over extended periods and with long benefit realisation periods, there is an uneasy feeling among researchers and practitioners that some forms of strategic IT alignment may start to impede agility (Tallon and Pinsonneault, 2011). Furthermore, there is an ongoing debate of effectiveness between too little or too much IS strategic planning, where too little planning is expected to lead to insufficient understanding of business needs while too much strategic IS planning may take too much time (Holmqvist and Pessi, 2006). In addition, agility has been overlooked by the literature as a possible result of alignment as the focus with alignment has been mainly on traditional performance metrics like profit, growth and efficiency. Likewise, the research on agility has been conceptual focusing on the benefits of agility rather than on whether increased alignment can help or hurt agility (Oh and Pinsonneault, 2007).

Given these two competing perspectives many empirical studies have been conducted to resolve this dispute (Tallon and Pinsonneault, 2011) and the outcome is clearly in favourite of alignment being a strong positive factor for IT and business agility. Alignment enables rather than impedes agility and this positive link between the two is valid for all organisations despite of market volatility (Tallon and Pinsonneault, 2011). IS-business alignment can be key for organisational agility as it can quickly mobilise resources enabling distributed, virtual and ad-hoc work environments (Seo and La Paz, 2008). Claims are rejected that organisations may need to put up with less than perfect alignment between IT and business in order to remain agile (Tallon and Pinsonneault, 2011). There is no trade-off between near-term alignment and longer-term agility which in turn facilitates the connection between alignment and organisational performance (Tallon and Pinsonneault, 2011). Alignment is

seen as a sensing capability and should always be given a high priority status by the leadership if they are concerned about agility (Luftman and Ben-Zvi, 2011). In order for the organisation to engage in a constructive dialogue around IT solutions, alternatives, and approaches, the leadership of IT as well as the leadership of business must understand and agree on the organization's competitive situation, strategies, challenges, and priorities which is an important requirement of IT agility (Glaser, 2008).

Thus signs of agility in the context of alignment are IT-Business mutual engagement (Glaser, 2008; Rockart et al., 1996), integrating business and IT strategies (Melarkode et al., 2004; Glaser, 2008), business involvement in setting strategic goals for IT (Tallon, 2008), and understanding and promoting business value of IT across the entire organisation (Prager, 1996; Melarkode et al., 2004).

Practically this means that IT people and leadership at multiple organisational levels has a seat around the business table including the CIO/ head of IT who should be at the table during senior leadership discussions (Glaser, 2008; Rockart et al., 1996). This implies that IT leadership must have excellent strategic and business acumen in addition to IT skills. The CIO and his/her leadership team would be well involved in both the strategic and operational planning and discussions of the organization (Glaser, 2008; Melarkode et al., 2004). Also, business and IT executives would collaborate on setting strategic goals for IT (Tallon, 2008).

As a result, IT and business strategies and plans will be positively driving each other and are always kept integrated and in sync. Furthermore IT staff would always have an updated picture of the business priorities, and in case of changes to the environment they would have a solid grasp of what and how IT can help realizing the new business agenda (Melarkode et al., 2004). Business units through influential business people should be involved as much as possible in the in business case creation, project setup and execution, steering committees, and should even own certain delivery components (Melarkode et al., 2004).

Another critical way of aligning IT with business to achieve agility is through proactive work by IT across the business to identify and drive new opportunities for value creation through IT as well as active and continuous assessment and improvement of business value gained through IT (Rockart et al., 1996; Melarkode et al., 2004). IT-Business alignment requires proactivity and engagement beyond technical issues targeting business topics like organizational changes, market influences, and future business (Prager, 1996).

In addition, it is paramount for the IT leadership to learn to speak about IT value at the enterprise level and to communicate and demonstrate how IT is playing a strategic role and adding value to the organization (Melarkode et al., 2004). One way of doing that is to develop "shareholder valuation models" for IT investments rather than focusing on traditional IT financial models that focus mainly on cost at the business unit level (Melarkode et al., 2004). In a nutshell, alignment in an agile and flexible organization means that IT executives are concerned about and do the same things as non-IT executives (Prager, 1996). In agile organizations, business executives want to see evidence of IT's contribution to the overall health and success of the company (Prager, 1996).

Based on the above, we suggest that a business aligned IT organization contributing positively to business agility should have the following properties and characteristics.

1. The IT leadership actively participates in business strategy and planning with senior business leaders (Rockart et al., 1996; Glaser, 2008; Melarkode et al., 2004)

2. Business and IT executives collaborate on setting strategic goals for IT (Tallon, 2008)

3. The IT function has dedicated teams/individuals proactively and regularly engaging with business (Melarkode et al., 2004; Prager, 1996)

4. The IT function maintains an up-to-date picture of business priorities and how it can contribute to them (Melarkode et al., 2004)

5. The IT function proactively works across the business to identify and drive new opportunities for value creation through IT (Melarkode et al., 2004; Rockart et al., 1996)

6. The business units own and drive IS/IT enabled business cases in close collaboration with the IT function (Melarkode et al., 2004)

7. The business units own and drive IS/IT enabled improvement projects in close collaboration with the IT function (Melarkode et al., 2004)

8. The IT leadership is concerned and cares about the same things as the leadership of business (Prager, 1996)

9. The IT leadership does well in demonstrating the strategic role of IT in meeting the organization's overall objectives (Melarkode et al., 2004)

10. The leadership of business fully understands the strategic role of IT and how IT can add business value (Prager, 1996)

6.1.2 Management and Leadership

This dimension includes areas like mission and vision, strategy, planning, resource management, budgeting, governance and steering, and sourcing strategies. Signs of agility in the context of management and leadership are the leadership's understanding of the value of and need for agility (Crocitto and Youssef, 2003), leadership's commitment to innovation and change (Crocitto and Youssef, 2003), dynamic organisational strategy and vision (Prastacos et al., 2002; Desouza, 2006), efficient and flexible planning and budget processes (Glaser, 2008; Desouza, 2006), business aligned IT investment portfolio governance (Gerth and Rothman, 2007), and flexible outsourcing strategies (Lacity et al., 1995).

An agile organisation brings together business processes and skilful people with innovative technology to satisfy market and customer needs in a timely manner (Kidd, 1994). This can only happen if agility is seen as a systemic organisational value and strategy championed by management and leadership at all levels (Crocitto and Youssef, 2003).

Agility is dependent on organisational leadership and on leadership's ability to create an agility vision and mission, and exert *agile management* (Crocitto and Youssef, 2003). Measures like creating reward systems for foreseeing and accepting change, promoting innovation, and fostering an organisational learning are critical leadership responsibilities in an agile organisation (Crocitto and Youssef, 2003). Especially for organisations competing in volatile markets, effective IT governance and managerial IT capabilities are essential for delivering business and IT adaptiveness and agility; they are as much a part of the search for agility as technical capabilities (Tallon, 2008).

Most IS organizations of today have some sort of strategy or strategies but in order to drive organizational agility it is critical that the strategy is dynamic, possible to reformulate and communicated throughout the organization (Prastacos et al., 2002). A clear strategy that easily outlines the future direction of an organization empowers peoples and makes it much easier for employees to do the right things and make the right decisions (Prastacos et al., 2002). Setting up vertical static strategies and goals a priori may limit the ability of the organisation to take advantage of opportunities in an uncertain and constantly changing environment (Desouza, 2006).

As for planning; with the increasing speed of changes to the business environment it is becoming more and more difficult to foresee what will happen over longer time horizons so certainty of organization needs for more than 2-3 years is becoming more and more of an illusion (Glaser, 2008). Therefore the leadership of IT should strive to shorten IT time plans in order to increase agility and flexibility, such as with multiple year projects where they should be structured in phases (Glaser, 2008). Organisations should move from long-term planning approaches to a model of constant adjustment and realignment (Desouza, 2006).

As for the budget; it is often the case that the capital and operating budget process is rigid and based on annual authorization mechanisms that are not easy to change during the year. To improve agility and deal with unexpected changes, organisations should shift to more of a real-time budget process where they make an overall IT budget commitment based on the anticipated set of initiatives to start with. The leadership can then release that commitment on a quarterly basis after reviewing the status of existing projects and making an assessment of any needed changes in direction or strategy (Glaser, 2008).

An effective IS governance and IT Investment Portfolio Management will be needed for making the right technology, risk, and investment decisions. Agility requires that governing IT investments is continuously aligned with the governance of the enterprise to ensure that the IS organization is always working on the prioritised IT projects. This means having well-defined criteria for project approval as well as for project suspension in case of change of business direction (Gerth and Rothman, 2007). In addition to alignment factors, Kim et al. (2000) claim that IT investment decision making must also incorporate flexibility factors in order to evaluate the need and the degree of flexibility and agility in an IT investment.

In the area of outsourcing, the question to be asked by the IT leadership is no longer whether the IT operation in scope for sourcing provides a strategic advantage or is just a commodity with no differentiation from competitors (Lacity et al., 1995). To be agile in any outsourcing activity, the leadership's highest objective should be how to maximize flexibility and control so that it can pursue different options in the future as it learns more or as the circumstances change (Lacity et al., 1995).

Based on the above, we suggest that an IS organization where management and leadership promote business agility should have the following characteristics.

1. The IT leadership understands the importance of the IT organization's ability to adjust quickly to a changing market environment (Crocitto and Youssef, 2003; Kidd, 1994)

2. The IT leadership promotes and rewards change, innovation and organizational learning (Crocitto and Youssef, 2003)

3. The IT leadership has a clear strategy that is well communicated throughout the organization (Prastacos et al., 2002; Desouza, 2006)

4. The IT strategy is dynamic and possible to adjust and reformulate in case of changes to the business environment (Desouza, 2006; Prastacos et al., 2002)

5. Ongoing IS/IT investments not in line with the business strategy are stopped or put on hold in spite of already made investments (Gerth and Rothman, 2007; Glaser, 2008)

6. The IT leadership drives and manages the shortening of IS/IT project time plans (Glaser, 2008)

7. The IT budget can be reassigned any time during a fiscal year (Glaser, 2008)

8. Governance of IS/IT investments is continuously aligned with business governance (Gerth and Rothman, 2007; Glaser, 2008)

9. For outsourcing contracts, the IT leadership focuses a lot on maximizing service flexibility from the outsourcing provider (Lacity et al., 1995)

10. For outsourcing contracts, the IT leadership focuses a lot on controlling the outsourcing provider (Lacity et al., 1995)

6.1.3 Organisation Structure and Culture

The structure of the organization refers to *"the manner in which people are grouped together, their roles and reporting relationships and their task assignments"* (Clark et al., 1997, p 432) whereas culture is defined as the *"collective behavioral tendency of an organization. It characterizes the way*

organizational member perceive, act and react to market and operational opportunities and challenges." (Pal and Pantaleo, 2005, p. 26).

Most of the current information system researchers and practitioners have focused on how the IT function can help business to improve business processes, system implementation, and integration often neglecting the relatively more important "people" and "culture" factors (Wang et al., 2014; Crocitto and Youssef, 2003). If the organisation doesn't know how to sense incoming data, it is then obvious that the organisation can't understand sensitive information, yet alone respond properly to changes (Seo and La Paz, 2008). The structure and culture of the organisation should be able to provide well-established ways of working, mechanisms, training programs, and the foundation for the employees to exploit the systems, use information sources, adjust resources, learn, and enhance the competencies to achieve agility, rather than just being a rigid and hardly structured workplace that prioritises only effectiveness and efficiency (Seo and La Paz, 2008). In other words, meeting business needs based on continuous change requires that IT organizations significantly change their operating philosophies, culture and behaviours, formal structures, and work processes. Thus, new IT cultures and structure are needed to support evolving organizations (Prager, 1996).

Signs of agility enabled by organisational structure and culture are: organizational openness (Seo and La Paz, 2008), workforce empowerment (Tsourveloudis and Valavanis, 2002; Lui and Piccoli, 2006; Breu et al., 2002), distributed decision-making authority and flatter managerial hierarchies (Tsourveloudis and Valavanis, 2002; Prastacos et al., 2002), strong and positive organisational identity (Wang et al., 2014), and organisational learning (Seo and La Paz, 2008; Crocitto and Youssef, 2003).

Openness in organisation structure and culture should be fostered to encourage people to be creative and innovative while conducting day-today operations (Seo and La Paz, 2008). Consequently, employees will be empowered to take leadership in decision making and execute these decisions. Having an empowered workforce is a critical factor for achieving agility as they are in the front line interacting with the business customers to make changes and progress things (Lui and Piccoli, 2006). Flatter hierarchies result in flat communication channels as well as fast decision-making which are critical factors in maintaining competitive advantage (Prastacos et al., 2002).

Fostering and promoting a culture and attitude of adopting an "agile mind set" among IT employees is a critical task of the IT department (Wang et al., 2014).

The identity of the IT organisation is another important culture related factor in the effective pursue of the organisation's strategic goals. Organisational identity is referred to as the *"features and characteristic of an organization that are central, enduring, and distinctive, and influences how insiders and outsiders define the organization and associate themselves with it"* (Wang et al., 2014, p 183). Internal identity (shared understanding held by the members of the IT department regarding what is central and distinctive about the department) is distinguished from external identity (how outside audiences such as other firm employees, vendors, and partners view the IT department). Gains from such an identity are to guide IT personnel at the cognitive and operational levels but also to create positive associations of the IT function by the outsiders which will help the organisation to drive its tasks, actions, strategic goals, and objectives. Hence, in dealing with internal matters as well as in engaging with the rest of the organisation, IT managers are urged to establish and develop clear and positive identity images which will contribute to IT-enabled enterprise agility. An IT organizational identity that guides people's mind set and beliefs is critical to inspiring agile behaviours (Wang et al., 2014)

Learning refers to *"the ability to build on experience to continuously improve and be better prepared to deal with changing conditions"* (Seo and La Paz, 2008, p. 137). IS/IT can support improved organisational learning by e.g. providing efficient knowledge management capabilities, good search capabilities, distance learning, online training, discussion forums, and more (Seo and La Paz, 2008).

Based on the above, we suggest the following characteristics for IT organizations whose structure and culture drive IT agility.

1. The IT organization has an open structure and culture where people feel encouraged to be creative and innovative (Seo and La Paz, 2008; Lui and Piccoli, 2006)

2. People working in IT feel empowered to take leadership in decision making and execution of these decisions (Lui and Piccoli, 2006; Seo and La Paz, 2008)

3. The IT function has a flat organization where decision-making authority is mostly distributed across the organization (Prastacos et al., 2002)

4. There is an IT organizational identity that inspires people's mind set and beliefs and guides them in their work (Wang et al., 2014)

5. IT staff have a positive image of their IT organization

6. IT staff have a shared understanding of what is core and distinctive about their IT organization (Wang et al., 2014)

7. The outside world (e.g. other employees, and partners) has a clear and positive view of the IT organization (Wang et al., 2014)

8. The IT function provides efficient and effective knowledge management and learning services, such as good search capabilities, distance learning, online training, and discussion forums for the entire organization (Seo and La Paz, 2008)

6.1.4 People, Skills and Capabilities

People's skills and capabilities mean all competencies (technical and others) that are the building blocks of organisational capabilities (Clark et al., 1997). By people we include all individuals in the company; leadership and management at all levels as well as none managers.

Many technical and none-technical skills, competencies, and capabilities have been linked to agility. Apart from the obvious technical knowledge there are a number of key skill areas of significant importance to IT in the context of agility. These are behavioural capability and flexibility skills (Fink and Neumann, 2007; Markus and Benjamin, 1996; Tapanainen et al., 2008; Bassellier and Benbasat, 2004), operational and strategic business competency (Bhatt and Grover, 2005; Fink and Neumann, 2007; Glaser, 2008; Rockart et al., 1996), competencies of external partners and vendor management (Desouza, 2006; Rockart et al., 1996), change agent competency (Markus and Benjamin, 1996), and competencies around collaborative work arrangements enabled by IT (Breu et al., 2002).

Behavioural Capability defined as "*interpersonal and management knowledge and skills, such as effective interpersonal communication, working in collaborative environments, and planning, organizing, and leading projects*" (Fink and Neumann, 2007, p. 443) is a critical component of IT-enabled business agility, in particular on the system and information side of business agility (Fink and Neumann, 2007). The horizontal nature of business processes and information systems require IT professionals to perform well in cross-functional and collective settings, and to engage and achieve true partnerships with their business clients (Bassellier and Benbasat, 2004; Fink and Neumann, 2007). The IT professional must educate and lead rather than sell applications or solutions (Prager, 1996). Increased behavioural flexibility of IS specialists and the ability to switch roles lead to improved organisational effectiveness and IS specialist credibility (Markus and Benjamin, 1996). IT staff training, flexibility and movement across domains (job rotation) increase the degree of agility (Glaser, 2008; Tsourveloudis and Valavanis, 2002). There are many IT positions with characteristic that enable some degree of interchangeability with other business domains. Thus, staff can be cross-trained in and/or cross-exposed to either different parts of the IT organisation and/or the customer organisation (Glaser, 2008). IT staff's training level and job rotation are two variables that can be used to measure people agility (Lui and Piccoli, 2006; Tsourveloudis and Valavanis, 2002).

The re-skilling of IT must go beyond technology skills to business skills if the necessary alignment and relations are to be built with business (Rockart et al., 1996). IT personnel with knowledge and awareness of business strategy, business opportunities, and competition possess a unique capability to improve the utilisation of commodity infrastructure services which in turn leads to competitive advantage (Bhatt and Grover, 2005). As strategic partners to the business, IT professionals in agile companies will have to understand and learn about market influences, they need to consider how their organizations are changing, and they must continually ask what business they are going to be in (Prager, 1996). *"Flexible IT professionals aligned with their organizations know and do some things beyond what they already know and do: they predict change, they design flexible infrastructures, and they continuously seek input from their organizations"* (Prager, 1996).

Nowadays it is too expensive to keep all resources needed in-house. Organisations striving for agility should therefore find smart ways of engaging with external entities and becoming an organisation that can integrate cross-disciplinary knowledge (Desouza, 2006).

Agile IS force work is also expected to possess knowledge about new innovative and collaborative ways of working enabled by new IT tools and capabilities such as virtual internal and external teams, communities of practice, home working and mobile working (Breu et al., 2002).

Based on the above we suggest the following agile characteristics and signs of IT people and their skills:

1. IT staff possesses good skills and competencies related to the business domain, processes, and capabilities (Rockart et al., 1996)

2. IT staff has a good understanding of business strategy, competition and market influences (Bhatt and Grover, 2005; Prager, 1996)

3. IT staff possesses good relational and social skills such as interpersonal communication and collaboration skills (Fink and Neumann, 2007; Bassellier and Benbasat, 2004)

4. IT staff possesses good management skills, such as planning, project management, and change management skills (Prager, 1996; Fink and Neumann, 2007)

5. IT staff have in general varied and broad skills and capabilities and are therefore easily re-deployable in times of change (Markus and Benjamin, 1996; Glaser, 2008)

6. The majority of the IT staff would be good candidates for job rotation outside the IT organization (Glaser, 2008; Lui and Piccoli, 2006)

7. The IT organization effectively utilizes skills and knowledge from external partners (Desouza, 2006)

8. IT staff possesses knowledge about new, innovative, and collaborative ways of working, such as virtual workplace and mobile working (Breu et al., 2002)

6.1.5 IT Infrastructure and Standards

IT infrastructure is made up of a technical block containing the shared technology, standards, applications and data (Broadbent and Weill, 1997; Henderson and Venkatraman, 1993) and a human block containing capabilities and knowledge required to manage the IT components (Broadbent and Weill, 1997). Many studies have suggested that building strong, highly capable, and organisation wide IT infrastructure services results often in positive strategic outcome for the organisation (Fink and Neumann, 2007). This strategic value has been linked into the organisation's ability to adapt successfully to changes in the external environment (Byrd and Turner, 2001; Fink and Neumann, 2007; Weill et al., 2002). Direct effect has also been found between well-crafted IT infrastructure capabilities and IT-dependent strategic agility (Fink and Neumann, 2007; Tapanainen et al., 2008; Lu and Ramamurthy, 2011; Roberts and Grover, 2012) which is defined as *"the ability to respond*

efficiently and effectively to emerging market opportunities by taking advantage of existing IT capabilities" (Fink and Neumann, 2007).

IT infrastructure's key agility factors are the extent of existing infrastructure (Fink and Neumann, 2007), infrastructure flexibility (Byrd and Turner, 2000; Tallon and Pinsonneault, 2011), standardisation and modularity (Tsourveloudis and Valavanis, 2002; Rockart et al., 1996; Glaser, 2008), integration and connectivity (Van Oosterhout et al., 2006; Goldman et al., 1995; Roberts and Grover, 2012), and the flexibility of IT personnel (Byrd and Turner, 2000).

Time and cost are reduced when implementing a new/modified system or fulfilling new information needs if the company has already extensive infrastructure services that cover the needs of new/modified applications and the emerging information needs. The effort needed to introduce new system and information capabilities will be less if the organisation e.g. already has solid channel management, communication, security and risk management, data management, application infrastructure, IT architecture and standards, and IT research and development services compared to the case where the organisation has to obtains many of these infrastructure services to support the system change and the new information needs (Fink and Neumann, 2007). A company with extensive and advanced infrastructure services is in a superior competitive position compared to its competitors as they more likely would need to spend time and efforts on the development of new infrastructure services (Fink and Neumann, 2007).

IT infrastructure Flexibility is defined as the extent to which key IT resources (e.g. hardware, software, and networks) are scalable and adaptable for different IT and business purposes (Byrd and Turner, 2000). Applying flexibility to infrastructure means adapting infrastructures to changing external drivers. Therefore, infrastructure must also include a process for evaluating and adding new tools, a process for continuously evaluating existing tools to see what should be removed, and a process for continually seeking user input about what works and what does not (Prager, 1996). IT infrastructure flexibility is what ultimately implements the opportunities for IT that have been identified and agreed together with the business to help enterprise agility (Tallon and Pinsonneault, 2011). Thus flexible IT infrastructure will enable a smooth and speedy implementation of the business market response strategy which entails that infrastructure flexibility can be viewed as a "response capability" component of agility (Tallon and Pinsonneault, 2011). A combination of tight IT business alignment and flexible IT infrastructure enables organisation to make use of IT in ways that satisfy their near term strategic objectives while developing greater awareness and knowledge of how IT can facilitate faster reactions to external market changes (Tallon and Pinsonneault, 2011).

IT infrastructure standards may, at first glance, appear to constrain agility as they may narrow the list of choices. In the long term however, standards do improve agility because their absence often results in major investments to integrate technologies that were never intended to be integrated causing increased costs and complex IT environment (Glaser, 2008). Agility in integration and support is increased by technology standardisation (Rockart et al., 1996). The responding aspect of agility can be implemented by being able of quickly reconfiguring the IT infrastructure (Van Oosterhout et al., 2006).

Agile IT infrastructure should facilitate integration and rapid connect and disconnect capabilities with customers and partners at the levels of hardware, communication, systems, and information (Van Oosterhout et al., 2006; Goldman et al., 1995). Companies with well-integrated information systems gain greater business value from inter-functional coordination when responding to changes or to market opportunities compared to companies with poorly integrated systems (Roberts and Grover, 2012). The flow of information across the enterprise gets improved with integrated systems.

Finally the *business value* of IT infrastructure must be well understood by both IT and business executives, otherwise IT infrastructure would only be seen as a cost which is devastating for IT and business agility (Rockart et al., 1996). The power of IT infrastructure with regard to business agility is

in knowledge creation and process enhancements which in turn facilitate the organisation's ability to sense and respond to customer and market opportunities (Roberts and Grover, 2012).

We suggest the following characteristics for IT Infrastructure that enhances the IT agility and thereby organizational agility.

1. The IT function provides reliable and extensive firm-wide IT infrastructure services (hardware, software and people capabilities) (Fink and Neumann, 2007; Tallon and Pinsonneault, 2011)

2. Adding new system or information capability can relatively easily be accommodated within existing IT infrastructure (Fink and Neumann, 2007)

3. The IT infrastructure is characterized by a high degree of standardization and modularity (Glaser, 2008; Rockart et al., 1996)

4. It is reasonably easy to connect and disconnect IS/IT capabilities with the external world (e.g. email system, information systems, information resources, etc.) (Van Oosterhout et al., 2006; Goldman et al., 1995)

5. The IT function provides a wide range of basic education and training services related to firm-wide IS/IT capabilities (Prager, 1996)

6. Business executives regard IT infrastructure as an asset that can create business value (Rockart et al., 1996)

6.1.6 IS Development and Delivery

This dimension includes the development, delivery, and deployment of information systems that meets current and future business needs. IS development/delivery (ISD) is a very common aspect of IS/IT that researchers have linked directly and indirectly to the agility of the IT function as well as to business agility at different levels (Lyytinen and Rose, 2006; Lee et al., 2006; Truex et al., 1999; Conboy, 2009; Lee and Xia, 2005; Glaser, 2008; Largent, 2010). Agility in the context of ISD is defined as "*the organization's ability to sense and respond swiftly to technical changes and new business opportunities*" (Lyytinen and Rose, 2006, p 183).

Signs of agility in this context are: well developed solution delivery capability (Larsen and McInerney, 2002; Lee et al., 2006), close business involvement and customer engagement (Largent, 2010), ISD methods and teams that can handle organisational and business change (Lee et al., 2006; Glaser, 2008; Conboy, 2009; Lee and Xia, 2005), ISD methods and teams that can handle technology change (Lee and Xia, 2005), and phased and incremental delivery approaches (Truex et al., 1999; Glaser, 2008).

Organisations must have the ability and capability to rapidly develop, deliver and deploy systems that satisfy current and emerging business needs (Lee et al., 2006). For global organisations, they have to manage successful and seamless solution delivery over multiple locations, time zones and cultures in a virtual model (Larsen and McInerney, 2002). At the very basic level, this requires effective and efficient system development and delivery methods as well as project management frameworks and teams with clear roles and responsibilities (Lee et al., 2006; Larsen and McInerney, 2002).

On the top of this and to be agile, these ISD methods, teams, and project frameworks must also have the ability to adapt to changing circumstances, to alleviate rigid formal controls, and to be continually ready (Conboy, 2009). Practitioners and academics alike are in agreement that flexibility is a critical and necessary condition for organizations to cope with the uncertainty and ambiguity of the dynamic business environment (Lee and Xia, 2005). Otherwise, what happens is that organizations create or introduce systems that are ineffective and/or irrelevant because business conditions and contexts have changed (Lee and Xia, 2005). Hence, the definition of agility in ISD as stated by Conboy (2009, p 340) is *"the continual readiness of an ISD method to rapidly or inherently create change, proactively or reactively embrace change, and learn from change while contributing to*

perceived customer value (economy, quality, and simplicity), through its collective components and relationships with its environment."

In addition to business and market changes agile ISD teams face and need to deal with the growing speed of technology changes. Lee and Xia (2005, p 77) define ISDP team flexibility as *"the ISDP team's ability to effectively and efficiently respond to business and technology changes"*. This flexibility is considered to be a project-level organizational capability that uses project resources to respond to the changes in business and technology throughout the project (Lee and Xia, 2005).

Furthermore, it is not unusual in many organisations that IT projects last for more than a year and sometimes several years where the business not only will have to wait so long to get the benefits, but also run the risk of getting something that is no longer fit for purpose (Glaser, 2008). Therefore, the faster the development and delivery process, the more agile (Tapanainen et al., 2008). It is critical that organisations understand and enable a cumulative ISD process where incremental development and delivery is constant, just like the organizations for which they are built, are subject to constant adjustment and adaptation (Truex et al., 1999). Thus, system development projects should have short deliverable cycles which can be achieved by e.g. piloting the a new application or IT capability in a selected part of the organisation before gradually rolling it out to the rest or breaking down the full package of features and functions into smaller portions that are delivered in a serial implementation approach (Glaser, 2008).

Based on the above, we suggest the following characteristics if the organization's IS development and delivery processes are to be agile and responsive.

1. The IT organization has the capability to rapidly deliver and implement systems that satisfy current and emerging business needs (Larsen and McInerney, 2002; Lee et al., 2006)

2. New systems are delivered through very close collaboration between IT and business customers (Largent, 2010)

3. The IT organization has flexible IS delivery teams and methods that can adapt to changing business circumstances (Lee et al., 2006; Glaser, 2008; Conboy, 2009; Lee and Xia, 2005)

4. The IT organization has flexible IS delivery teams and methods that can adapt to rapid technology changes (Lee and Xia, 2005)

5. The IT organization uses flexible IS delivery teams and methods that can alleviate rigid formal controls whilst maintaining quality (Conboy, 2009)

6. The IT organization uses project management frameworks that can deliver in an incremental manner (Truex et al., 1999; Glaser, 2008)

7. Long IS/IT projects are usually broken down to phases resulting in deliverables within months rather than years (Truex et al., 1999; Glaser, 2008)

6.1.7   System Capabilities

System Capabilities refer to the end user, business, and technical functionality and features of information systems including their support and maintenance capabilities. Information systems in themselves are not sufficient to achieve agility (Coronado Mondragon et al., 2004) but they are considered by many scholars as important prerequisites to agility in the sense that they constitute a critical and fundamental part of any change required for enterprise agility (Goldman et al., 1995; Coronado Mondragon et al., 2004).

Characteristics of agility in this regard are ability to change and adjust system capabilities and features (Boar, 1998; Glaser, 2008; Fink and Neumann, 2007), and efficient and effective support and maintenance (Fink and Neumann, 2007).

At the heart of challenges in this area is what many organisations have experienced namely that information systems have been anything but flexible and agile, hence they have become more as disablers of agility and flexibility than enablers (Allen and Boynton, 1991). One of the most common and important agility disablers is the existence of inflexible legacy systems (Van Oosterhout et al., 2006). For companies to compete in a rapidly changing world, the IT function can no longer merely create and manage static systems (Prager, 1996). As change is essential for the survival of the organisation, IT systems must also incorporate continuous change and be flexible (Boar, 1998). Even though the offered functionality and features of applications are the main immediate contributions to improving business processes, the application's ability to accommodate possible future changes and modifications as well as being flexible for additional demands is of critical importance for contributing to agility (Glaser, 2008). Most probably, an organisation won't be able to use IT to react effectively to new opportunities or threats if system changes take time and are costly to make and to implement (Fink and Neumann, 2007).

Thus ability to adjust information system capabilities to the new requirements will be needed if IT is used to react quickly and effectively. Examples of such needs could be the application's ability to accommodate improvements and new data elements, to integrate with other applications (internal and external), and to provide application program interfaces to the outside world. Features like these can be just as important as the existing functionality. IT-dependent system agility is defined as *"the ability to accommodate change in information systems without incurring significant penalty in time or cost"* (Fink and Neumann, 2007, p. 442). In other words, for an IT organisation to be agile, adding new features and functions to existing applications should be relatively straightforward, inexpensive, and quick (Glaser, 2008). This implies being agile in activities like system development and delivery, implementation, modification and maintenance. It is also about decreasing system modification or enhancement costs and faster application development (Fink and Neumann, 2007).

Based on the above, we suggest the following characteristics if the system capabilities of the organization are to be agile and responsive.

1. Adding new features to existing applications is relatively straightforward and is done at reasonable cost (Prager, 1996; Glaser, 2008; Fink and Neumann, 2007)

2. Existing applications are relatively easy to integrate with other internal applications (Boar, 1998; Fink and Neumann, 2007)

3. Existing applications are relatively easy to integrate with external applications (Fink and Neumann, 2007)

4. Existing applications have such features that make their support and maintenance cost efficient (Fink and Neumann, 2007)

5. The support and maintenance of the application portfolio is efficient and effective (Fink and Neumann, 2007)

6.1.8 Information Capabilities

Information Capabilities refer to the availability, access, retrieval and utilisation of relevant information and reports in the organisation. Information and the ability to process information in an efficient and effective manner allow organisations to reduce uncertainty and make more accurate decisions, contributing thereby to both the *sensing* and *responding* dimensions of agility (Seo and La Paz, 2008; Huang et al., 2012). As for sensing, appropriate use of technology with proper information practices in place help generating a multitude of signals to the agile organization (Seo and La Paz, 2008). This can be done by collecting large amounts of data, and making data retrievable and accessible from multiple sources, in multiple formats, and with limited compatibility problems. E.g. the wide spread of mobile devices with improved features make it possible to access, update, process, and retrieve information anywhere, anytime. The use of advanced information technologies

allows organizations to efficiently capture and process large amounts of data, reducing the time for decision making actions (Seo and La Paz, 2008). In supply chain, facilitating the flow and processing of information across the entire process, IT can speed up the timeliness, and improve accessibility, accuracy and adequacy of information (Degroote and Marx, 2013). The way IS can facilitate *responding* is by presenting accurate, reliable, and adequate information enabling organizations to make decisions for effective response in changing environments.

Signs of agility related to information capabilities are access to the right information at the right time (Desouza, 2006; Bersin, 2014; Breu et al., 2002), ability to accommodate change related to access and use of information (Fink and Neumann, 2007), well-developed and flexible information infrastructure (Fink and Neumann, 2007; Tsourveloudis and Valavanis, 2002), and information interoperability and network communication (Tsourveloudis and Valavanis, 2002).

Today the work content in an organization has become more of non-routine tasks and complex efforts. Most of the simple tasks have been automated or soon will be. The knowledge worker must, in order to work in an agile manner, be able to access information in an agile manner (Desouza, 2006). IT tools and procedures add value to business when they make quality information widely available and accessible (Breu et al., 2002) so agile organisations should have the ability to access the right information at the right time (Bersin, 2014). IT professionals should recast their roles from applications delivery to information delivery (Prager, 1996).

Most probably, an organisation won't be able to use information to react effectively to new opportunities or threats if changes to information use and practices are costly, complicated or take time to make (Fink and Neumann, 2007). Thus, Fink and Neumann (2007, p. 442) define IT-dependent information agility as "*the ability to easily accommodate change in the way organizational users access and use information resources*". This implies that IS enabled agility in the information context means cost-effective and timely manner for organisational actions as IS is not only about creating and managing databases but even more importantly about developing analytics and business intelligence (Seo and La Paz, 2008). The ability to adjust the utilization of information resources in line with new information needs will be critical if information is used to sense and react quickly and effectively (Fink and Neumann, 2007).

Such an agile ability relies not only on information systems but also on well-developed and flexible information infrastructure to increase the efficiency of accessing and using both internal and external information (Fink and Neumann, 2007; Tsourveloudis and Valavanis, 2002).

Building an agile information infrastructure ability requires high degree of interoperability and sufficient internal and external network communication (Tsourveloudis and Valavanis, 2002). Interoperability indicates the level of standardization while network communication is about networking infrastructure which includes density of connections, their functionality, bandwidth, and reliability (Tsourveloudis and Valavanis, 2002).

Based on the above, we suggest the following characteristics if the information capabilities of the organizations are to be agile and responsive.

1. The right information is accessible at the right time across the organization (Desouza, 2006; Bersin, 2014; Breu et al., 2002)

2. The organization has a good capability to adapt the use of information resources in line with new information needs (Fink and Neumann, 2007)

3. It is relatively easy to integrate information across business domains within the company (Seo and La Paz, 2008)

4. The IT function provides flexible infrastructure to access external information sources (Fink and Neumann, 2007; Tsourveloudis and Valavanis, 2002)

5. It is relatively easy to exchange and transfer information with the outside world (Tsourveloudis and Valavanis, 2002)

6. It is relatively easy to integrate information from internal and external sources (Fink and Neumann, 2007; Tsourveloudis and Valavanis, 2002)

6.2   IT Agility Definition

The concept presented in the previous section links IT agility to many different themes of IT as well as to several organizational aspects. It connects to the organization's hardware and shared services (IT infrastructure) as well as to the software (information systems). It also links to the IT organization's structure, workforce and capabilities. Furthermore, it emphasizes the importance of alignment and partnership with business and focuses on the enablement of efficient use of business information through IT. This is in line with what has been stated earlier that this research adopts and uses the term IT Agility to refer to *the overall role of IT in enterprise agility*. This role is primarily studied from the perspective of the IT organization, but ultimately IT in an organization can encompass much more than the IT function which makes the question of how to define IT agility a bit tricky and quite challenging. Even though the IT function has been in focus for this research, we would like to adopt a more forward-looking definition of IT agility viewing it as an *ability of and for the entire organization* and not only related to the IT function solely. Based on this view and because of the dynamic nature of this topic we suggest the following tentative definition of IT Agility that can be developed further as more theoretical and practical knowledge is gained.

> ***IT Agility is the ability of the organization, through IT and IT's partnership with business, to effectively sense and respond to internal as well as external changes in a timely manner.***

7   IT Agility Survey Results

This chapter contains the main results from the empirical study. It starts by presenting the sample characteristics (section 7.1), followed by the presentation of descriptive statistics and frequency distribution of the three key parameters in the survey (section 7.2), followed by correlation analysis (section 7.3). Finally some subgroup results are presented too (7.4).

7.1   Sample Characteristics

Table 4 contains the sample characteristics. The sample represents the public sector as well as various industry sectors, ranging from healthcare, financial services, energy, materials, industrials, consumer products, to information technology. The sample also represented a wide range of organizations in terms of number of employees and sizes. Most of the sample works either within the IS/IT field or in the interface between IS/IT and business.

Table 4: Sample Characteristics / Demography of the Respondents

Sector	N	Percent		Organizational Area	N	Percent
Government / Public Sector	74	35.4%		IS/IT	77	36.8%
Energy and Power Supply	11	5.3%		Interface IS/IT & Business	103	49.3%
Materials	9	4.3%		Business	21	10.0%
Industrials	8	3.8%		Other	8	3.8%
Consumer Discretionary	11	5.3%		**Total**	**209**	**100.0%**
Consumer Staples	7	3.3%				
Health Care	27	12.9%		**Organizational Position**	**N**	**Percent**
Financials	15	7.2%		Upper management level	29	13.9%
Information Technology	24	11.5%		Middle management level	34	16.3%
Telecommunication	4	1.9%		Lower management level	38	18.2%
Other	19	9.1%		None management level	108	51.7%
Total	**209**	**100.0%**		**Total**	**209**	**100.0%**

Size of Organization	N	Percent		Length of Employment	N	Percent
Fewer than 100	32	15.3%		Less than 1 year	12	5.7%
Between 100 – 1000	55	26.3%		1 - 3 years	40	19.1%
Between 1000 –10 000	53	25.4%		4 - 5 years	21	10.0%
More than 10 000	69	33.0%		More than 5 years	136	65.1%
Total	**209**	**100.0%**		**Total**	**209**	**100.0%**

Scope of Operation	N	Percent		Work for IS/IT Company	N	Percent
Only in Sweden	103	49.3%		Yes	33	15.8%
Globally	106	50.7%		No	176	84.2%
Total	**209**	**100.0%**		**Total**	**209**	**100.0%**

7.2   Descriptive Statistics and Frequency Distribution

In this section we present the results of the assessment of the three key parameters in our survey IT agility survey, namely:

- **Importance** - the importance of IT agility dimensions and their characteristics for the respondents' organization
- **Status** - the extent to which IT agility dimensions and their characteristics exist in the respondents' organization
- **Active Work** - the extent of active work undertaken in the respondents' organization to improve IT agility dimensions and their characteristics

The results are presented for each one of the eight agility dimensions, as well as for the underlying characteristics of each dimension. For reasons outlined in the Methodology section, the mean value is used for the dimension results, while both median and mean are used for the individual characteristics results. In addition we present the frequency of each response alternative to the three evaluation questions related to importance, status, and active work for each dimension. The frequency is presented in a histogram chart in order to demonstrate the shape of the answer distribution. At the end of this chapter, we present some selected subgroup results showing some interesting differences and similarities between these subgroups.

For the full set of the results and all the details please refer to Appendix D - The Complete and Detailed Survey Results.

7.2.1   IT-Business Alignment

7.2.1.1   Assessment of Individual Characteristics

Table 5: The assessment (median value) of the Importance, Status, and Active Work for the individual characteristics of the IT-Business Alignment dimension

1. IT-Business Alignment - Characteristics	Importance	Status	Active Work
1. The IT leadership actively participates in business strategy and planning with senior business leaders	Very Important	To a little extent - Quite a lot	Quite a lot
2. Business and IT executives collaborate on setting strategic goals for IT	Very Important	To a little extent - Quite a lot	Quite a lot
3. The IT function has dedicated teams/individuals proactively and regularly engaging with business	Very Important	Quite a lot	Quite a lot
4. The IT function maintains an up-to-date picture of business priorities and how it can contribute to them	Very Important	Quite a lot	Quite a lot
5. The IT function proactively works across the business to identify and drive new opportunities for value creation through IT	Very Important	To a little extent	Quite a lot
6. The business units own and drive IS/IT enabled business cases in close collaboration with the IT function	Very Important	To a little extent	Quite a lot
7. The business units own and drive IS/IT enabled improvement projects in close collaboration with the IT function	Very Important	Quite a lot	Quite a lot
8. The IT leadership is concerned and cares about the same things as the leadership of business	Very Important	Quite a lot	Quite a lot
9. The IT leadership does well in demonstrating the strategic role of IT in meeting the organization's overall objectives	Very Important	To a little extent	Quite a lot
10. The leadership of business fully understands the strategic role of IT and how IT can add business value	Very Important	To a little extent	Quite a lot

Figure 12: The assessment (mean value) of the Importance, Status, and Active Work for the individual statements of the IT-Business Alignment dimension

7.2.1.2   Aggregated Assessment and Frequency Distribution
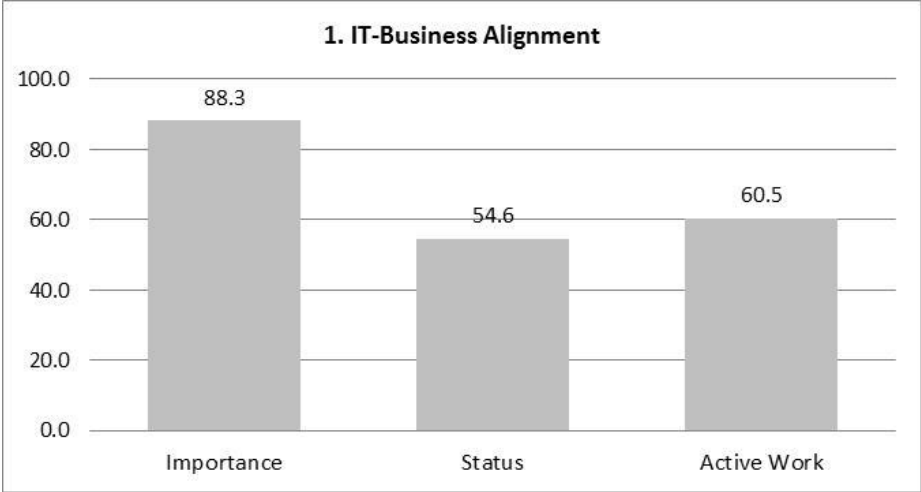
Figure 13: The aggregated assessment (mean value) of the Importance, Status, and Active Work of the IT-Business Alignment dimension

Figure 14: The frequency distribution of the response alternatives to the three assessment questions related to Importance, Status, and Active Work of the IT Business Alignment dimension

7.2.2 Management and Leadership

7.2.2.1 Assessment of Individual Characteristics

Table 6: The assessment (median value) of the Importance, Status, and Active Work for the individual characteristics of the Management and Leadership dimension

2. Management and Leadership - Characteristics	Importance	Status	Active Work
1. The IT leadership understands the importance of the IT organization's ability to adjust quickly to a changing market environment	Very Important	Quite a lot	Quite a lot
2. The IT leadership promotes and rewards change, innovation and organizational learning	Very Important	To a little extent	To a little extent
3. The IT leadership has a clear strategy that is well communicated throughout the organization	Very Important	To a little extent	To a little extent
4. The IT strategy is dynamic and possible to adjust and reformulate in case of changes to the business environment	Very Important	To a little extent	Quite a lot
5. Ongoing IS/IT investments not in line with the business strategy are stopped or put on hold in spite of already made investments	Important	To a little extent	To a little extent
6. The IT leadership drives and manages the shortening of IS/IT project time plans	Important	To a little extent	To a little extent
7. The IT budget can be reassigned any time during a fiscal year	Important	To a little extent	To a little extent
8. Governance of IS/IT investments is continuously aligned with business governance	Very Important	To a little extent	Quite a lot
9. For outsourcing contracts, the IT leadership focuses a lot on maximizing service flexibility from the outsourcing provider	Very Important	Quite a lot	Quite a lot
10. For outsourcing contracts, the IT leadership focuses a lot on controlling the outsourcing provider	Very Important	Quite a lot	Quite a lot

Figure 15: The assessment (mean value) of the Importance, Status, and Active Work for the individual statements of the Management and Leadership dimension

7.2.2.2   Aggregated Assessment and Frequency Distribution
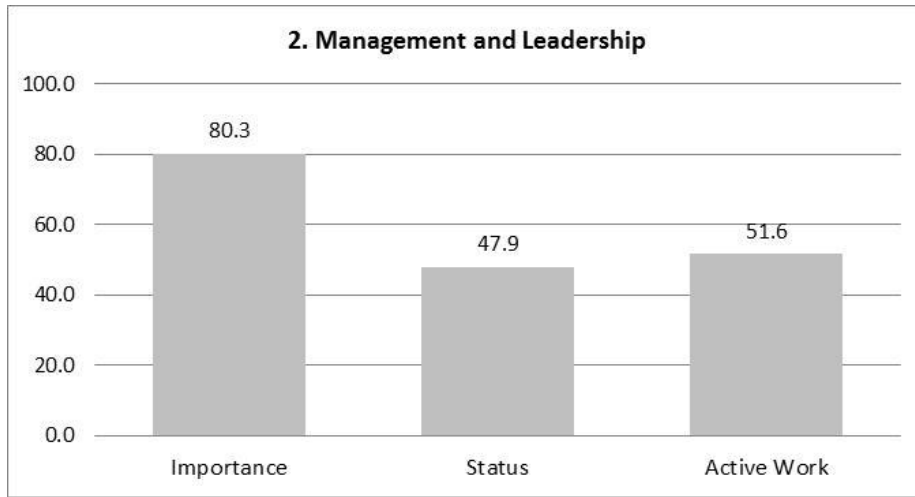
Figure 16: The aggregated assessment (mean value) of the Importance, Status, and Active Work of the Management and Leadership dimension

Figure 17: The frequency distribution of the response alternatives to the three assessment questions related to Importance, Status, and Active Work of the Management and Leadership dimension

7.2.3 Organization Structure and Culture

7.2.3.1 Assessment of Individual Characteristics

Table 7: The assessment (median value) of the Importance, Status, and Active Work for the individual characteristics of the Organization Structure and Culture dimension

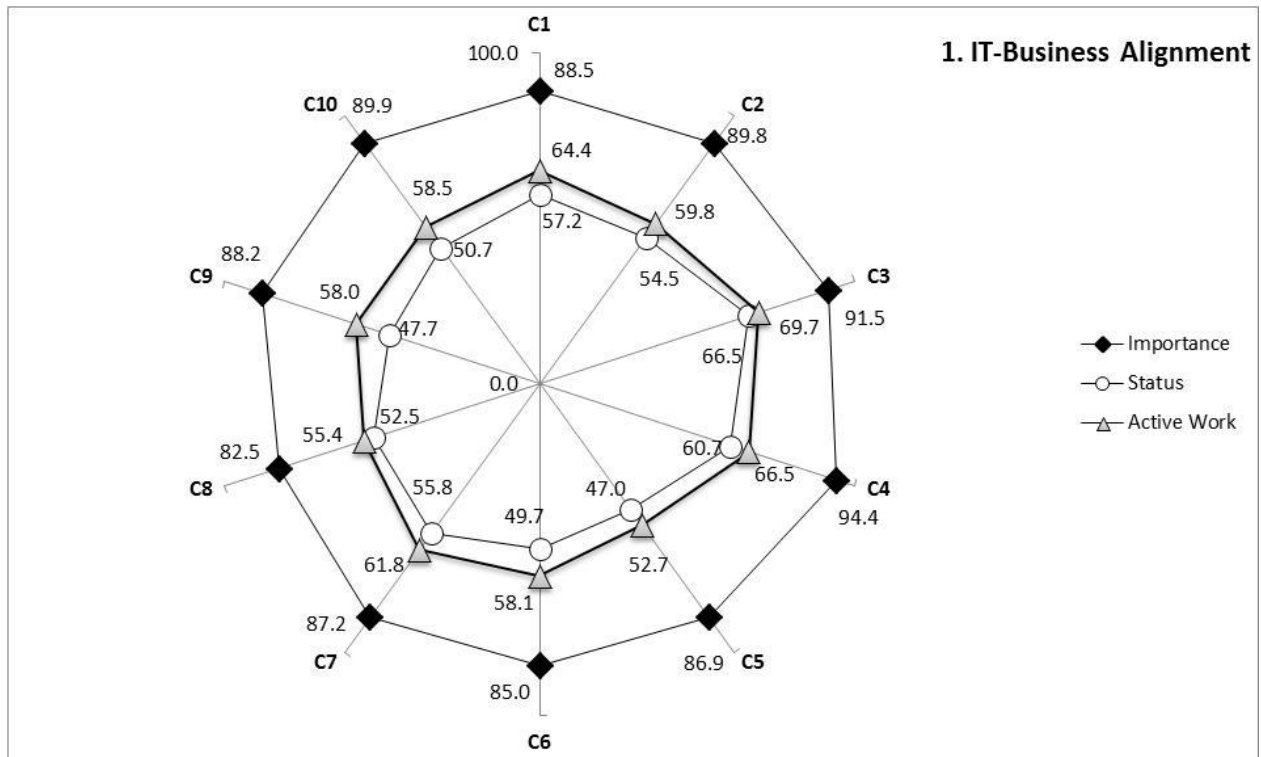| 3. Organization Structure and Culture - Characteristics	Importance	Status	Active Work
1. The IT organization has an open structure and culture where people feel encouraged to be creative and innovative	Very Important	To a little extent	Quite a lot
2. People working in IT feel empowered to take leadership in decision making and execution of these decisions	Very Important	To a little extent	Quite a lot
3. The IT function has a flat organization where decision-making authority is mostly distributed across the organization	Important	To a little extent	To a little extent
4. There is an IT organizational identity that inspires people's mind set and beliefs and guides them in their work	Important	To a little extent	To a little extent
5. IT staff have a positive image of their IT organization	Very Important	Quite a lot	Quite a lot
6. IT staff have a shared understanding of what is core and distinctive about their IT organization	Very Important	Quite a lot	Quite a lot
7. The outside world (e.g. other employees, and partners) has a clear and positive view of the IT organization	Very Important	To a little extent	Quite a lot
8. The IT function provides efficient and effective knowledge management and learning services, such as good search capabilities, distance learning, online training, and discussion forums for the entire organization	Important	To a little extent	To a little extent

Figure 18: The assessment (mean value) of the Importance, Status, and Active Work for the individual statements of the Organization Structure and Culture dimension

7.2.3.2   Aggregated Assessment and Frequency Distribution

Figure 19: The aggregated assessment (mean value) of the Importance, Status, and Active Work of the Organization Structure and Culture dimension
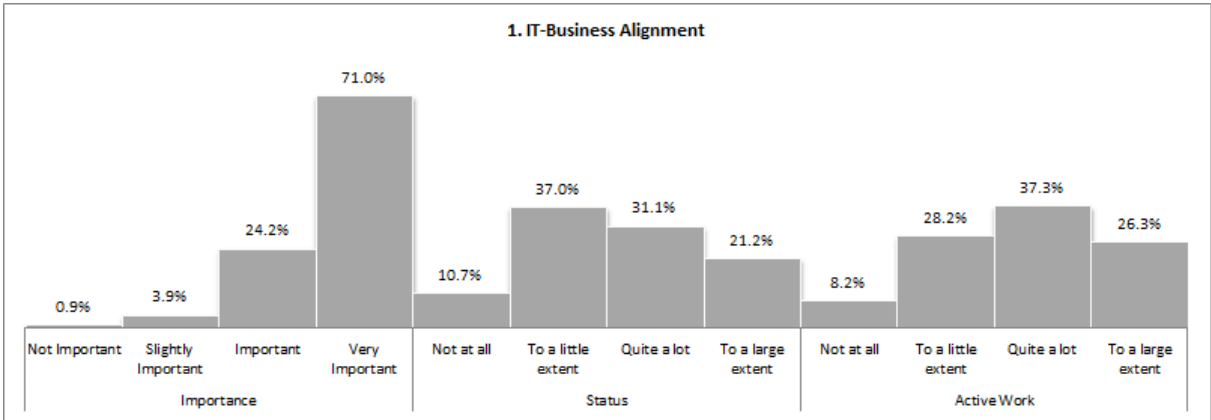

Figure 20: The frequency distribution of the response alternatives to the three assessment questions related to Importance, Status, and Active Work of Organization Structure and Culture dimension

7.2.4   People, Skills and Capabilities

7.2.4.1   Assessment of Individual Characteristics

Table 8: The assessment (median value) of the Importance, Status, and Active Work for the individual characteristics of the People, Skills and Capabilities dimension

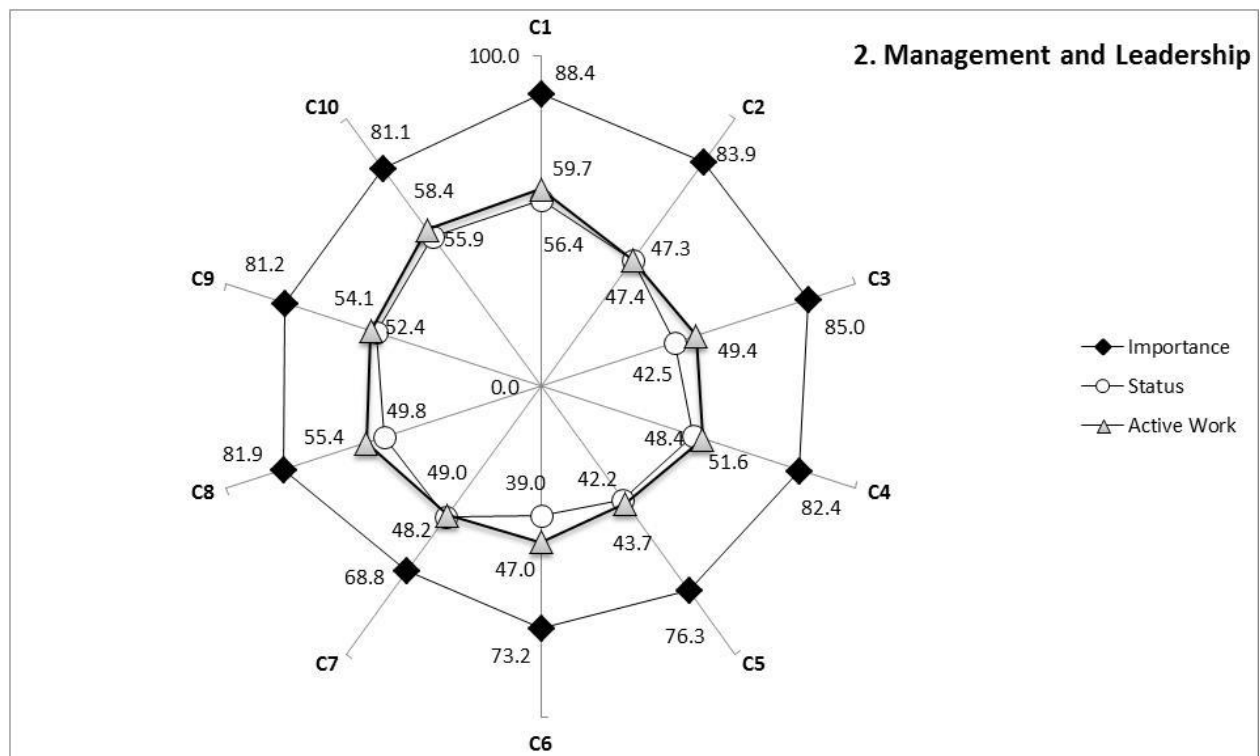| 4. People, Skills and Capabilities - Characteristics	Importance	Status	Active Work
1. IT staff possesses good skills and competencies related to the business domain, processes, and capabilities	Very Important	Quite a lot	Quite a lot
2. IT staff has a good understanding of business strategy, competition and market influences	Important	To a little extent	To a little extent
3. IT staff possesses good relational and social skills such as interpersonal communication and collaboration skills	Very Important	Quite a lot	Quite a lot
4. IT staff possesses good management skills, such as planning, project management, and change management skills.	Very Important	Quite a lot	Quite a lot
5. IT staff have in general varied and broad skills and capabilities and are therefore easily re-deployable in times of change	Important	Quite a lot	To a little extent
6. The majority of the IT staff would be good candidates for job rotation outside the IT organization	Slightly Important	To a little extent	To a little extent
7. The IT organization effectively utilizes skills and knowledge from external partners	Important	Quite a lot	Quite a lot
8. IT staff possesses knowledge about new, innovative, and collaborative ways of working, such as virtual workplace and mobile working	Important	Quite a lot	Quite a lot

Figure 21: The assessment (mean value) of the Importance, Status, and Active Work for the individual statements of the People, Skills and Capabilities dimension

7.2.4.2   Aggregated Assessment and Frequency Distribution

Figure 22: The aggregated assessment (mean value) of the Importance, Status, and Active Work of thePeople, Skills and Capabilities dimension
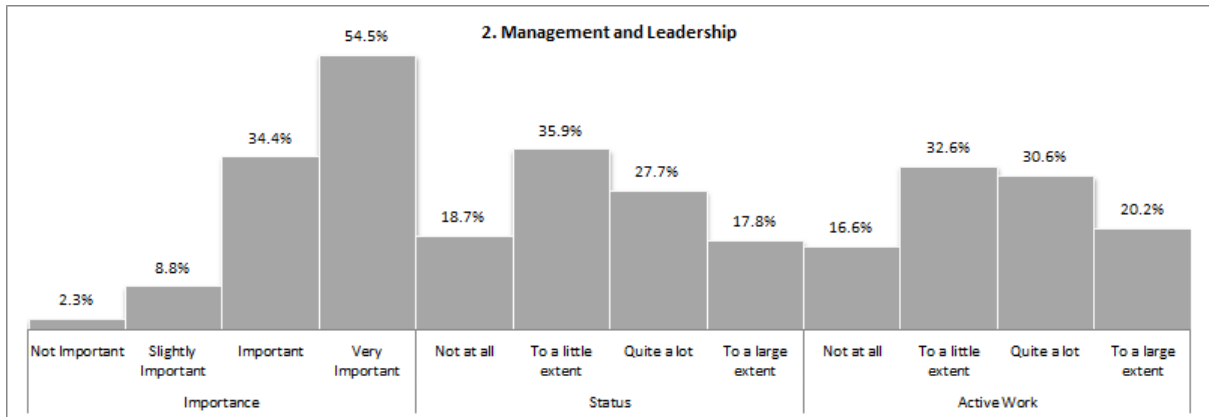

Figure 23: The frequency distribution of the response alternatives to the three assessment questions related to Importance, Status, and Active Work of the People, Skills and Capabilities dimension

7.2.5   IT Infrastructure and Standards

7.2.5.1   Assessment of Individual Characteristics

Table 9: The assessment (median value) of the Importance, Status, and Active Work for the individual characteristics of the IT Infrastructure and Standards dimension

5. IT Infrastructure and Standards - Characteristics	Importance	Status	Active Work
1. The IT function provides reliable and extensive firm-wide IT infrastructure services (hardware, software and people capabilities)	Very Important	Quite a lot	Quite a lot
2. Adding new system or information capability can relatively easily be accommodated within existing IT infrastructure	Very Important	Quite a lot	Quite a lot
3. The IT infrastructure is characterized by a high degree of standardization and modularity	Very Important	Quite a lot	Quite a lot
4. It is reasonably easy to connect and disconnect IS/IT capabilities with the external world (e.g. email system, information systems, information resources, etc.)	Important	Quite a lot	Quite a lot
5. The IT function provides a wide range of basic education and training services related to firm-wide IS/IT capabilities	Important	To a little extent	To a little extent
6. Business executives regard IT infrastructure as an asset that can create business value	Very Important	To a little extent	To a little extent

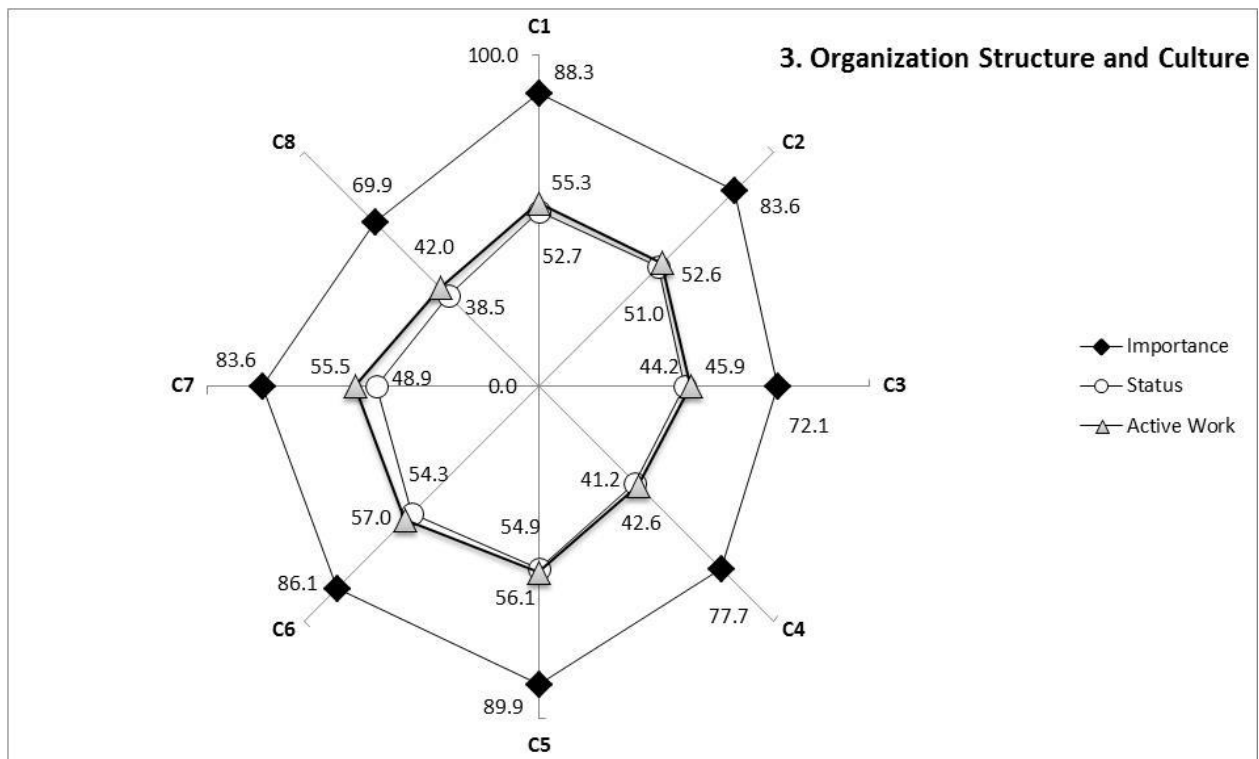**Figure 24: The assessment (mean value) of the Importance, Status, and Active Work for the individual statements of the IT Infrastructure and Standards dimension**

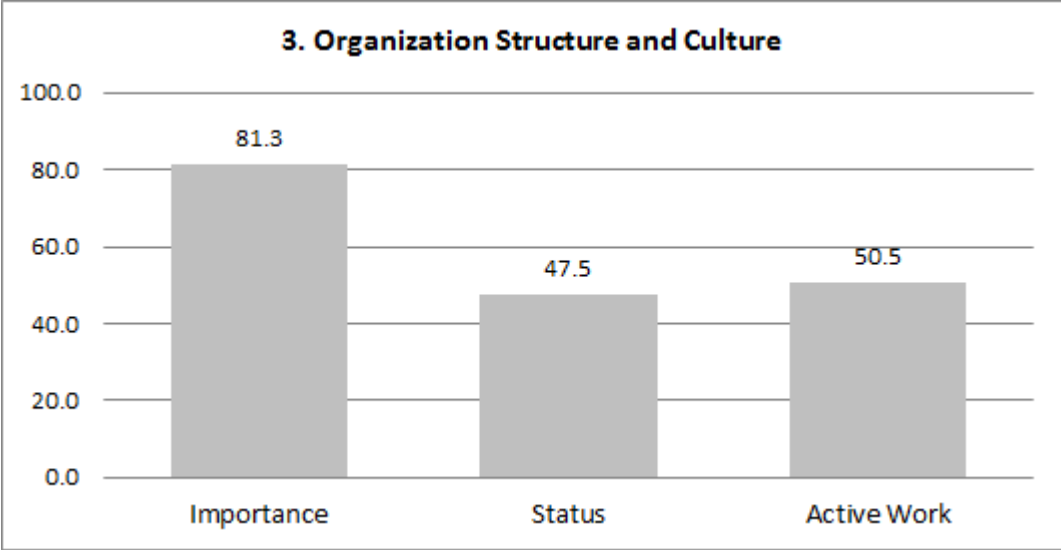### *7.2.5.2 Aggregated Assessment and Frequency Distribution*

Figure 25: The aggregated assessment (mean value) of the Importance, Status, and Active Work of the IT Infrastructure and Standards dimension
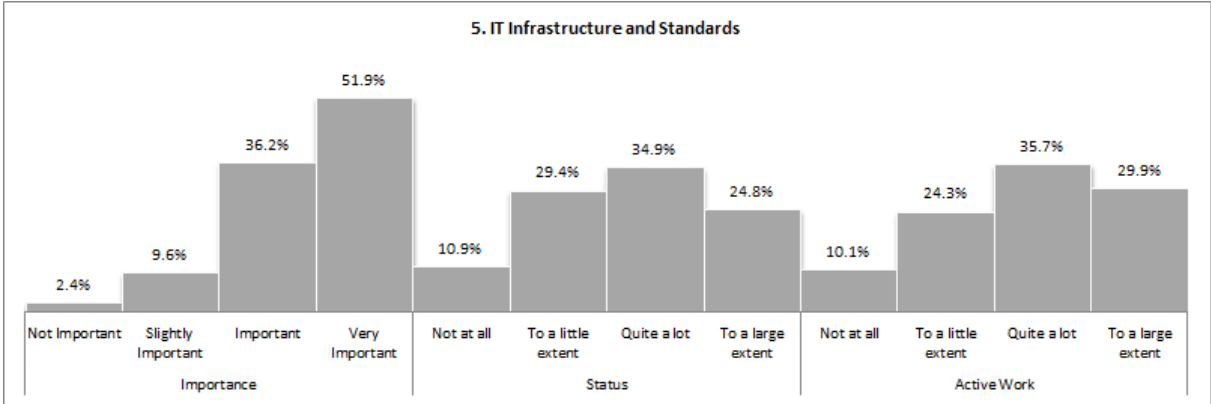
Figure 26: The frequency distribution of the response alternatives to the three assessment questions related to Importance, Status, and Active Work of the IT Infrastructure and Standards dimension

7.2.6 IS Development and Delivery

7.2.6.1 Assessment of Individual Characteristics

Table 10: The assessment (median value) of the Importance, Status, and Active Work for the individual characteristics of the IS Development and Delivery dimension

6. IS Development and Delivery - Characteristics	Importance	Status	Active Work
1. The IT organization has the capability to rapidly deliver and implement systems that satisfy current and emerging business needs	Very Important	To a little extent	Quite a lot
2. New systems are delivered through very close collaboration between IT and business customers	Very Important	Quite a lot	Quite a lot
3. The IT organization has flexible IS delivery teams and methods that can adapt to changing business circumstances	Very Important	To a little extent	Quite a lot
4. The IT organization has flexible IS delivery teams and methods that can adapt to rapid technology changes	Very Important	To a little extent	Quite a lot
5. The IT organization uses flexible IS delivery teams and methods that can alleviate rigid formal controls whilst maintaining quality	Important	To a little extent	To a little extent
6. The IT organization uses project management frameworks that can deliver in an incremental manner	Very Important	Quite a lot	Quite a lot
7. Long IS/IT projects are usually broken down to phases resulting in deliverables within months rather than years	Very Important	Quite a lot	Quite a lot

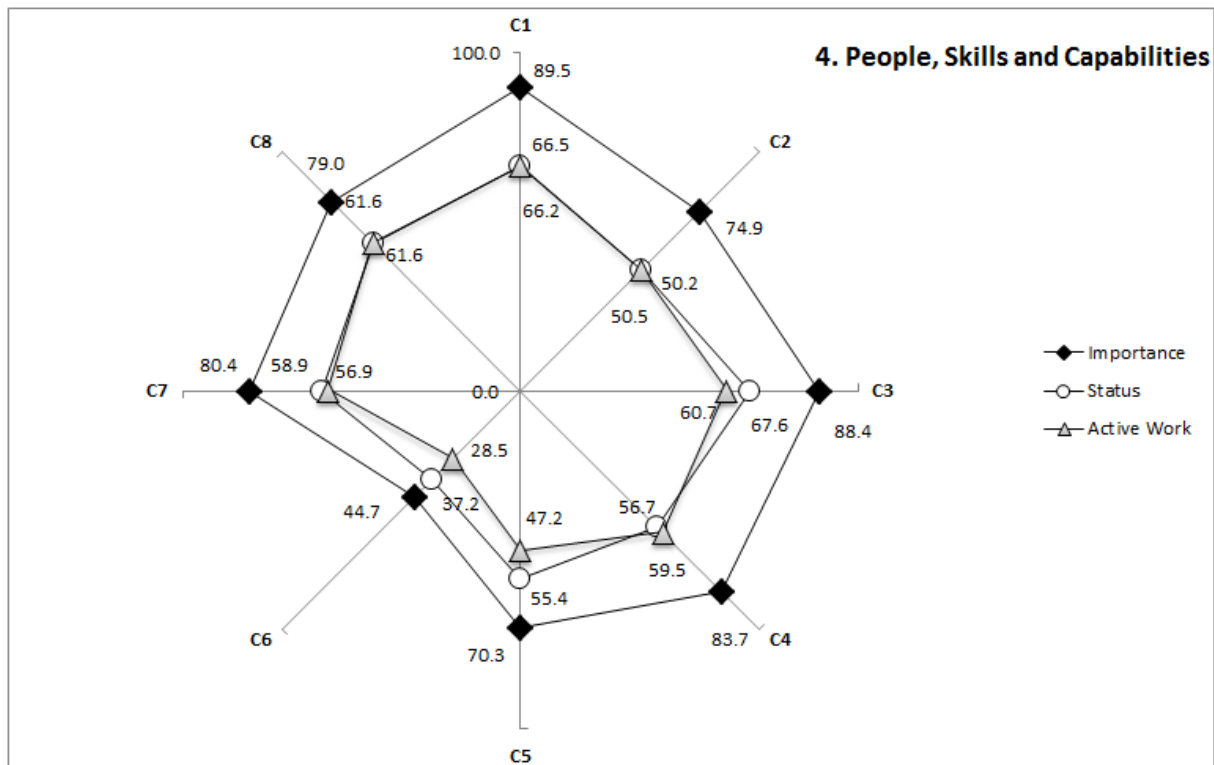**Figure 27: The assessment (mean value) of the Importance, Status, and Active Work for the individual statements of the IS Development and Delivery dimension**

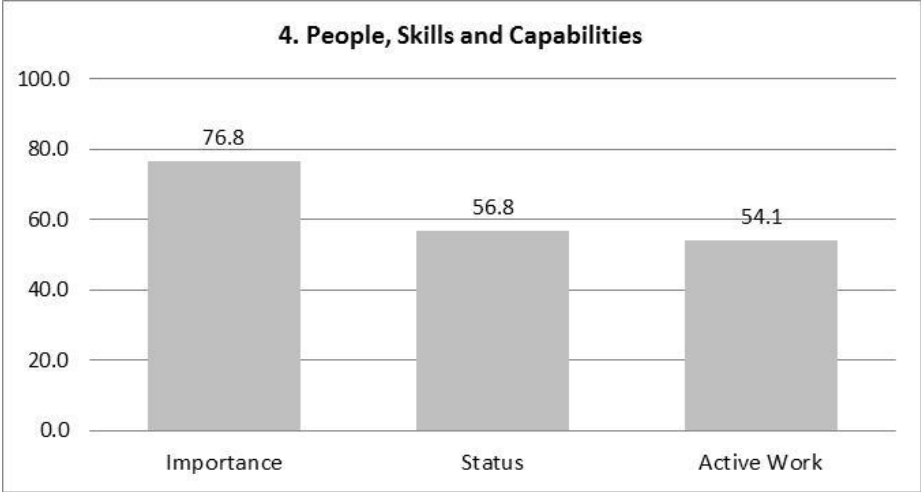### 7.2.6.2   Aggregated Assessment and Frequency Distribution
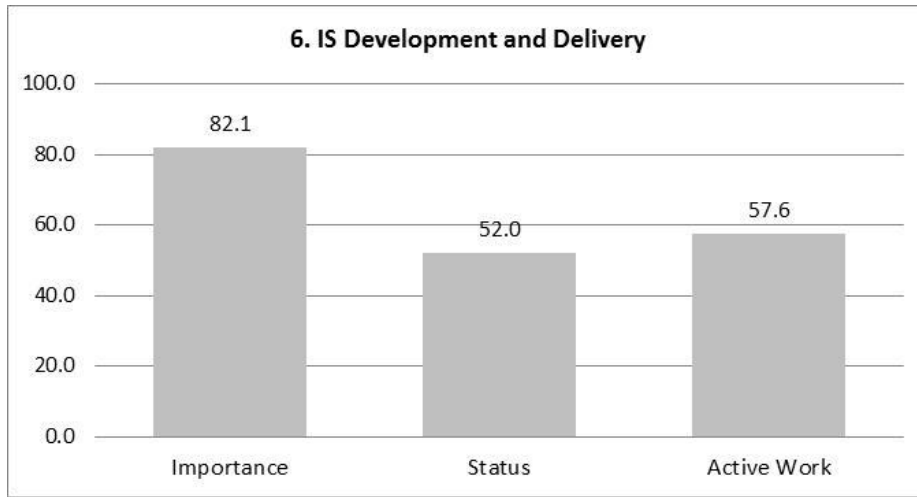
Figure 28: The aggregated assessment (mean value) of the Importance, Status, and Active Work of the IS Development and Delivery dimension
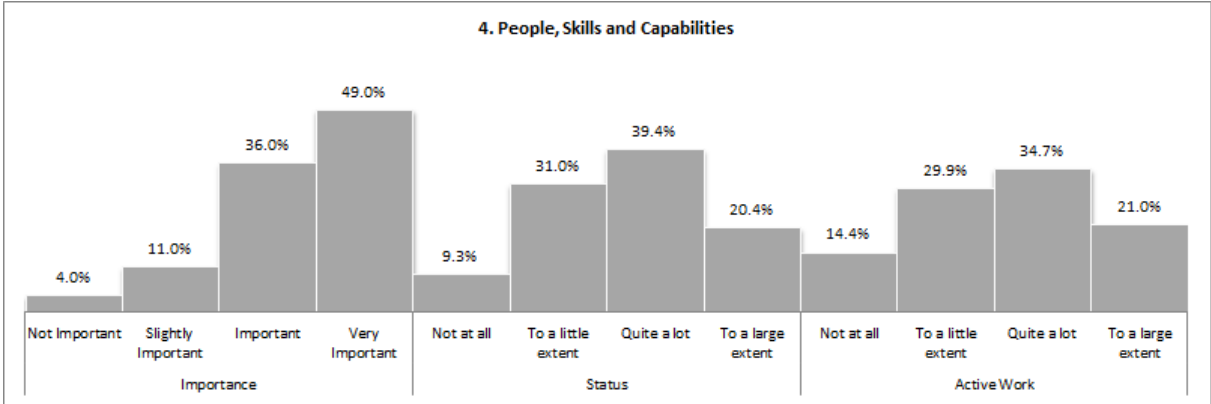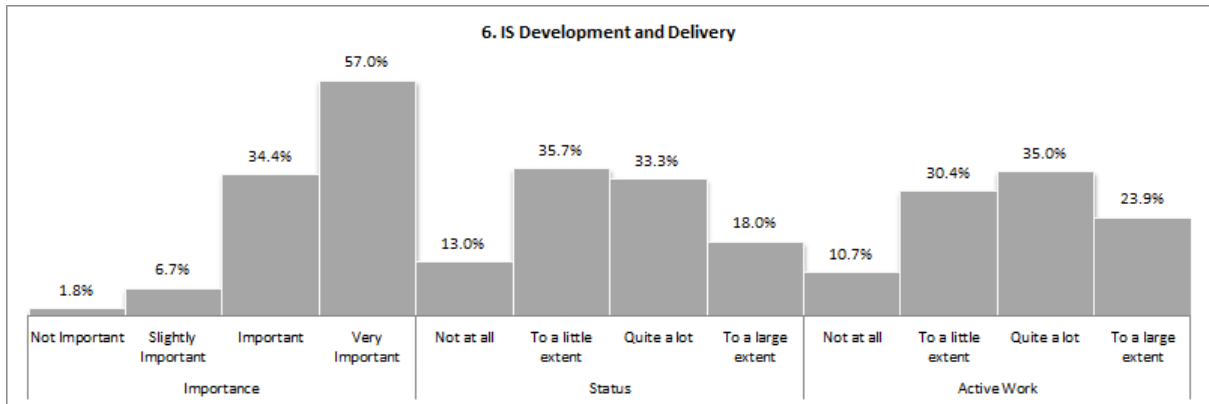

Figure 29: The frequency distribution of the response alternatives to the three assessment questions related to Importance, Status, and Active Work of the IS Development and Delivery dimension

7.2.7   System Capabilities

7.2.7.1   Assessment of Individual Characteristics

Table 11: The assessment (median value) of the Importance, Status, and Active Work for the individual characteristics of the System Capabilities dimension

7. System Capabilities - Characteristics	Importance	Status	Active Work
1. Adding new features to existing applications is relatively straightforward and is done at reasonable cost	Very Important	To a little extent	Quite a lot
2. Existing applications are relatively easy to integrate with other internal applications	Very Important	To a little extent	Quite a lot
3. Existing applications are relatively easy to integrate with external applications	Important	To a little extent	Quite a lot
4. Existing applications have such features that make their support and maintenance cost efficient	Very Important	To a little extent	Quite a lot
5. The support and maintenance of the application portfolio is efficient and effective	Very Important	To a little extent	Quite a lot

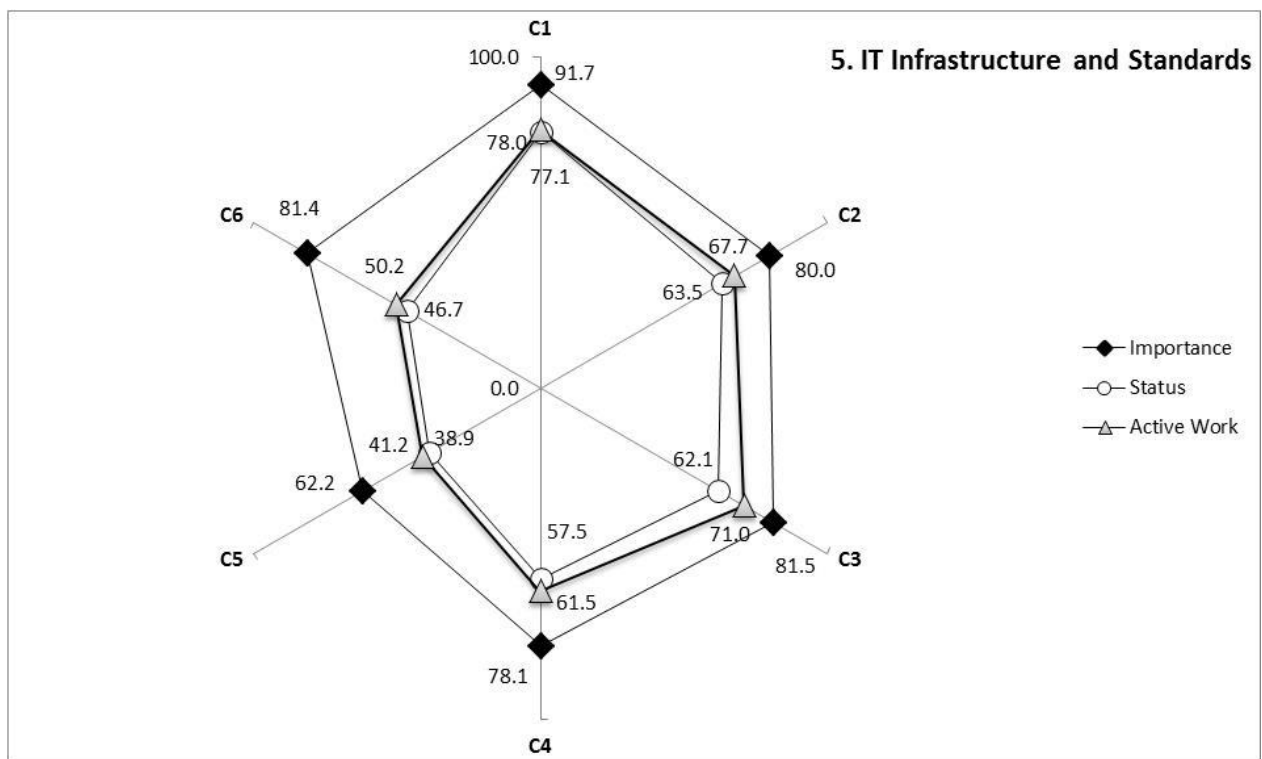**Figure 30: The assessment (mean value) of the Importance, Status, and Active Work for the individual statements of the System Capabilities dimension**

7.2.7.2 Aggregated Assessment and Frequency Distribution
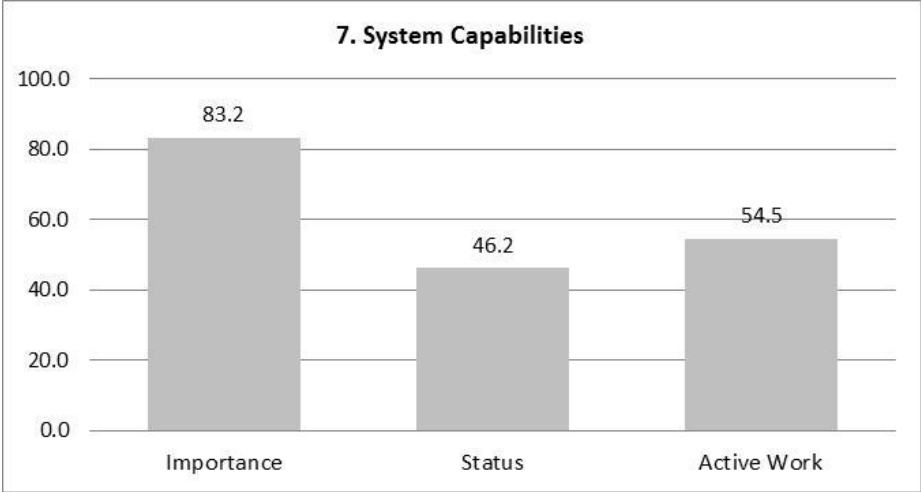
Figure 31: The aggregated assessment (mean value) of the Importance, Status, and Active Work of the System Capabilities dimension
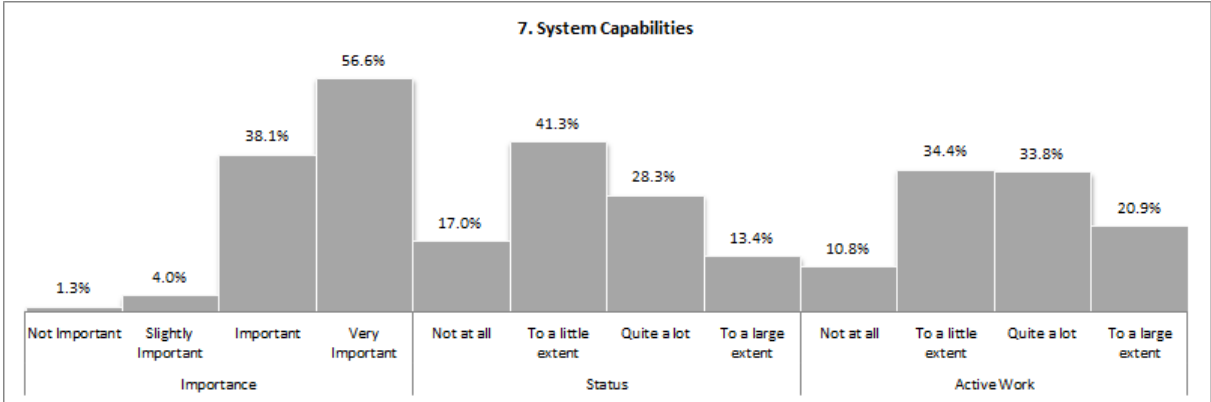
Figure 32: The frequency distribution of the response alternatives to the three assessment questions related to Importance, Status, and Active Work of the System Capabilities dimension

7.2.8 Information Capabilities

7.2.8.1 Assessment of Individual Characteristics

Table 12: The assessment (median value) of the Importance, Status, and Active Work for the individual characteristics of the Information Capabilities dimension

8. Information Capabilities - Characteristics	Importance	Status	Active Work
1. The right information is accessible at the right time across the organization	Very Important	Quite a lot	Quite a lot
2. The organization has a good capability to adapt the use of information resources in line with new information needs	Very Important	To a little extent	Quite a lot
3. It is relatively easy to integrate information across business domains within the company	Very Important	To a little extent	Quite a lot
4. The IT function provides flexible infrastructure to access external information sources	Very Important	Quite a lot	Quite a lot
5. It is relatively easy to exchange and transfer information with the outside world	Very Important	Quite a lot	Quite a lot
6. It is relatively easy to integrate information from internal and external sources	Very Important	To a little extent	Quite a lot

Figure 33: The assessment (mean value) of the Importance, Status, and Active Work for the individual statements of the Information Capabilities dimension

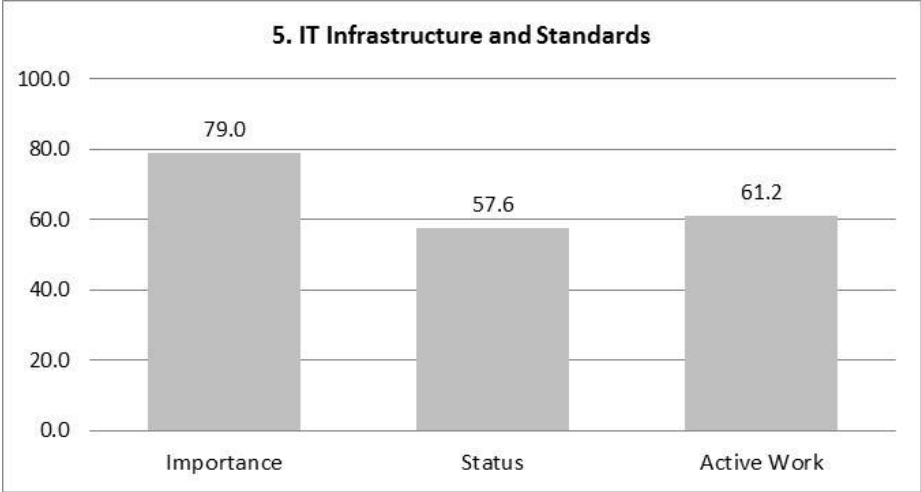### 7.2.8.2 Aggregated Assessment and Frequency Distribution
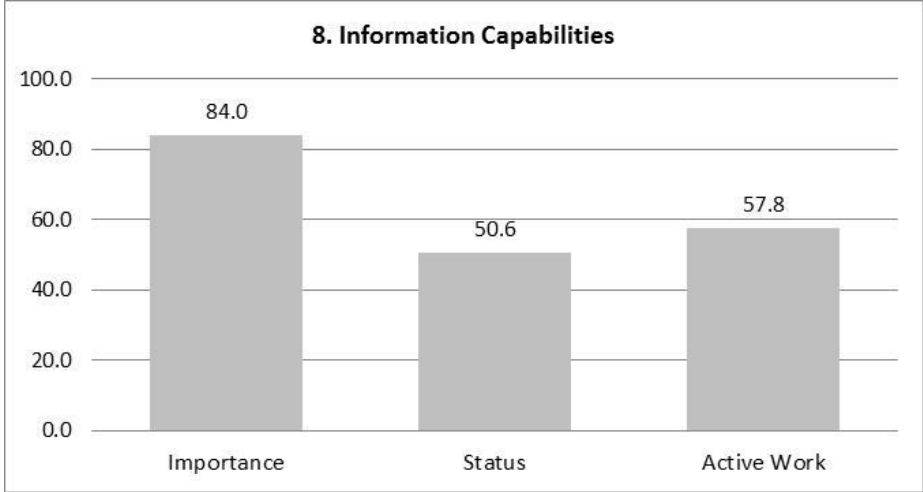
Figure 34: The aggregated assessment (mean value) of the Importance, Status, and Active Work of the Information Capabilities dimension
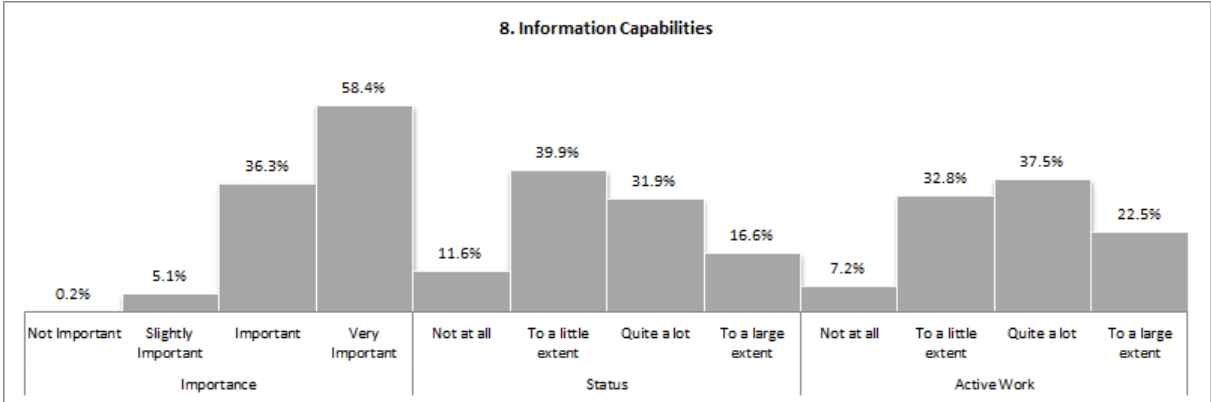
Figure 35: The frequency distribution of the response alternatives to the three assessment questions related to Importance, Status, and Active Work of the IT Information Capabilities dimension

7.2.9 Summary of All Dimension
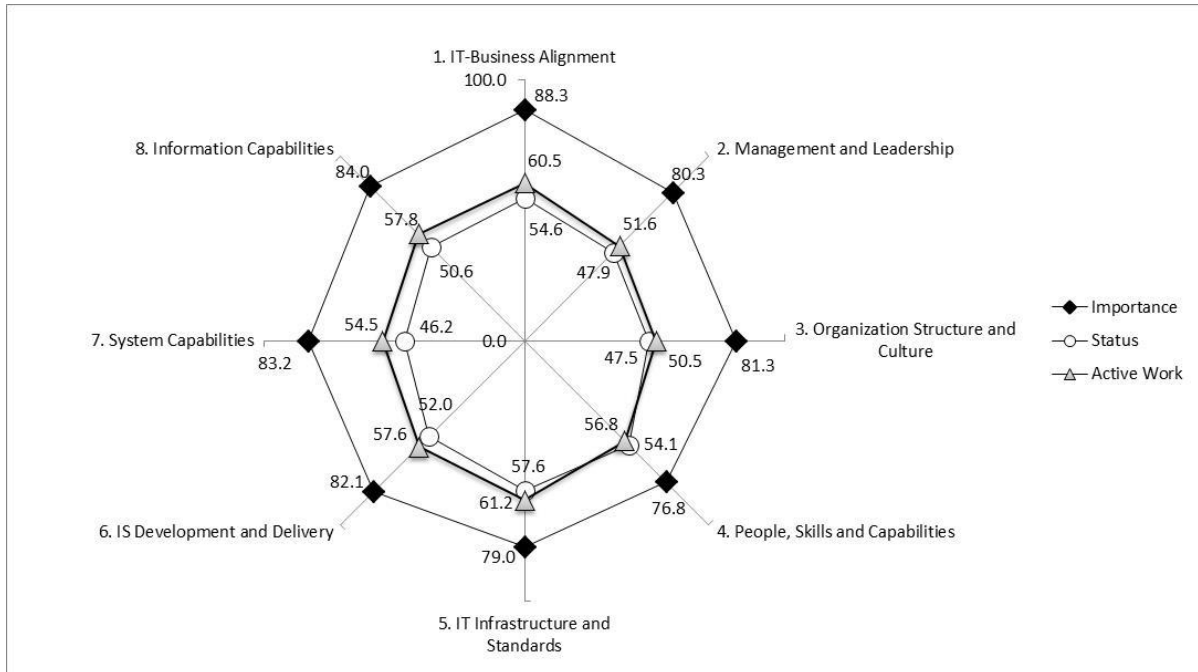
Figure 36: The aggregated assessment (mean value) of the Importance, Status, and Active Work of all dimensions

7.3 Correlation Analysis

Correlation analysis between the Importance, Status, and Active Work of the eight dimensions is presented here. Correlation analysis is also done between the Importance, Status, and Active Work within each dimension. The tables in this section contain the linear correlation coefficient on the left side of the diagonal and the corresponding scatterplot on the right side of the diagonal, for any pair of variables picked from table rows and columns.

Please refer to the Methodology chapter for a detailed description of the correlation analysis and how it has been used and calculated here.

7.3.1 Correlation between the Importance of the Eight Dimensions

In general, the importance of all dimensions seem to correlate positively to each other, however some of them correlate more than others. The highest correlation is between the dimensions of 'Information Capabilities' and 'System Capabilities', followed by the correlation between 'Organization Structure and Culture' and 'Management and Leadership'. For more details see Table 13.
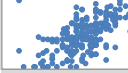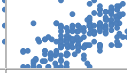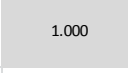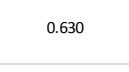
Table 13: Correlation between the Importance of the eight dimensions

Importance	1. IT-Business Alignment	2. Management and Leadership	3. Organization Structure and Culture	4. People, Skills and Capabilities	5. IT Infrastructure and Standards	6. IS Development and Delivery	7. System Capabilities	8. Information Capabilities
1. IT-Business Alignment	1.000							
2. Management and Leadership	0.560	1.000						
3. Organization Structure and Culture	0.525	0.687	1.000					
4. People, Skills and Capabilities	0.437	0.608	0.647	1.000				
5. IT Infrastructure and Standards	0.514	0.609	0.610	0.667	1.000			
6. IS Development and Delivery	0.522	0.658	0.588	0.650	0.654	1.000		
7. System Capabilities	0.492	0.655	0.639	0.578	0.588	0.627	1.000	
8. Information Capabilities	0.446	0.610	0.570	0.548	0.552	0.580	0.699	1.000

7.3.2 Correlation between the Status of the Eight Dimensions

Also the status among the eight dimensions seems to correlate positively to each other with varying degrees. The highest correlation is found between the dimensions of 'Organization Structure and Culture' and 'Management and Leadership', and between the dimensions of 'IT-Business Alignment' and 'Management and Leadership'. For more details see Table 14.
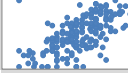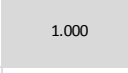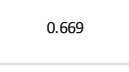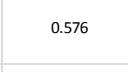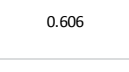
Table 14: Correlation between the Status of the eight dimensions

Status	1. IT-Business Alignment	2. Management and Leadership	3. Organization Structure and Culture	4. People, Skills and Capabilities	5. IT Infrastructure and Standards	6. IS Development and Delivery	7. System Capabilities	8. Information Capabilities
1. IT-Business Alignment	1.000							
2. Management and Leadership	0.708	1.000						
3. Organization Structure and Culture	0.626	0.778	1.000					
4. People, Skills and Capabilities	0.491	0.566	0.604	1.000				
5. IT Infrastructure and Standards	0.573	0.630	0.602	0.508	1.000			
6. IS Development and Delivery	0.613	0.658	0.661	0.602	0.610	1.000		
7. System Capabilities	0.484	0.566	0.582	0.452	0.578	0.582	1.000	
8. Information Capabilities	0.496	0.587	0.574	0.513	0.542	0.568	0.605	1.000

7.3.3 Correlation between the Active Work of the Eight dimensions

The same positive correlation is found between the active work with the eight agility dimensions. Correlation is highest between the dimensions of 'Organization Structure and Culture' and 'Management and Leadership', and between the dimensions of 'IT-Business Alignment' and 'Management and Leadership'. For more details see Table 15.

Table 15: Correlation between the Active Work of the eight dimensions

Active Work	1. IT-Business Alignment	2. Management and Leadership	3. Organization Structure and Culture	4. People, Skills and Capabilities	5. IT Infrastructure and Standards	6. IS Development and Delivery	7. System Capabilities	8. Information Capabilities
1. IT-Business Alignment	1.000							
2. Management and Leadership	0.728	1.000						
3. Organization Structure and Culture	0.620	0.733	1.000					
4. People, Skills and Capabilities	0.501	0.586	0.631	1.000				
5. IT Infrastructure and Standards	0.607	0.669	0.562	0.576	1.000			
6. IS Development and Delivery	0.588	0.650	0.624	0.626	0.640	1.000		
7. System Capabilities	0.552	0.606	0.546	0.523	0.607	0.651	1.000	
8. Information Capabilities	0.458	0.578	0.557	0.585	0.561	0.577	0.647	1.000

7.3.4 Correlation between the Three Aspects of Each Dimension

There is a clear correlation (high coefficient and linear scatter plot) between the status and the active work for all dimensions. It is also apparent that there is no or very weak correlation between importance and status, and between importance and active work across all dimensions. For more details see Tables 15 to 22.

Table 16: Correlation between the Importance, Status, and Active Work of the IT-Business Alignment dimension

1. IT-Business Alignment	Importance	Status	Active Work
Importance	1.000		
Status	0.224	1.000	
Active Work	0.245	0.791	1.000

Table 17: Correlation between the Importance, Status, and Active Work of the Management and Leadership dimension

2. Management and Leadership	Importance	Status	Active Work
Importance	1.000		
Status	0.240	1.000	
Active Work	0.315	0.814	1.000

Table 18: Correlation between the Importance, Status, and Active Work of the Organization Structure and Culture dimension

3. Organization Structure and Culture	Importance	Status	Active Work
Importance	1.000		
Status	0.197	1.000	
Active Work	0.292	0.892	1.000

Table 19: Correlation between the Importance, Status, and Active Work of the People, Skills and Capabilities dimension

4. People, Skills and Capabilities	Importance	Status	Active Work
Importance	1.000		
Status	0.340	1.000	
Active Work	0.363	0.775	1.000

Table 20: Correlation between the Importance, Status, and Active Work of the IT Infrastructure and Standards dimension

5. IT Infrastructure and Standards	Importance	Status	Active Work
Importance	1.000		
Status	0.178	1.000	
Active Work	0.335	0.761	1.000

Table 21: Correlation between the Importance, Status, and Active Work of the IS Development and Delivery dimension

6. IS Development and Delivery	Importance	Status	Active Work
Importance	1.000		
Status	0.236	1.000	
Active Work	0.376	0.704	1.000

Table 22: Correlation between the Importance, Status, and Active Work of the System Capabilities dimension

7. System Capabilities	Importance	Status	Active Work
Importance	1.000		
Status	0.160	1.000	
Active Work	0.250	0.696	1.000

Table 23: Correlation between the Importance, Status, and Active Work of the Information Capabilities dimension

8. Information Capabilities	Importance	Status	Active Work
Importance	1.000		
Status	0.189	1.000	
Active Work	0.295	0.781	1.000

7.4 Subgroup Results

In this section results from different sample subgroups are presented and compared with each other.

7.4.1 Private Sector vs Public Sector
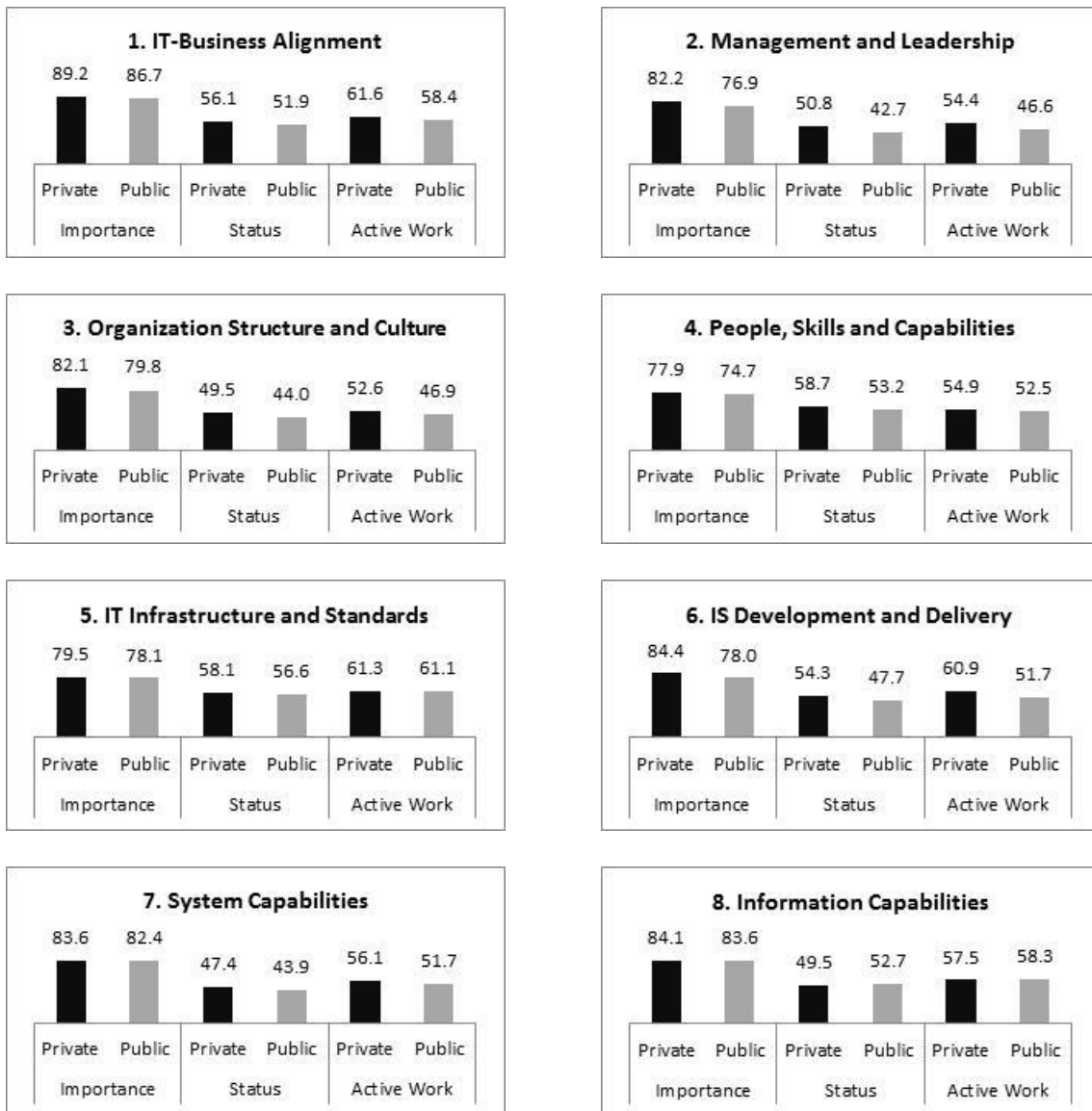
Figure 37: Comparison of aggregated dimension assessment between Private Sector (N=135) and Public Sector (N=74)

Table 24: Difference in points between aggregated dimension assessment for Private Sector (N=145) and Public Sector (N=74)

Dimension	Difference between Private Sector and Public Sector		
	Importance	Status	Active Work
1. IT-Business Alignment	2.5	4.2	3.2
2. Management and Leadership	5.3	8.1	7.7
3. Organization Structure and Culture	2.3	5.5	5.6
4. People, Skills and Capabilities	3.2	5.5	2.5
5. IT Infrastructure and Standards	1.4	1.4	0.2
6. IS Development and Delivery	6.3	6.6	9.2
7. System Capabilities	1.2	3.4	4.3
8. Information Capabilities	0.5	-3.2	-0.8

7.4.2 Globally Operating vs Nationally Operating Organizations
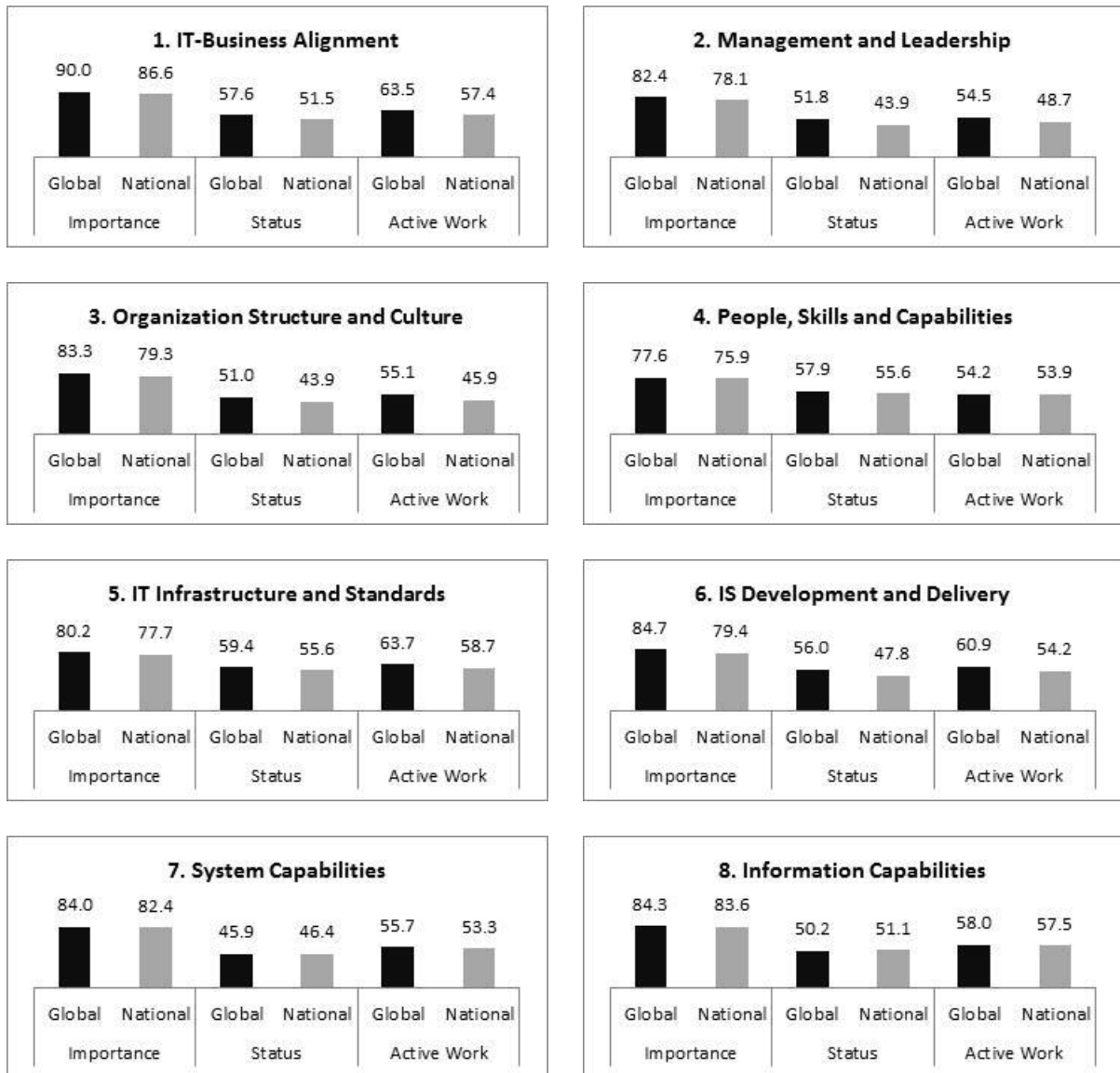
Figure 38: Comparison of aggregated dimension assessment between Globally operating (N=106) and Nationally operating organizations (N=103)

Table 25: Difference in points between aggregated dimension assessment for Globally operating (N=106) and Nationally operating organizations (N=103)

Dimension	Difference between Globally operating and Nationally operating Swedish organizations		
	Importance	Status	Active Work
1. IT-Business Alignment	3.4	6.1	6.1
2. Management and Leadership	4.3	7.8	5.9
3. Organization Structure and Culture	4.0	7.1	9.2
4. People, Skills and Capabilities	1.6	2.3	0.4
5. IT Infrastructure and Standards	2.5	3.8	5.0
6. IS Development and Delivery	5.3	8.1	6.7
7. System Capabilities	1.6	-0.5	2.4
8. Information Capabilities	0.8	-0.9	0.4

7.4.3 People Working in IS/IT vs people Working in IS/IT- Business Interface vs People Working in Business
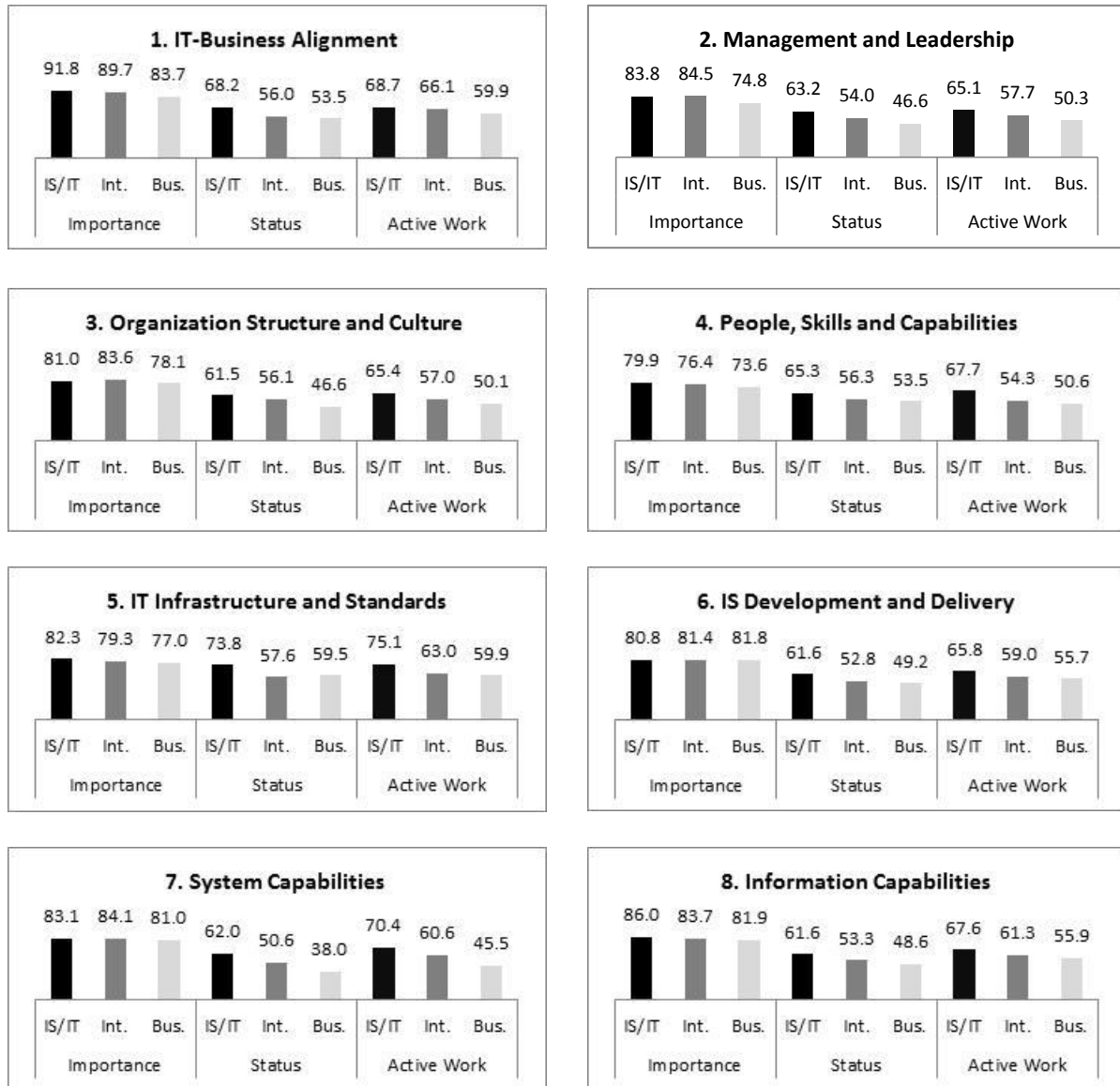
Figure 39: Comparison of aggregated dimension assessment between people working in IS/IT (N=77), people working in IS/IT – Business Interface (N=103), and people working in Business (N=21) in Swedish Organizations

Table 26: Difference in points between aggregated dimension assessment for people working in IS/IT (N=77), people working in IS/IT – Business Interface (N=103), and people working in Business (N=21) in Swedish Organizations

Dimension	Difference btw people working in IS/IT and people working in IS/IT-Business Interface			Difference btw people working in IS/IT and people working in Business		
	Importance	Status	Active Work	Importance	Status	Active Work
1. IT-Business Alignment	2.1	12.3	2.6	8.1	14.8	8.8
2. Management and Leadership	-0.7	9.2	7.4	9.0	16.5	14.8
3. Organization Structure and Culture	-2.7	5.4	8.5	2.9	14.8	15.3
4. People, Skills and Capabilities	3.5	9.0	13.4	6.4	11.8	17.1
5. IT Infrastructure and Standards	3.0	16.2	12.1	5.3	14.4	15.3
6. IS Development and Delivery	-0.6	8.8	6.8	-1.0	12.4	10.2
7. System Capabilities	-1.1	11.4	9.8	2.1	24.1	24.9
8. Information Capabilities	2.4	8.3	6.3	4.1	13.0	11.7

7.4.4 Management People vs None Management People
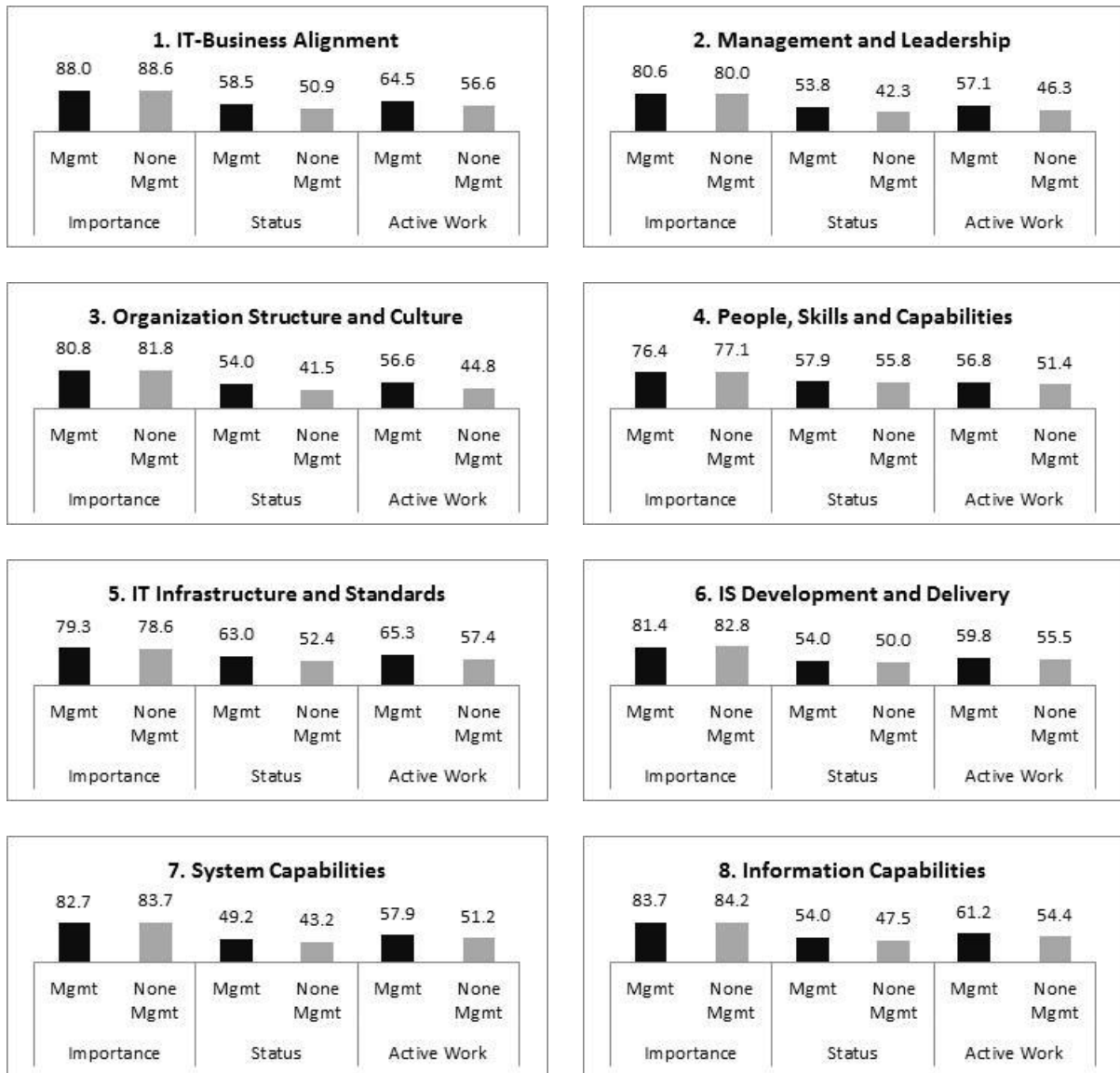
Figure 40: Comparison of aggregated dimension assessment between Management level (N=101) and None Management level (N=108) in Swedish organizations

Table 27: Difference in points between aggregated dimension assessment for Management level (N=101) and None Management level (N=108) in Swedish organizations

Dimension	Difference between Management level and None Management level in Swedish organizations		
	Importance	Status	Active Work
1. IT-Business Alignment	-0.5	7.6	7.9
2. Management and Leadership	0.7	11.5	10.7
3. Organization Structure and Culture	-1.0	12.5	11.8
4. People, Skills and Capabilities	-0.7	2.1	5.4
5. IT Infrastructure and Standards	0.7	10.6	7.9
6. IS Development and Delivery	-1.5	4.0	4.3
7. System Capabilities	-1.1	6.1	6.7
8. Information Capabilities	-0.6	6.5	6.7

7.4.5 Organizations up to 10000 Employees vs Organizations with more than 10000 Employees
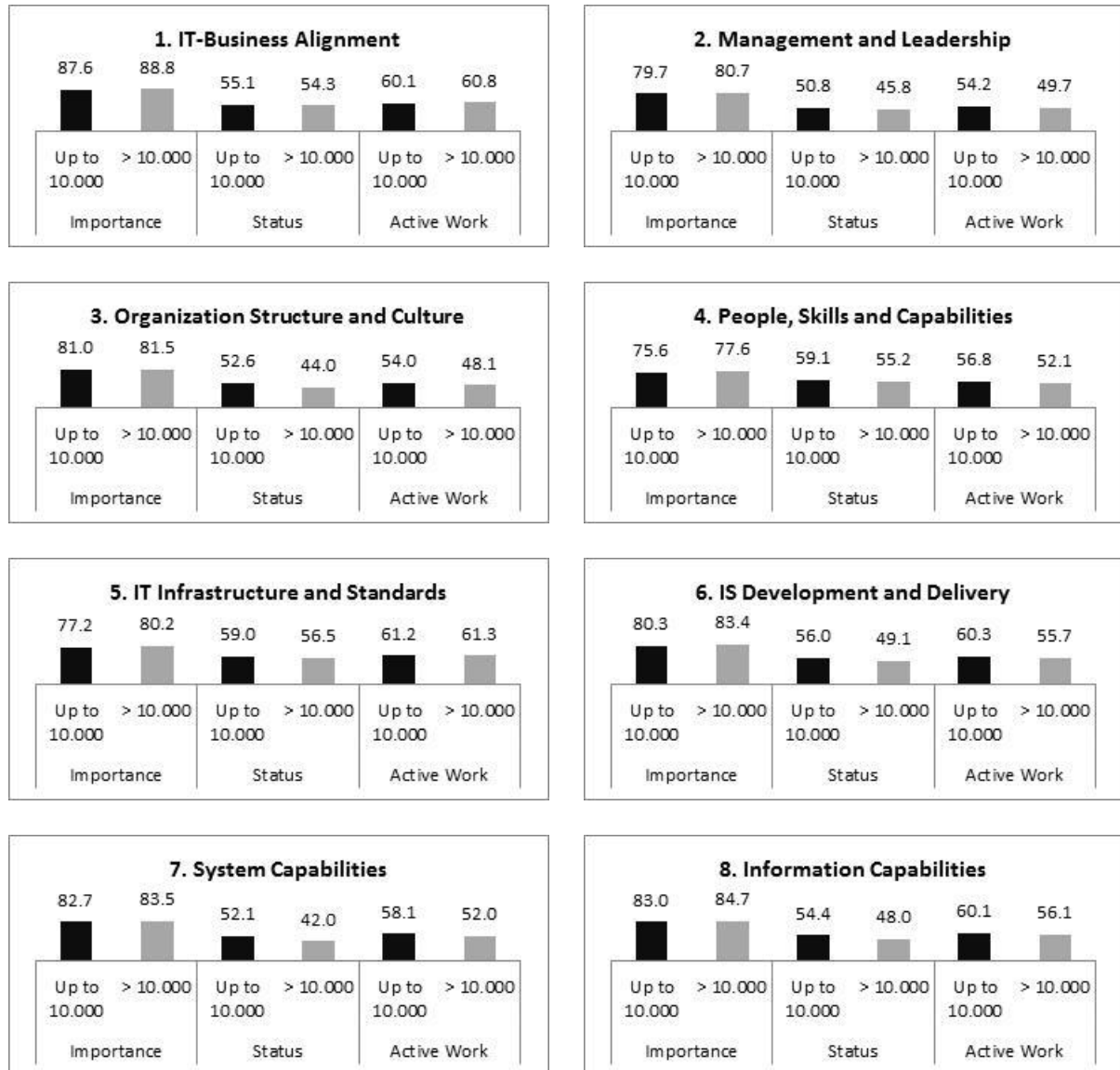
Figure 41: Comparison of aggregated dimension assessment between organizations with up to 10.000 employees (N=140) and organizations with more than 10.000 (N=69)

Table 28: Difference in points between aggregated dimension assessment for organizations with up to 10.000 employees (N=140) and organizations with more than 10.000 (N=69)

Dimension	Difference between organizations with up to 10.000 employees and organizations with more than 10.000 employees		
	Importance	Status	Active Work
1. IT-Business Alignment	-1.3	0.8	-0.7
2. Management and Leadership	-1.0	5.0	4.5
3. Organization Structure and Culture	-0.5	8.6	6.0
4. People, Skills and Capabilities	-2.0	3.9	4.7
5. IT Infrastructure and Standards	-3.1	2.5	-0.1
6. IS Development and Delivery	-3.0	6.9	4.6
7. System Capabilities	-0.8	10.1	6.1
8. Information Capabilities	-1.7	6.4	4.0

8 Analysis and Discussion

This chapter starts by an analysis and discussion related to the theoretical part of this research namely the IT Agility Model (section 8.1), followed by analysis and discussion of the result of the empirical study, i.e. the electronic survey for assessing IT agility in Swedish organizations (section 8.2).

8.1 IT Agility Model

This research has developed a model consisting of eight dimensions and their key characteristics conceptualizing IT agility in its pursuit to help and enable business to sense and respond to internal and external changes. These eight dimensions are identified as a result of an extensive and comprehensive review and analysis of prior research related to IT agility and its interplay with business agility.

This model has common elements with the frameworks developed by Duncan (1995) for infrastructure flexibility, and by the IT function agility model produced by Tapanainen et al. (2008) for IT agility as illustrated in Figure 42. Similar to Duncan (1995) our model also highlights the importance of IT infrastructure capabilities, the skills of IT personnel, and IT-business alignment for an agile IT organisation.
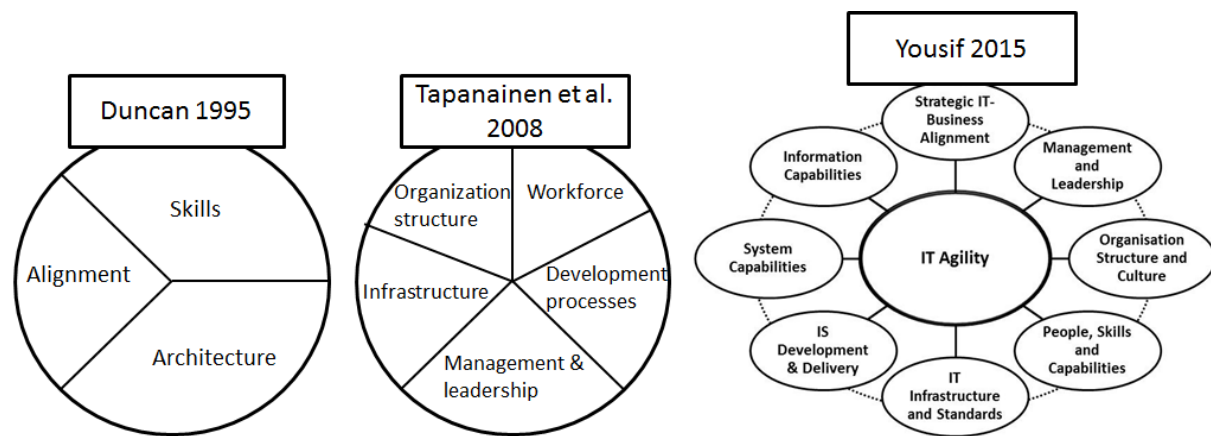
Figure 42: A comparison of Duncan's (1995) IT Flexibility Model, Tapanainen's IT Function Agility Model (2008) and the Author's IT Agility Model

As can also be seen on the figure, our model has more commonality with Tapanainen's (2008) model where there are five common components namely, Organisation Structure, IT Infrastructure, People Skills, IS Development, and Management and Leadership. It is worth noting however that in Tapanainen's (2008) Organisation Structure component there is not much mentioned about cultural aspects of the organisation and their importance to enhance agility whereas cultural identity aspects are given a critical importance in the Organisation Structure and Culture dimension of our model. The added dimensions in our model that are not explicitly found or emphasized in Tapanainen's (2008) model are Strategic Alignment, System Capabilities, and Information Capabilities. When it comes to Strategic Alignment, (Tapanainen et al., 2008) includes some alignment considerations in his Organisation Structure and Management and Leadership dimensions. As we have shown that alignment is probably the most critical aspect for the IT organisation to sense changes in the business environment, it definitely merits to be given an own dimension in an IT agility model. The same thing applies for the System and Information capabilities. We have clearly demonstrated that information systems, their business functionality and technical features are core elements to the responding capability of agility. Likewise, availability, access, retrieval and utilisation of business information contribute strongly to both the sensing and responding elements of agility in our information age.

There are also differences between Tapanainen's (2008) and our approach regarding the way the classification of the agility dimensions has been done, and also the way each dimension is presented. Tapanainen grouped the reviewed 24 articles into five different topics/groups which constituted the

five dimensions in his framework. Each dimension was then described by listing the corresponding articles and shortly highlighting the key conclusions from these articles. As for our approach, the identification and grouping of the eight dimensions were a result of analysing, synthesizing, and breaking down the content of each article into various topics where a single article could contribute to several topics/dimensions. Each dimension is then given a clear definition in terms of its scope, meaning, background, and its role in and impact on agility. Finally each dimension is described in terms of the agility properties and characteristics that it has or should have.

As seven years have passed between Tapanainen's literature review and our review we have for obvious reasons been able to include several recent articles dated after 2008.

8.2   Assessment of IT Agility in Swedish Organizations

This research has also conducted an empirical study targeting mainly the IT staff of Swedish organizations in order to collect their views regarding the importance of IT agility for their organizations, how agile and responsive their IT functions are, and how actively they are working to achieve higher levels of agility in IT. The basis for this assessment is our IT agility framework consisting of the eight dimensions and their 60 agile characteristics.

The results show without a doubt that IT agility, as conceptualised in our agility model and mapped into the electronic survey, is highly important for Swedish organizations. This high degree of importance however does not seem to match the current level of IT agility with Swedish organizations. Given that the outcome of aggregated IT agility for the eight dimensions ranges between 46.2 of 100 for the lowest dimension and 57.6 of 100 for the highest one (five dimensions just above the middle point and three dimensions just below the middle point), it is reasonable to conclude that IT agility level with Swedish organisations can be described as "floating between rather weak and mediocre".

The amount of work undertaken to achieve and improve IT agility does not either reflect the importance of the IT agility dimensions in Swedish organizations, as the outcome of the active work parameter in the survey ranges between 50 of 100 for the lowest dimension and 61 of 100 for the highest dimension. This level is well below the level of importance.

8.2.1   General Questions and Reflections

To our knowledge there are no prior studies and results to compare with and find out whether these aspects have changed and if so; improved or deteriorated. These results trigger a number of interesting questions and reflections that are worth discussing here as well as raising in future research.

Why is IT agility level so low compared to the level of importance?

One such a question is how come that these organizations view all these IT agility aspects to be so highly important, yet they are not working harder to improve them. Should we be surprised with what it seems to be contrasting results, or are there some obvious explanations and reasons to this? Even though IT agility is highly desired by many organizations, researchers confirm that getting IT to play a strategic role in enabling enterprise agility is not plain sailing; there are many challenges and obstacles facing the IT organization and its leadership (Melarkode et al., 2004). Could such a challenge be what Sengupta and Masini (2008) claim that the construct of IT agility is still not well-understood and that its impact on business performance is in need of further articulation? Or is the challenge even deeper than that and is to be sought in the understanding (or rather in the lack of understanding) of the way IT can generate and promote business value? In either case, we think that our IT agility model addresses both challenges. It offers a concept that can help not only in understanding the construct of IT agility but also in operationalizing and converting it into tangible actions and ways of working. As for the question of understanding and embracing IT as a potential business value creator, our model also recognizes the essentiality of such an understanding not only

by the IT organization and its leadership but even more critically by the business and its top leadership. This aspect is articulated in the characteristics of several dimensions (e.g. IT-Business Alignment, IT-Infrastructure) in the model.

How good is the current IT agility level with Swedish organizations?

Another critical question that merits searching for an answer is whether the existing IT agility level with Swedish organizations, being around the middle, is sufficient or not. Is an IT organization with this level of sensing and responding to business and market environmental changes an enabler or disabler of enterprise agility? Researchers have identified a long list of IT related issues that constitute real hurdles and barriers to radical and rapid change and thereby to business agility such as inflexible systems, lack of integration between systems, silos of IS solutions, un-standardized data, inaccurate information, lack of information for decision makers, technology dependence and lock-in effects, and lag between system introduction and business value realisation (Seo and La Paz, 2008; Van Oosterhout et al., 2006; Attaran, 2004) just to mention a few. Almost all of these issues are addressed and targeted either directly or indirectly by the agile characteristics of our IT agility model and were accordingly mapped into the survey questions. With the IT agility survey results floating around the middle point makes us believe that these IT issues are present to a considerable extent with Swedish organizations making IT to behave more as a disabler rather than an enabler for business performance and agility. If IT, in a business and market environment with fierce competition and rapid changes, is not strongly acting as a driver and enabler for business and market changes, or is not able to at least adapt quickly, we believe then that it is most probably acting as a hurdle impeding business agility.

What is the level of IT agility that Swedish organizations are aiming at?

Looking at these results one might also wonder about the ambition level that Swedish organizations have with regard to IT agility and how is that related to where they have reached at this point in time. As we see it, the level of active work parameter coming out of this survey can be seen as a reasonable indicator for where these organizations are striving in this respect. As the level of active work is ranging between 50 and 61 of 100, this suggests that these organizations' aspiration is actually not particularly high. Given this relatively low aspiration level, the discrepancy between where they are today and their goal setting is not that big. Could a possible conclusion be then that given the current level of IT agility aspiration (as expressed in our survey parameter Active Work), the potential IT agility improvement compared to today's level is not very big either? If this is true, a new set of interesting questions can be raised as to why the aspiration level is not higher and why it is not more in line with the level of importance that these organizations attach to the agility of these dimensions. Is it because of lack of understanding of the strategic role IT can play in relation to enterprise agility, or is it because of bad alignment, or other reasons?

Will higher ambitions with Swedish organizations be worthwhile and pay off?

Having said all of that, a positive sign coming out of the correlation analysis carried out between the status of and active work with IT agility is that these two parameters are strongly positively correlated for all dimensions (see Tables 15-22) which means that the more work is undertaken to improve IT agility with these dimensions the better is the level of IT agility. Therefore, if Swedish organizations put more work to these agility dimensions there are good reasons to believe that they will be able to improve their IT agility level. The mismatch that we have already noted and discussed between the importance of the dimensions and their agility level is also well founded in the correlation analysis (see Tables 15-22) as it clearly shows that there is no statistical correlation between the two parameters.

How do Swedish organizations stand in comparison to organizations in other countries?

This survey is carried out with Swedish organizations but it is hard not wonder how would Swedish organizations stand in comparison with organizations in other comparable countries. Can the

outcome of this survey give any hint as to how IT agile organizations in comparable countries are? A possible link that we can make between the two is through the fact that almost half of our respondents do come from organizations in Sweden operating on a global level. Given that many of the global and international companies of today operate truly globally in terms of one organization structure, one business and IT leadership, globally driven IT projects, globally provided IT services, etc., we have reasons to believe that our respondents belonging to global organizations considered their entire global organization and not only the Swedish part of it when they responded to our survey questions. Provided that this assumption is valid, it is likely that the IT agility results for global organizations in Sweden are no very different to global organizations in comparable countries. For the results of the group of respondents belonging to global Swedish organizations, see Subgroup Comparisons and Discussions further down in this section.

Do these survey results suggest anything with regard to our IT agility model?

Our IT agility model has sprung out of an extensive review of IT agility literature. An interesting and a natural reflection to make is whether the results of our survey suggest or hint anything related to the validity and relevance of this model in the real life of IT organizations. Even though, the purpose of the survey was not to investigate whether this IT agility concept is meaningful or would make a fair depiction of IT agility in reality, the fact that all dimensions including all their underlying characteristics (except for one single characteristic) were consistently viewed as highly important, and that active work is being undertaken with these dimensions, make us believe that this agility model is also well-founded in reality and its dimensions and their characteristics are relevant to practitioners in IT and IT-business interaction.

Do these survey results suggest anything with regard to the inter-relation of our model's dimensions?

The correlation analysis conducted between the importance, status, and active work across the eight dimensions shows a clearly that they are positively correlated, even though in varying degrees. This confirms our belief that we stated while building up this model that these dimensions are interdependent and do impact and drive each other. The correlation analysis reveals that the dimension of 'Management and Leadership' has highest correlations to the other dimensions confirming how central and critical the role of IT leadership is with regard to the agility of IT. For an organisation to be agile you have to bring together business processes and skilful people with innovative technology to meet market and customer needs in a timely manner (Kidd, 1994). This is doable only if management and leadership at all levels see and champion agility as systemic organisational value and strategy (Crocitto and Youssef, 2003). It is also worth noticing the relatively high dependency between 'System Capabilities' and 'Information Capabilities' which should not come as a surprise. The organization's ability to access, retrieve, and make use of information is highly dependent on the system capabilities available.

8.2.2 Subgroups and Categories

Private and public sector

The level of and the active work with IT agility is consistently higher with the Swedish private sector organizations compared to the public sector. The same pattern is seen between Swedish organizations operating globally and those only operating in Sweden. Could it be that private organizations as most of them operate globally are more exposed to competition and market changes compared to organizations only operating in Sweden, most of which are public sector organizations?

Different views on IT agility between IT and business

There is an even bigger difference in rating the IT agility level as well as the active work undertaken to improve IT agility between people working in IS/IT departments and those working in

organizational structures acting as an interface between IST/IT and business. The gap is even wider if we compare the view of IS/IT departments with the view of business people, even though the sample number of business people completed the survey is quite low (21). Nevertheless, the trend is clear; the closer to the IT departments the higher is the perception of IT agility, or conversely, the closer to the business, the lower is the IT agility perception. What does this tell us? Despite the big boost in alignment that many organizations talk about, the distance between IT and business on a strategic level still seems to be considerable.

Different views on IT agility between management and none-management levels

There is a similar trend of judgment of IT agility between people in management positions compared to people in none management positions. Why is there a discrepancy between the views of these two groups and who is closer to reality? As shown in our model, being and operating as an agile IT organization is very much a management and leadership issue and is something built in to all aspects of the IT organization and its interaction with the business. For these leaders and manages, rating down the level of IT agility in their organization might be seen as if they are not taking their full responsibility in shaping and forming the IT organization for current and future challenges. Having said that, the rating of the management is still not very high (between 54 and 64 of 100, except for the dimension of System Capabilities which is rated just below 50), so in a way their result is still in line with the overall results, albeit a little bit less bad.

Size of organizations

IT agility level is also higher with organizations with up to 10000 employees compared to those with more than 10000 employees. This is not surprising as previous studies have shown that bureaucratization is a function of the size and life time of an organization.

8.2.3 Individual Dimensions

In the rest of this section we will discuss and analyse the results of each one of the eight dimensions separately.

1. IT-Business Alignment

Even though all dimensions score high in terms of how important they are, the alignment dimension scores the highest. This doesn't come as a surprise as the alignment topic is one of the most frequently addressed topics in the information systems literature (Tallon and Pinsonneault, 2011) verifying its criticality for an organization. Despite its obvious importance for Swedish organizations, the current level of agility scores only 54 of 100 and the active work to improve it 60 of 100. Thus agility level for this dimension and efforts to improve it are not in line with the importance associated with it. Organizations with this level of agility are not very good at IT-Business mutual engagement, integration of business and IT strategies, and at involving business in setting strategic goals for IT (Tallon, 2008). Even more importantly, organizations with this degree of agility in the alignment area have long way to go in understanding and promoting business value of IT across the entire organisation (Melarkode et al., 2004).

Looking into the individual characteristics that make up the alignment dimension, we can see that statements addressing the proactivity of the IT function and the IT-Business collaborative work in driving new business opportunities score lower than dimension average. Another critical statement being among the lower ones is the IT leaderships' ability to demonstrate the strategic role of IT in meeting the organization's overall objectives. In line with this, its mirrored statement addressing the business leaderships' understanding of the strategic role of IT and how IT can add business value also pulls down the score for this dimension. This is reflected in some of the comments made by some survey participants. One of them reads; *Personally I believe that both IT and Business leaderships' understanding and maturity level is low concerning how IT strategy should be set and driven, hence the low score.*

2. Management and Leadership

Despite its high importance, the agility level of management and leadership is below 50 and the work to improve the situation is just slightly above 50. Since agility is dependent on leadership's ability to create an agility vision and mission, and exert *agile management* (Crocitto and Youssef, 2003), scoring low in this dimension imply that agility is not regarded as a systemic organisational value and is not encouraged and driven by management and leadership at all levels (Crocitto and Youssef, 2003). Most of the characteristics in this dimension scores below 50 and some of them well below the middle point, such as characteristics addressing rewarding change and innovation, and how to handle ongoing investments that are not in line with business strategy. This means lack of clear basis for project approval as well as for project suspension when business direction is changed (Gerth and Rothman, 2007).

One of the lowest scoring characteristics is the one highlighting the importance of management's ability to shorten project time line deliveries. This aspect was also frequently reflected in some of the comments made by the participants such as: "*Large programs are launched where delivery time is so long that upcoming changes eventually kill the deliverables*". Researchers are in agreement that it is becoming more and more difficult to foresee what will happen over longer time horizons so being certain of the organization needs for more than a couple of years is becoming more and more of an illusion (Glaser, 2008).

Another characteristic also receiving a low score is flexible handling of IT budget during a fiscal year. This means that that most of the organizations are stuck with a rigid budget processes based on annual authorization mechanisms (Glaser, 2008).

3. Organisation Structure and Culture

Agile properties included in this dimension are regarded very important for Swedish organizations but the current level of agility is rather low and the amount of work to improve the situation does not seem to be sufficient either. Scoring low in this dimension indicate that organizations are not paying enough attention to the "people" and "culture" factors when it comes to responding properly to changes (Wang et al., 2014; Crocitto and Youssef, 2003). It also means that the structure and culture of the organisation are not able to provide the foundation for employees to exploit the systems, use information sources, adjust resources, learn, and enhance their competencies to achieve agility resulting in the work place being rigid, hardly structured, and where effectiveness and efficiency are the only prioritises (Seo and La Paz, 2008).

One of the key characteristics scoring low is the one addressing the positive affect on agility coming from flat organization structures as well as from distributed decision making. Flatter organizational hierarchies help enabling flat communication channels and fast decision-making which are critical factors in maintaining competitive advantage (Prastacos et al., 2002).

One the most critical cultural aspects addressed in this dimension is the identity of the IT organization and the image of it by outsiders (rest of the organization, providers, etc.) and the effect of both on agility. Swedish IT organizations scored rather low in the two characteristics addressing those aspects implying not a very shiny image by outsiders and that IT staff lacks a feeling of a positive identity with their organizations that is not only motivational at the personal level, but together with a good image, helps in the interaction with the rest of the organization as well as in driving tasks, actions, strategic goals, and objectives (Wang et al., 2014).

Last but not least, the characteristic receiving the lowest agility score in this dimension is the one showing the role of the IT organization in providing efficient and effective capabilities for knowledge management and learning services. The agility impact of this aspect is related to organizational learning which is about building on experience and supporting continuous improvement. The IS/IT organization is seen as a strong partner in driving improved organisational learning by e.g. providing good knowledge management capabilities, good search capabilities, distance learning, online

training, discussion forums, and more (Seo and La Paz, 2008). Many of the respondents commented on this by saying that most of these services are the responsibility of HR and not IT in their organizations which might be part of the explanation to the low score.

4. People, Skills and Capabilities

Even though still high, the importance level of agility properties in this dimension is rated 77 of 100 which is slightly lower than most of other dimensions. Interestingly, the agility level here is a bit over the middle point; 57 of 100 which is among the highest agility levels across all dimensions. This means that the delta between agility importance level and existing agility level is smallest in this dimension, around 20 points. What is even more interesting is that the level of active work to enhance agility in this dimension is less than (albeit not by much) the existing agility level which is an exception compared to the other dimensions. Could the reason for the latter observation be found in what one of the participant commented on characteristic 3 which is about the IT staffs relational, social, interpersonal communication, and collaboration skills. The comment reads: *"Question 3: We have no problems with this and we are therefore not working actively on it. It is very much about people's personalities so it is part of the recruitment process, not a continuous work"*. This particular characteristic received the highest score in this dimension. Another characteristic receiving a relatively high score in terms of current agility level is the first one suggesting that IT staff in Swedish organization has fairly good skills and competencies related to their organizations' business domains and business processes. Combining good behavioural capabilities with good level of business process knowledge help IT professionals to perform well in cross-functional settings, and to engage successfully and achieve true partnerships with their business clients (Bassellier and Benbasat, 2004; Fink and Neumann, 2007).

Finally, in this dimension we found the one and only characteristic (out of 60) that was not viewed highly important. It is about the ability of the IT staff to take on job rotation outside the IT organization. Consequently, the agility level and the level of active work are also low.

5. IT Infrastructure and Standards

Even though still high, the importance level of this dimension is second to last scoring 79 of 100, whereas the current agility level is rated 57.6 of 100 which is relatively high compared to the agility levels of other dimensions. Active work undertaken to improve agility here is also among the highest in comparison to other dimensions; 61.2 of 100. One of the top scoring characteristics is the first one stating that an organization has reliable and extensive firm-wide IT infrastructure foundation, which should be seen as a positive and strategic component for Swedish organisations. The strategic value from IT infrastructure services has been linked into the ability of the organizations to adapt successfully to changes in the external environment, which in turn is linked into IT and enterprise agility (Byrd and Turner, 2001; Fink and Neumann, 2007; Weill et al., 2002). In line with this, the second and third characteristics addressing IT-infrastructure standards and whether existing infrastructure can accommodate new systems and new information capabilities also receive relatively good scores. If an organization doesn't need to obtain new infrastructure services such as new application infrastructure and/or new middleware, the time and effort to introduce new system and information capabilities will be less (Fink and Neumann, 2007). Agile IT infrastructure should enable rapid connect and disconnect capabilities at many levels (hardware, communication, systems, and information) with the outside world at (Van Oosterhout et al., 2006; Goldman et al., 1995). This aspect seems also to work relatively well with Swedish organizations.

One the negative side, there are two important characteristics receiving low agility rating. Swedish IT organizations seem to be bad at providing basic training and education related to organization-wide IS/IT capabilities which should have a negative impact on maximising the use and benefits of existing IT infrastructure when sensing and responding to internal/external changes. The other rather low rated characteristics addresses the business value of IT infrastructure and the degree to which business executives regard IT infrastructure as an asset. The low score here for Swedish organizations

indicates lack of understanding of this value and consequently a view that IT infrastructure is more of a cost than asset which is rather damaging for IT and business agility (Rockart et al., 1996). Having said that, the rating of this last characteristic seems somehow contradictory to the outcome of the initial ones that showed that the current infrastructure is widely built and quite flexible.

6. IS Development and Delivery

As with all dimensions even the importance of this one is viewed by Swedish organizations to be high. The agility level is just above the middle point (52 of 100) and the active work to boost this dimension is just a little bit higher than the current agility level. Having a mediocre agility level in this dimension with no big efforts to improve the situation indicate that the organization's ability to sense and respond quickly to technical changes and new business opportunities is not satisfactory (Lyytinen and Rose, 2006). Breaking down this dimension into its underlying characteristics, we can see to start with that the first characteristic addressing the organization's overall capability to rapidly deliver and implement new systems satisfying current and emerging business needs is low, which means on the very basic level that organizations lack effective and efficient system development and delivery methods as well as project management frameworks and teams with clear roles and responsibilities (Lee et al., 2006; Larsen and McInerney, 2002). On the top of this, the key and critical agility factors in the area of system development and delivery are flexibility and adaptation to changing circumstances, mainly changing business conditions and needs, and technology changes. Delivery teams in Swedish IT organizations don't seem to handle these changes in a good way. Another agility impeding factor in IS delivery is rigid formal controls in the delivery process.

7. System Capabilities

Swedish organizations regard the agility characteristics of this dimension as very important, yet its current agility level is rather low; 46.2 of 100, and the efforts to improve it is not higher than 54.5 of 100. Organizations scoring low in this dimension have considerable difficulties in responding quickly to changes as information systems and their capabilities are seen by many researchers as critical change enablers (Goldman et al., 1995; Coronado Mondragon et al., 2004). Investigating the agility level of the individual characteristics in this dimension, we realise that this is the only dimension where all components are consistently low. This should be a very worrying sign for Swedish organizations. Typical agility disablers in an organization are the existence of inflexible and static systems making it very difficult to respond to future demands and incorporate continuous changes (Van Oosterhout et al., 2006; Prager, 1996). It is very unlikely that organisation can use IT to respond effectively and timely to new threats or opportunities if system changes take time and are costly to realise (Fink and Neumann, 2007). Unfortunately, this seems to be the case with Swedish organizations. In addition to the functionality part, both internal and external application integration capabilities seem to be week too which has a damaging effect on the organization's information capabilities.

8. Information Capabilities

As one would expect being agile with information capabilities is regarded as very important by Swedish organizations. This level of importance however, is once again not in sync with where these organizations have reached in terms of agility and flexibility in this area. They seem to be in the middle; scoring 50.7 of 100. Their ambitions to be better and improve seems to be modest too as the active work to enhance the agility elements of information capabilities only scores 57.8 of 100. This level of agility in the information and global age these organizations are living in ought to be regarded as low and not sufficient. The reason information has a critical role with regard to IT and business agility is that the availability, access, retrieval and effective utilisation of relevant information allow organisations to reduce uncertainty and make more accurate decisions, which contributes to both the *sensing* and *responding* aspects of agility (Seo and La Paz, 2008; Huang et al., 2012).

9   Conclusions

This chapter presents the key conclusions of this research starting with an overall conclusion related to IT agility as viewed by this study. The conclusions in Sections 9.1 and 9.2 follow the two phases of this study and are aligned with the six research questions related to the purpose of the study and their order. Thus Section 9.1 Enterprise and IT Agility addresses phase 1 of the study and its corresponding research questions 1, 2 and 3, while section 9.2 IT Organizational Agility in Swedish Organizations concludes the answers to research questions 4,5 and 6.

As a foundation for our conclusions, we can ascertain that IT agility, conceptually and operationally, is a multi-facetted multidimensional construct and a function of the agilities of all the critical components that constitute the IT function and its interaction with the wider organization. As such, there should be no separation between the work with IT agility on one hand, and how to run and govern IT in an organisation on another. Since the concept developed in this research addresses agility in all important aspects of the organization, integrating the agile characteristics of our model into the organization's strategy, operation, and into the mind-set of its leadership and people, will improve IT agility.

9.1   Enterprise and IT Agility

RQ1: How is the concept of Enterprise/Business Agility defined and how different it is compared to other similar concepts?

The organisation's ability to sense and respond to environmental changes is by far the most common elements used by researchers in defining enterprise or business agility. Other key themes used are coping with the unexpected and the unpredictable, ability to make swift changes, thriving and growing in a competitive environment, discovering and seizing new opportunities, and efficient management and application of knowledge and competencies.

Relating to Flexibility, which is seen as a predetermined response to a predictable change, agility is regarded as an innovative response to an unpredictable change and thus an extension to flexibility. In comparison with Lean, which focuses on efficient execution of established processes, agility is about adequate response to disruptions in those processes.

RQ 2: What is meant by IT Agility and how is it studied and explored by the literature?

The basic principle adopted by most researchers to describe and explain IT agility is that *IT capabilities can enable an organization to configure and re-configure its resources and people quickly and flexibly* in order to sense and respond to a changing environment.

Our review shows clearly that researchers have explored, studied, and linked IT agility to almost all elements of the IT organization and its relation to business, such as IS development, IT infrastructure, IT business-alignment, IT work force, information systems and business information, IT organisation structure, and IT leadership. This emphasizes the view that IT agility is a comprehensive concept that is present in all aspects of the organization.

RQ 3. How can we define and conceptualize IT Agility into a theoretical model, and what would such a model consist of in terms of dimensions and their characteristics?

We define IT Agility as *the ability of the organization, through IT and IT's partnership with business, to effectively sense and respond to internal as well as external changes in a timely manner.*

Based on what has been concluded so far, our research has developed a model consisting of eight dimensions and their key characteristics related to the agility of the IT function and its partnership with business. These dimensions are: **1) agility in IT-Business Alignment** focusing on IT-Business strategy integration and promoting business value of IT across the entire organisation, **2) agility in Management and Leadership** focusing on leadership's commitment to innovation and change, **3) agility in Organisation Structure and Culture** focusing on workforce empowerment and strong organisational identity, **4) agility in People, Skills and Capabilities** focusing (in addition to IT skills) on

behavioural capabilities as well as on increased business knowledge, **5) agility in IT Infrastructure and Standards** focusing on infrastructure flexibility and integration, **6) agility in IS Development & Delivery** focusing on rapid and incremental IS development and delivery, **7) agility in System Capabilities** focusing on flexible system functionality and capability, and **8) agility in Information Capabilities** focusing on accessing the right business information at the right time.

Our study has shown that these eight dimensions including their underlying characteristics are well-substantiated in the IT agility literature. In addition, the fact that these dimensions are consistently viewed as highly important by Swedish organizations leads us to believe that this agility model is also well-founded in reality, and its dimensions and their characteristics are also relevant to practitioners in IT and IT-business interaction.

9.2   IT Organizational Agility in Swedish Organizations

RQ 4. How important is IT agility for firms and organizations in Sweden?

IT agility, as conceptualised in our agility model, is highly important for Swedish organizations. The level of importance ranges from 76.8 of 100 to 88.3 of 100 for the eight agility dimensions identified and investigated in this research.

RQ 5. What is the current level of IT agility among firms and organizations in Sweden?

This high degree of IT agility importance found in Swedish organizations does not seem to match the current level of IT agility, as the aggregated degree of IT agility for the eight dimensions ranges only between 46.2 of 100 for the lowest dimension and 57.6 of 100 for the highest one (five dimensions just above the middle point and three dimensions just below the middle point). Given the fierce competition that today's enterprises and organizations are exposed to, this level of T agility with Swedish organizations can be described as "floating between rather weak and mediocre".

RQ 6. How active are these organizations working to achieve and improve IT agility, and what are the main gaps in this regard?

The amount of work undertaken in Swedish Organizations to achieve and improve IT agility does not either reflect the importance of it, as the level of their active work ranges between 50 and 61 of 100 for the eight dimensions. There are gaps across all the eight dimensions but mainly with IT agility related to management and leadership, organization structure and culture, system capabilities, and information capabilities.

In addition to the overall results, there are some interesting subgroup results. With importance being almost equally high, the level of and the active work with IT agility is consistently higher with the Swedish private sector organizations compared to the public sector organizations. The same pattern is seen between Swedish organizations operating globally and those only operating in Sweden.

The IT agility level and corresponding active work is viewed to be higher by people working in IS/IT departments compared to those working in organizational structures acting as an interface between IST/IT and business. The gap is even wider if we compare the view of IS/IT departments with business people. There is a similar disagreement on the level of IT agility between people in management positions compared to people in none management positions. These levels are also higher with organizations with up to 10000 employees compared to those with more than 10000 employees.

10 Contribution and Further Research

This chapter summarizes the key contributions coming out of this research (Section 10.1) and reflects on the future by a proposing a number of possible new questions to be studied and investigated further (Section 10.2).

10.1 Contribution

Even though our IT agility framework has commonality with Tapanainen's (2008) model, our model can be seen as a further built on Tapanainen's model offering a more comprehensive coverage of and deep dive into the concept of IT agility in the organisation and its role in driving and creating business agility. Our model consisting of the eight dimensions and theirs 60 distinct characteristics offer not only an a comprehensive and easy-to-understand concept, but can also be used as a powerful, tangible and practical tool for organisations to operationalize IT agility and help assessing and evaluating the degree of their IT enabled organisational agility, identifying existing gaps, and guiding them in finding measures addressing those gaps as shown in **Error! Reference source not found.**.
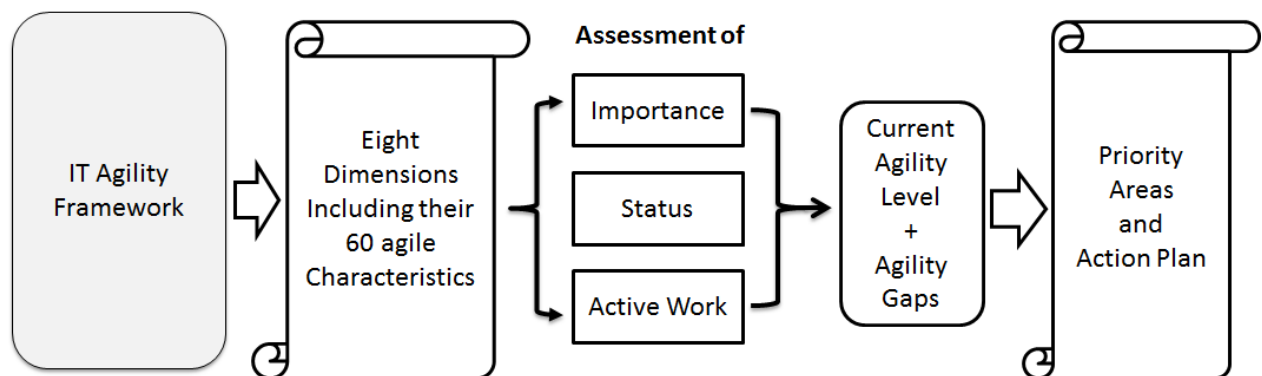
Figure 43: Practical use of the IT Agility Framework developed in this paper

Accordingly, this research has determined the current IT agility level of Swedish organizations. Even though there are no prior studies to compare with, we hope that our findings will be an awakening for Swedish organizations to encourage them to review and improve their position in this regard. Our model and the way to utilise it as shown in **Error! Reference source not found.** can aid them in this endeavour. In order to achieve higher performance and stronger competitive advantage, Swedish and other organisations for that matter can cultivate their IT workforce and IT capabilities in line with the characteristics of the eight dimensions of our IT agility model. The nature of the survey results suggests that these dimensions and their characteristics are well-grounded in the real life of IT organizations.

10.2 Further Research

The IT agility model including the eight dimensions and their underlying 60 characteristics should be seen as a first version that will need to be developed further and refined. In general, the agility of IT and its role in enabling or for that matter impeding enterprise agility is in need of more theoretical as well as empirical research. E.g. more empirical studies would be needed to validate and apply the current theoretical models including the model developed and presented in this paper. In this regard, we already have plans to complement this quantitative study with Swedish organizations with qualitative interviews to gain a deeper understanding of the IT agility situation in Swedish organizations as well as finding explanations and insights to the discrepancy between the high importance associated with these agility dimensions and the low level of efforts spent on improving them. Another planned complement to this research is investigating IT agility purely from the business perspective and compare it to those working in IT. We have also thoughts and ideas to run a similar quantitative IT agility assessment of organizations in other countries, like Scandinavian countries, UK and the US. Therefore, we would be interested to come in contact with scholars and

researchers in countries who have an interest to collaborate in conducting such an assessment and in further developing this model.

Furthermore, most of the research targeting the agility of the IT organisation is linked to the IT organisation's efficiency and effectiveness in supporting the business with sensing and responding to business changes. An important agility aspect that needs further research is business agility that can be achieved by better linking business value of IT into creating value for shareholders. This is in line with our desire and call for widening the view on and treatment of IT agility from being mainly an ability of the IT function to being an ability of the entire organization.

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Appendices - Table of Content

Appendix A - Dimensions and Characteristics of the IT Agility Model

IT agility model dimensions, their definition and characteristics

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1. Strategic IT-Business Alignment

The extent of fit between information technology and business strategy

Key Agile Characteristics

1.1   The IT leadership actively participates in business strategy and planning with senior business leaders

1.2   Business and IT executives collaborate on setting strategic goals for IT

1.3   The IT function has dedicated teams/individuals proactively and regularly engaging with business

1.4   The IT function maintains an up-to-date picture of business priorities and how it can contribute to them

1.5   The IT function proactively works across the business to identify and drive new opportunities for value creation through IT

1.6   The business units own and drive IS/IT enabled business cases in close collaboration with the IT function

1.7   The business units own and drive IS/IT enabled improvement projects in close collaboration with the IT function

1.8   The IT leadership is concerned and cares about the same things as the leadership of business

1.9   The IT leadership does well in demonstrating the strategic role of IT in meeting the organization's overall objectives

1.10   The leadership of business fully understands the strategic role of IT and how IT can add business value

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2. Management and Leadership

Includes areas like mission and strategy, planning, resource management, budgeting, governance and steering

Key Agile Characteristics

2.1   The IT leadership understands the importance of the IT organization's ability to adjust quickly to a changing market environment

2.2   The IT leadership promotes and rewards change, innovation and organizational learning

2.3   The IT leadership has a clear strategy that is well communicated throughout the organization

2.4   The IT strategy is dynamic and possible to adjust and reformulate in case of changes to the business environment

2.5   Ongoing IS/IT investments not in line with the business strategy are stopped or put on hold in spite of already made investments

2.6   The IT leadership drives and manages the shortening of IS/IT project time plans

2.7   The IT budget can be reassigned any time during a fiscal year

2.8   Governance of IS/IT investments is continuously aligned with business governance

2.9   For outsourcing contracts, the IT leadership focuses a lot on maximizing service flexibility from the outsourcing provider

2.10   For outsourcing contracts, the IT leadership focuses a lot on controlling the outsourcing provider

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3. Organisation Structure and Culture

Structure refers to the manner in which people are grouped together, their roles and reporting relationships and their task assignments.

Culture is the collective behavioural tendency of an organization. It characterizes the way organizational member perceive, act and react to market and operational opportunities and challenges.

Key Agile Characteristics

3.1   The IT organization has an open structure and culture where people feel encouraged to be creative and innovative

3.2   People working in IT feel empowered to take leadership in decision making and execution of these decisions

3.3   The IT function has a flat organization where decision-making authority is mostly distributed across the organization

3.4   There is an IT organizational identity that inspires people's mind set and beliefs and guides them in their work

3.5   IT staff have a positive image of their IT organization

3.6   IT staff have a shared understanding of what is core and distinctive about their IT organization

3.7   The outside world (e.g. other employees, and partners) has a clear and positive view of the IT organization

3.8   The IT function provides efficient and effective knowledge management and learning services, such as good search

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capabilities, distance learning, online training, and discussion forums for the entire organization

4.   People, Skills and Capabilities

All competencies (technical and others) that are the building blocks of organisational capabilities.

Key Agile Characteristics

4.1   IT staff possesses good skills and competencies related to the business domain, processes, and capabilities

4.2   IT staff has a good understanding of business strategy, competition and market influences

4.3   IT staff possesses good relational and social skills such as interpersonal communication and collaboration skills

4.4   IT staff possesses good management skills, such as planning, project management, and change management skills.

4.5   IT staff have in general varied and broad skills and capabilities and are therefore easily re-deployable in times of change

4.6   The majority of the IT staff would be good candidates for job rotation outside the IT organization

4.7   The IT organization effectively utilizes skills and knowledge from external partners

4.8   IT staff possesses knowledge about new, innovative, and collaborative ways of working, such as virtual workplace and mobile working

5.   IT Infrastructures and Standards

The shared technology, standards, applications, and data and a human block containing capabilities and knowledge required to manage the IT components.

Key Agile Characteristics

5.1   The IT function provides reliable and extensive firm-wide IT infrastructure services (hardware, software and people capabilities)

5.2   Adding new system or information capability can relatively easily be accommodated within existing IT infrastructure

5.3   The IT infrastructure is characterized by a high degree of standardization and modularity

5.4   It is reasonably easy to connect and disconnect IS/IT capabilities with the external world (e.g. email system, information systems, information resources, etc.)

5.5   The IT function provides a wide range of basic education and training services related to firm-wide IS/IT capabilities

5.6   Business executives regard IT infrastructure as an asset that can create business value

6.   IS Development and Delivery

The development, delivery and implementation of information systems

Key Agile Characteristics

6.1   The IT organization has the capability to rapidly deliver and implement systems that satisfy current and emerging business needs

6.2   New systems are delivered through very close collaboration between IT and business customers

6.3   The IT organization has flexible IS delivery teams and methods that can adapt to changing business circumstances

6.4   The IT organization has flexible IS delivery teams and methods that can adapt to rapid technology changes

6.5   The IT organization uses flexible IS delivery teams and methods that can alleviate rigid formal controls whilst maintaining quality

6.6   The IT organization uses project management frameworks that can deliver in an incremental manner

6.7   Long IS/IT projects are usually broken down to phases resulting in deliverables within months rather than years

7.   System Capabilities

End user, business, and technical functionality and features of information systems including their support and maintenance capabilities.

Key Agile Characteristics

7.1   Adding new features to existing applications is relatively straightforward and is done at reasonable cost

7.2   Existing applications are relatively easy to integrate with other internal applications

7.3   Existing applications are relatively easy to integrate with external applications

7.4   Existing applications have such features that make their support and maintenance cost efficient

7.5	The support and maintenance of the application portfolio is efficient and effective

8. **Information Capabilities**

The availability, access, retrieval and utilisation of relevant information and reports in the organisation.

Key Agile Characteristics

8.1	The right information is accessible at the right time across the organization
8.2	The organization has a good capability to adapt the use of information resources in line with new information needs
8.3	It is relatively easy to integrate information across business domains within the company
8.4	The IT function provides flexible infrastructure to access external information sources
8.5	It is relatively easy to exchange and transfer information with the outside world
8.6	It is relatively easy to integrate information from internal and external sources

Appendix B - Survey Launch Letter (Email)

Survey Launch Email Letter (Swedish)
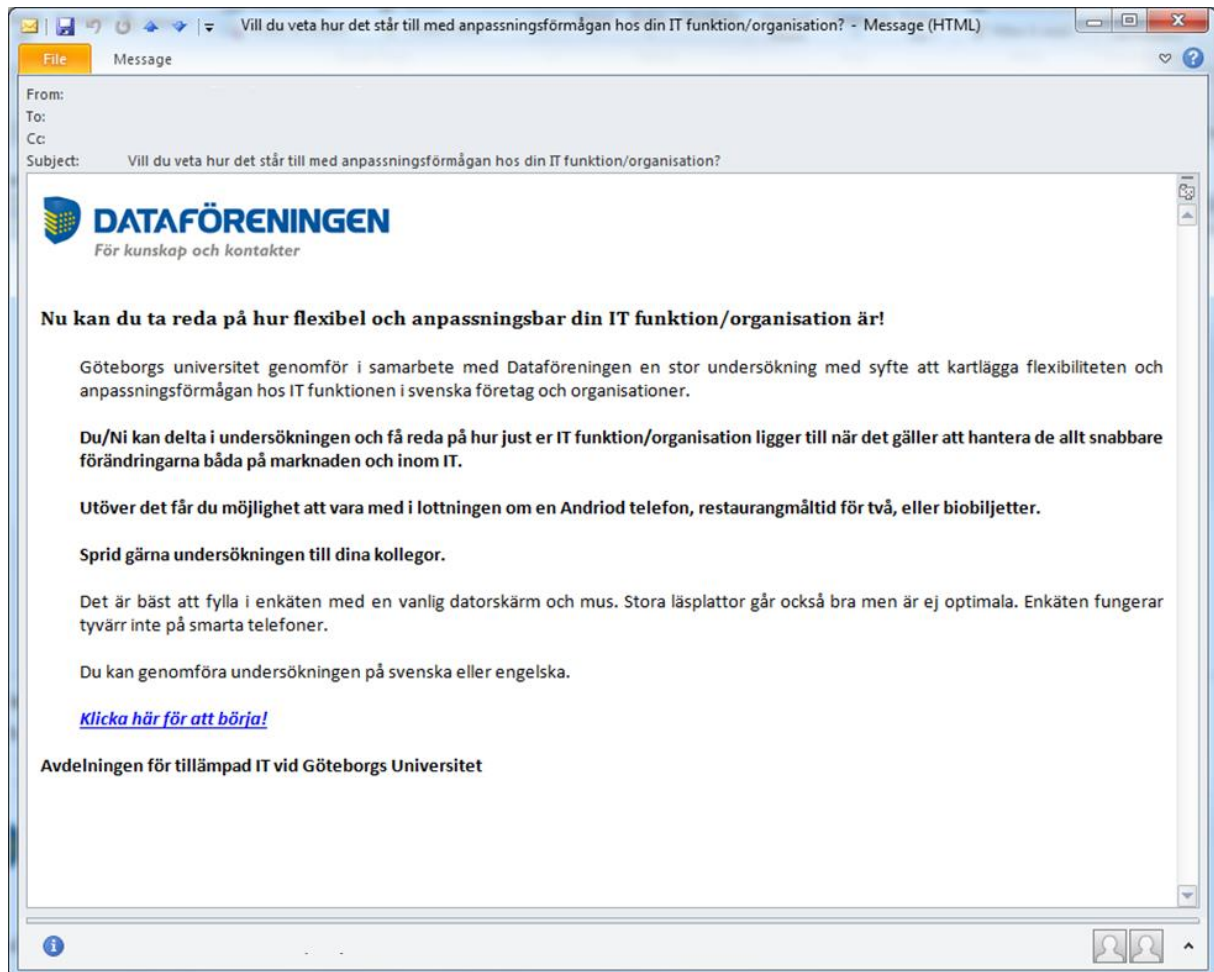
Survey Launch Email Letter (Translation to English)

<Email Title>

Do you want to know how things are with the agility of your IT function/organization?

<Email Content>

The Logotype of the Swedish Computer Society

Now you can find out how flexible and adaptable your IT function/organization is.

The University of Gothenburg in collaboration with the Swedish Computer Society is conducting a survey with a purpose of assessing the flexibility and adaptability of the IT functions of Swedish companies and organizations.

You can participate in the survey and find out how your own IT function/organization is doing when it comes to dealing with the increasingly rapid changes both in the market and in IT.

In addition you get the opportunity to participate in a draw with a chance of winning an Andriod phone, restaurant meal for two, or movie tickets.

Please pass on the survey to your colleagues also.

It is preferable to complete the survey using a standard computer monitor, and mouse. Large tablets are also good but not optimal. The questionnaire will not work on smart phones.

You can complete the survey in English or Swedish.

Click here to begin!

Department of Applied Information Technology, University of Gothenburg

<End>

Appendix C - Hard Copy of the Complete Electronic Survey

Page 1 – Introduction

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
                        För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

⦿ English
◯ Svenska

0%

Hello and thank you very much for taking this survey.

This survey is part of a research conducted by the Department of Applied IT at the University of Gothenburg in collaboration with Dataföreningen, with the aim of studying the ability of the IT function in Swedish companies and organizations to adjust to a changing market and business environment. The results of this survey will be analyzed and incorporated into a research paper addressing this topic.

It takes approximately 20 minutes to complete the questionnaire. Your identity is confidential (unless you wish to share it) and the responses from this survey will be reported only in the aggregate.

As a thank-you, you will IMMEDIATELY upon survey completion be able to download...

  · a report with your own survey answers which can be used to assess your IT function's agility level, and also identify gaps and improvement measures

  · a brief version of the theoretical model behind this survey which can help your organization to better understand what is meant by the agility of the IT function

Shortly after finishing the entire survey you will be able to...

  · get a copy of the final report where you can compare your organization to the rest of the country and conduct some useful benchmarking

  · Participate in a draw with the chance of winning an Android phone, restaurant meal for two, or cinema tickets

Please, pass on the survey to your colleagues also.

Finally, if you have any questions about the survey, you are most welcome to contact Michael Yousif (0705-771232, gusyousimi@student.gu.se) or Kalevi Pessi (0706-989448, kalevi.pessi@ait.gu.se).

Michael Yousif - Researcher at the Department of Applied IT, University of Gothenburg
Kalevi Pessi - Associate Professor at Department of Applied IT, University of Gothenburg

PS. Survey language (English or Swedish) can be changed any time using the language buttons at the upper right corner. You can also at any time take a break, save your answers and continue later by using the "Save and continue later" button at the bottom of the screen.

Next

Save and continue later

Page 2 – Facts About You

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
                        För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

⦿ English
◯ Svenska

4%

We will now start with 7 short introductory questions about you and your organization and then proceed to the main questions.

Back   Next

Save and continue later

Page 3 – Facts About You

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

◉ English
○ Svenska

8%

1. What is your organization's primary industry or business sector?

○ Government / Public Sector (e.g. health service, governmental authorities, etc.)

○ Energy and Power Supply

○ Materials (Chemicals, Construction Materials, Containers & Packaging, Metals & Mining, Paper & Forest Products)

○ Industrials (Capital Goods, Commercial & Professional Services, Transportation)

○ Consumer Discretionary (Automobiles & Components, Consumer Durables & Apparel, Consumer Services, Media, Retailing)

○ Consumer Staples (Food & Staples Retailing, Food, Beverage & Tobacco, Household & Personal Products)

○ Health Care (Health Care Equipment & Services, Pharmaceuticals, Biotechnology & Life Sciences)

○ Financials (Banks, Insurance, Real Estate, Diversified Financials)

○ Information Technology (Software & Services, Technology Hardware & Equipment, Semiconductors & Semiconductor Equipment)

○ Telecommunication (Telecommunication Services, Utilities)

○ Other

Back   Next

Save and continue later

Page 4 – Facts About You

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

◉ English
○ Svenska

13%

2. What is the size of your firm/organization?

○ Fewer than 100

○ Between 100 – 1000

○ Between 1000 –10 000

○ More than 10 000

Back   Next

Save and continue later

Page 5 – Facts About You

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För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

◉ English
○ Svenska

17%

3. Does your firm/organization operate globally or only in Sweden?

○ Only in Sweden

○ Globally

Back   Next

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Page 6 – Facts About You

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För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

○ English
○ Svenska

21%

4. What is the main area of your position/role?

○ IS/IT (Information Systems / Information Technology)

○ Interface between IS/IT and Business

○ Business

○ Other

Back   Next

Save and continue later

Page 7 – Facts About You

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

○ English
○ Svenska

21%

4. What is the main area of your position/role?

○ IS/IT (Information Systems / Information Technology)

○ Interface between IS/IT and Business

○ Business

○ Other

Back   Next

Save and continue later

Page 8 – Facts About You

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

○ English
○ Svenska

30%

6. How long have you been working for this organization/firm?

○ Less than 1 year

○ 1 - 3 years

○ 4 - 5 years

○ More than 5 years

Back   Next

Save and continue later

Page 9 – Facts About You

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
                               För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

◉ English
○ Svenska

34% ──────────────────────────

7. Are you an employee of an IS/IT consultancy company?

○ Yes

○ No

Back   Next

Save and continue later

Page 10 – Assessment of IT Agility Dimensions

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
                               För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

◉ English
○ Svenska

39% ──────────────────────────

Introduction to the main questions

You will now be presented with a number different <u>Situations</u> related to IT in an organization.

These situations are grouped into the following <u>8 Areas</u>:

    1. **IT-Business Alignment** .... *(10 situations)*

    2. **Management and Leadership** .... *(10 situations)*

    3. **Organization Structure and Culture** ..... *(8 situations)*

    4. **People, Skills and Capabilities** .... *(8 situations)*

    5. **IT Infrastructure and Standards** .... *(6 situations)*

    6. **IS Development and Delivery** .... *(7 situations)*

    7. **System Capabilities** .... *(5 situations)*

    8. **Information Capabilities** .... *(6 situations)*

For <u>Each Situation</u> you will be asked to assess...

    · **Importance** ... i.e. whether the situation is important to your organization

    · **Status** ... i.e. whether the situation exists in your organization or not

    · **Active Work** ... i.e. whether your organization works actively to achieve and/or sustain the situation

You may choose to answer *Don't Know* if you don't know the answer, or if the situation is not applicable to your organization. You may also add comments to your answers.

Please note that some of the situations presented may seem similar, which is due to the theoretical model behind the survey. We appreciate therefore your patience and understanding.

Back   Next

Save and continue later

Page 11– Assessment of IT Agility Dimensions

GÖTEBORGS UNIVERSITET

DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

○ English
○ Svenska

43%

Area no. 1 **IT-Business Alignment** Situations	Importance Is this situation important to your organization?					Status Does this situation exist in your organization?					Active Work Is your organization working actively to achieve/sustain this situation?				
	Not Important	Slightly Important	Important	Very Important	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know
1 The IT leadership actively participates in business strategy and planning with senior business leaders	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2 Business and IT executives collaborate on setting strategic goals for IT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3 The IT function has dedicated teams/individuals proactively and regularly engaging with business	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4 The IT function maintains an up-to-date picture of business priorities and how it can contribute to them	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5 The IT function proactively works across the business to identify and drive new opportunities for value creation through IT	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6 The business units own and drive IS/IT enabled business cases in close collaboration with the IT function	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
7 The business units own and drive IS/IT enabled improvement projects in close collaboration with the IT function	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
8 The IT leadership is concerned and cares about the same things as the leadership of business	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
9 The IT leadership does well in demonstrating the strategic role of IT in meeting the organization's overall objectives	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
10 The leadership of business fully understands the strategic role of IT and how IT can add business value	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Any comments to your answers above?

Type here

Back   Next

Save and continue later

Page 12– Assessment of IT Agility Dimensions

GÖTEBORGS UNIVERSITET   DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

○ English
○ Svenska

47%

Area no. 2 **Management and Leadership** Situations	Importance Is this situation important to your organization?					Status Does this situation exist in your organization?					Active Work Is your organization working actively to achieve/sustain this situation?				
	Not Important	Slightly Important	Important	Very Important	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know
1 The IT leadership understands the importance of the IT organization's ability to adjust quickly to a changing market environment	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2 The IT leadership promotes and rewards change, innovation and organizational learning	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3 The IT leadership has a clear strategy that is well communicated throughout the organization	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4 The IT strategy is dynamic and possible to adjust and reformulate in case of changes to the business environment	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5 Ongoing IS/IT investments not in line with the business strategy are stopped or put on hold in spite of already made investments	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6 The IT leadership drives and manages the shortening of IS/IT project time plans	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
7 The IT budget can be reassigned any time during a fiscal year	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
8 Governance of IS/IT investments is continuously aligned with business governance	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
9 For outsourcing contracts, the IT leadership focuses a lot on maximizing service flexibility from the outsourcing provider	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
10 For outsourcing contracts, the IT leadership focuses a lot on controlling the outsourcing provider	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Any comments to your answers above?

Type here

Back   Next

Save and continue later

Page 13– Assessment of IT Agility Dimensions

GÖTEBORGS UNIVERSITET

DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

○ English
○ Svenska

52%

Area no. 3 **Organization Structure and Culture** **Situations**	**Importance** Is this situation important to your organization?					**Status** Does this situation exist in your organization?					**Active Work** Is your organization working actively to achieve/sustain this situation?				
	Not Important	Slightly Important	Important	Very Important	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know
1 The IT organization has an open structure and culture where people feel encouraged to be creative and innovative	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2 People working in IT feel empowered to take leadership in decision making and execution of these decisions	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3 The IT function has a flat organization where decision-making authority is mostly distributed across the organization	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4 There is an IT organizational identity that inspires people's mind set and beliefs and guides them in their work	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5 IT staff have a positive image of their IT organization	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6 IT staff have a shared understanding of what is core and distinctive about their IT organization	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
7 The outside world (e.g. other employees, and partners) has a clear and positive view of the IT organization	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
8 The IT function provides efficient and effective knowledge management and learning services, such as good search capabilities, distance learning, online training, and discussion forums for the entire organization	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Any comments to your answers above?

Type here

Back   Next

Save and continue later

Page 14– Assessment of IT Agility Dimensions

GÖTEBORGS UNIVERSITET DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

○ English
○ Svenska

56%

Area no. 4 **People, Skills and Capabilities** Situations	**Importance** Is this situation important to your organization?					**Status** Does this situation exist in your organization?					**Active Work** Is your organization working actively to achieve/sustain this situation?				
	Not Important	Slightly Important	Important	Very Important	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know
1 IT staff possesses good skills and competencies related to the business domain, processes, and capabilities	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2 IT staff has a good understanding of business strategy, competition and market influences	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3 IT staff possesses good relational and social skills such as interpersonal communication and collaboration skills	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4 IT staff possesses good management skills, such as planning, project management, and change management skills.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5 IT staff have in general varied and broad skills and capabilities and are therefore easily re-deployable in times of change	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6 The majority of the IT staff would be good candidates for job rotation outside the IT organization	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
7 The IT organization effectively utilizes skills and knowledge from external partners	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
8 IT staff possesses knowledge about new, innovative, and collaborative ways of working, such as virtual workplace and mobile working	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Any comments to your answers above?

Type here

Back   Next

Save and continue later

Page 15– Assessment of IT Agility Dimensions

GÖTEBORGS UNIVERSITET DATAFÖRENINGEN
För kunskap och kontakter

Survey about the Agility of the IT Function in Swedish Organizations

○ English
○ Svenska

60%

Area no. 5 **IT Infrastructure and Standards** Situations	**Importance** Is this situation important to your organization?					**Status** Does this situation exist in your organization?					**Active Work** Is your organization working actively to achieve/sustain this situation?				
	Not Important	Slightly Important	Important	Very Important	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know
1 The IT function provides reliable and extensive firm-wide IT infrastructure services (hardware, software and people capabilities)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2 Adding new system or information capability can relatively easily be accommodated within existing IT infrastructure	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3 The IT infrastructure is characterized by a high degree of standardization and modularity	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4 It is reasonably easy to connect and disconnect IS/IT capabilities with the external world (e.g. email system, information systems, information resources, etc.)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5 The IT function provides a wide range of basic education and training services related to firm-wide IS/IT capabilities	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6 Business executives regard IT infrastructure as an asset that can create business value	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Any comments to your answers above?

Type here

Back   Next

Save and continue later

Page 16– Assessment of IT Agility Dimensions

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65%

Area no. 6 — **IS Development and Delivery** — Situations	Importance — Is this situation important to your organization?					Status — Does this situation exist in your organization?					Active Work — Is your organization working actively to achieve/sustain this situation?				
	Not Important	Slightly Important	Important	Very Important	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know
1 The IT organization has the capability to rapidly deliver and implement systems that satisfy current and emerging business needs	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2 New systems are delivered through very close collaboration between IT and business customers	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3 The IT organization has flexible IS delivery teams and methods that can adapt to changing business circumstances	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4 The IT organization has flexible IS delivery teams and methods that can adapt to rapid technology changes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5 The IT organization uses flexible IS delivery teams and methods that can alleviate rigid formal controls whilst maintaining quality	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6 The IT organization uses project management frameworks that can deliver in an incremental manner	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
7 Long IS/IT projects are usually broken down to phases resulting in deliverables within months rather than years	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Any comments to your answers above?

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Back   Next

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69%

Area no. 7 — **System Capabilities** — Situations	Importance — Is this situation important to your organization?					Status — Does this situation exist in your organization?					Active Work — Is your organization working actively to achieve/sustain this situation?				
	Not Important	Slightly Important	Important	Very Important	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know
1 Adding new features to existing applications is relatively straightforward and inexpensive	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2 Existing applications are relatively easy to integrate with other internal applications	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3 Existing applications are relatively easy to integrate with external applications	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4 Existing applications have such features that make their support and maintenance cost efficient	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5 The support and maintenance of the application portfolio is efficient and effective	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Any comments to your answers above?

Type here

Back   Next

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73%

Area no. 8 __Information Capabilities__ Situations	Importance					Status					Active Work				
	Is this situation important to your organization?					Does this situation exist in your organization?					Is your organization working actively to achieve/sustain this situation?				
	Not Important	Slightly Important	Important	Very Important	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know	Not at all	To a little extent	Quite a lot	To a large extent	Don't Know
1 The right information is accessible at the right time across the organization	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2 The organization has a good capability to adapt the use of information resources in line with new information needs	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3 It is relatively easy to integrate information across business domains within the company	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4 The IT function provides flexible infrastructure to access external information sources	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5 It is relatively easy to exchange and transfer information with the outside world	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6 It is relatively easy to integrate information from internal and external sources	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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Back   Next

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78%

Further comments and additions to your answers

Please share any more additions and comments you may have to your answers

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Back   Next

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Page 20 - Incentives

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82%

You are now done with the main questions!

As an appreciation for your efforts, you will now be able to take advantage of the promised offerings.

Please indicate below if you would like to …

☐ … get a copy of the final report och final results which will be available later this year

☐ … participate in a draw with the chance of winning an Android phone, a restaurant meal for two, or cinema tickets

Back   Next

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Page 21 - Incentives

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86%

Email Address

Please enter a valid email address to be used for sending you the material and/or to be included in the draw

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Back   Next

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Page 22 - Feedback

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91%

Feedback on the survey

Please share any views and comments you may have on the content and design of the survey, as well as any suggestions for improvements

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Back   Next

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Page 23 – Thank You

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95%

Thank you very much! - You are done with the survey

Before submitting your response, you may edit your answers if you wish to. This is done by going back to the different pages using the Back button.

Otherwise, please click the Submit button to proceed to the Download Page where you can download a report with your answers and the theoretical model behind this survey.

Back   Submit

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Page 24 – Material Download

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Downloading Materials

Here you can download the following:

1. A brief version of the theoretical model behind this survey.
This model can help your organization to better understand what is meant by the agility of an IT organization, as well as how to interpret and work further with your answers

Download

2. A report with your own survey answers which can be used to assess your organization's agility level, and also identify gaps and improvement measures
It is recommended to use the PDF format

: PDF   Word

Appendix D – The Complete and Detailed Survey Results

1. IT-Business Alignment – Aggregated Results

Importance: The importance of the characteristics of this dimension for your organization

3.9%	24.2%		71.0%
■ Not Important	■ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
208	88.3	12.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

10.7%	37.0%	31.1%	21.2%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
209	54.6	21.6	Quite a lot	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

8.2%	28.2%	37.3%	26.3%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
207	60.5	22.0	Quite a lot	Quite a lot
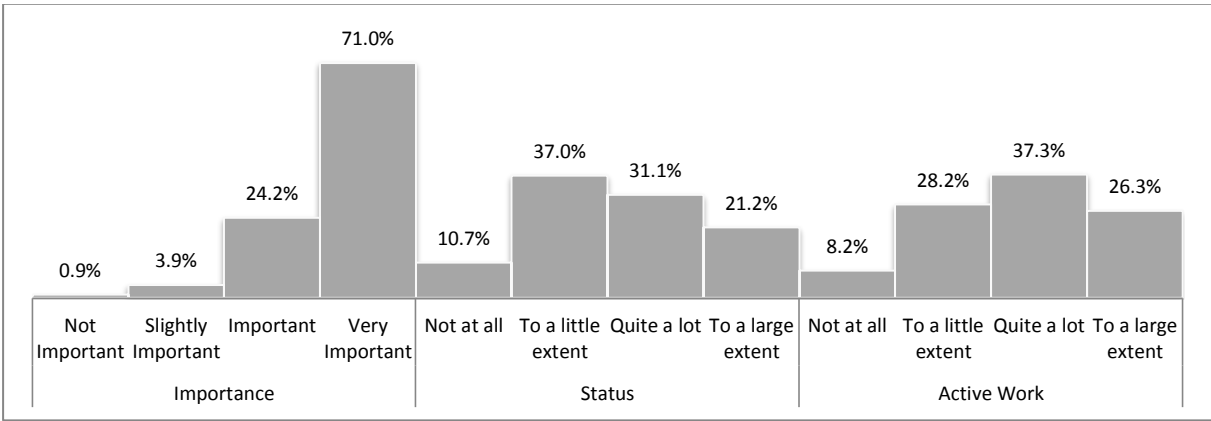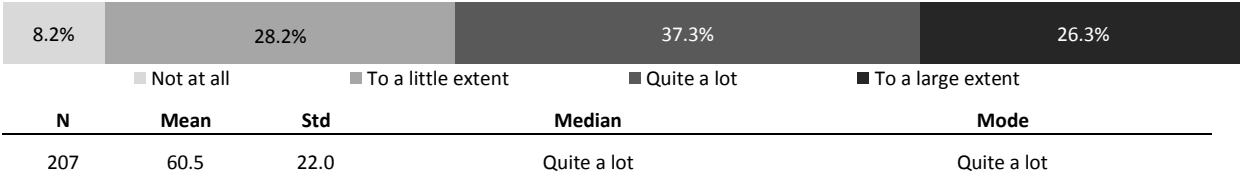
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 1

The IT leadership actively participates in business strategy and planning with senior business leaders

Importance: The importance of the characteristics of this dimension for your organization

4.9%	23.3%	71.4%

☐ Not Important   ☐ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
206	88.5	19.8	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

7.0%	43.0%	21.5%	28.5%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
200	57.2	31.9	To a little extent - Quite a lot	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

7.4%	26.3%	32.1%	34.2%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
190	64.4	31.6	Quite a lot	To a large extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 2

Business and IT executives collaborate on setting strategic goals for IT

Importance: The importance of the characteristics of this dimension for your organization

4.5%	20.3%	74.8%

■ Not Important　■ Slightly Important　■ Important　■ Very Important

N	Mean	Std	Median	Mode
202	89.8	19.2	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

11.6%	38.4%	24.7%	25.3%

■ Not at all　■ To a little extent　■ Quite a lot　■ To a large extent

N	Mean	Std	Median	Mode
198	54.5	32.9	To a little extent - Quite a lot	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

8.8%	31.6%	31.1%	28.5%

■ Not at all　■ To a little extent　■ Quite a lot　■ To a large extent

N	Mean	Std	Median	Mode
193	59.8	31.9	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 3

The IT function has dedicated teams/individuals proactively and regularly engaging with business

Importance: The importance of the characteristics of this dimension for your organization

2.9%	16.6%	79.5%

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
205	91.5	18.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

9.3%	18.6%	35.3%	36.8%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
204	66.5	32.2	Quite a lot	To a large extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

8.5%	14.4%	36.8%	40.3%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
201	69.7	31.3	Quite a lot	To a large extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 4

The IT function maintains an up-to-date picture of business priorities and how it can contribute to them

---

Importance: The importance of the characteristics of this dimension for your organization

1.0%	14.9%	84.1%

■ Not Important ■ Slightly Important ■ Important ■ Very Important

N	Mean	Std	Median	Mode
208	94.4	13.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

6.3%	27.3%	44.4%	22.0%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
205	60.7	28.2	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

4.9%	20.2%	45.3%	29.6%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
203	66.5	27.8	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

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22

IT-Business Alignment - Characteristic No. 5

The IT function proactively works across the business to identify and drive new opportunities for value creation through IT

Importance: The importance of the characteristics of this dimension for your organization

4.4%	30.6%	65.0%

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
206	86.9	19.1	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

11.9%	47.5%	28.2%	12.4%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent
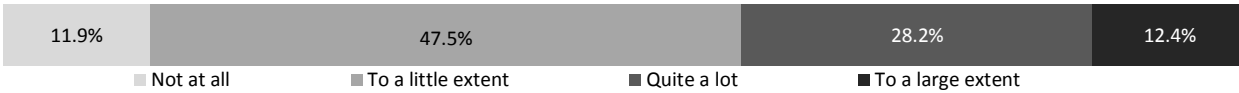
N	Mean	Std	Median	Mode
202	47.0	28.5	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

9.5%	39.5%	34.5%	16.5%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent
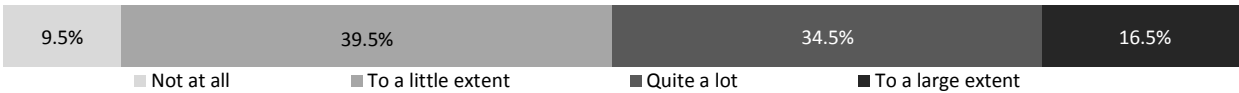
N	Mean	Std	Median	Mode
200	52.7	29.2	Quite a lot	To a little extent
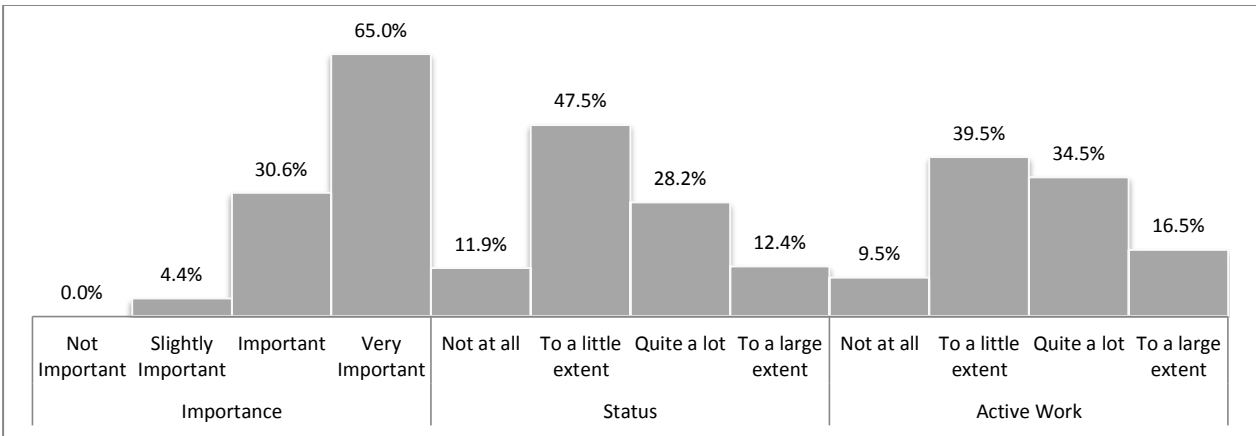
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 6

The business units own and drive IS/IT enabled business cases in close collaboration with the IT function

Importance: The importance of the characteristics of this dimension for your organization

2.6%	4.1%	29.2%	64.1%

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
195	85.0	23.2	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

14.3%	40.2%	27.5%	18.0%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
189	49.7	31.6	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

8.6%	30.1%	39.8%	21.5%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
186	58.1	29.8	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 7

The business units own and drive IS/IT enabled improvement projects in close collaboration with the IT function

Importance: The importance of the characteristics of this dimension for your organization

3.0%	29.5%	66.5%

■ Not Important　　■ Slightly Important　　■ Important　　■ Very Important

N	Mean	Std	Median	Mode
200	87.2	20.0	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

9.2%	34.2%	36.7%	19.9%

■ Not at all　　■ To a little extent　　■ Quite a lot　　■ To a large extent

N	Mean	Std	Median	Mode
196	55.8	29.9	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

6.3%	29.2%	37.5%	27.1%

■ Not at all　　■ To a little extent　　■ Quite a lot　　■ To a large extent

N	Mean	Std	Median	Mode
192	61.8	29.7	Quite a lot	Quite a lot
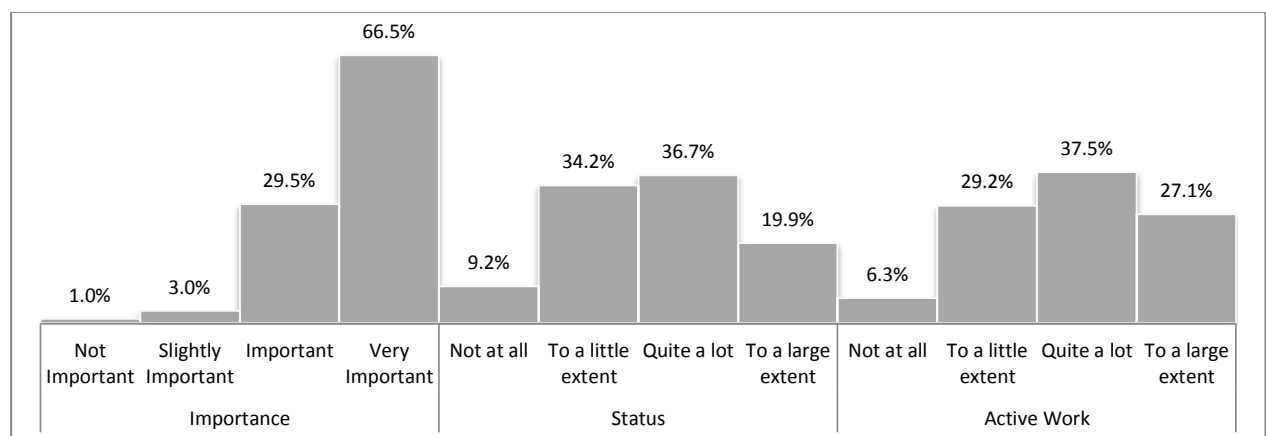
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 8

The IT leadership is concerned and cares about the same things as the leadership of business

Importance: The importance of the characteristics of this dimension for your organization

| 1.0% | 9.9% | 29.7% | 59.4% |

☐ Not Important   ☐ Slightly Important   ☐ Important   ☐ Very Important

N	Mean	Std	Median	Mode
192	82.5	23.9	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

| 11.8% | 37.1% | 32.8% | 18.3% |

☐ Not at all   ☐ To a little extent   ☐ Quite a lot   ☐ To a large extent

N	Mean	Std	Median	Mode
186	52.5	30.8	Quite a lot	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

| 9.9% | 33.7% | 36.5% | 19.9% |

☐ Not at all   ☐ To a little extent   ☐ Quite a lot   ☐ To a large extent

N	Mean	Std	Median	Mode
181	55.4	30.3	Quite a lot	Quite a lot
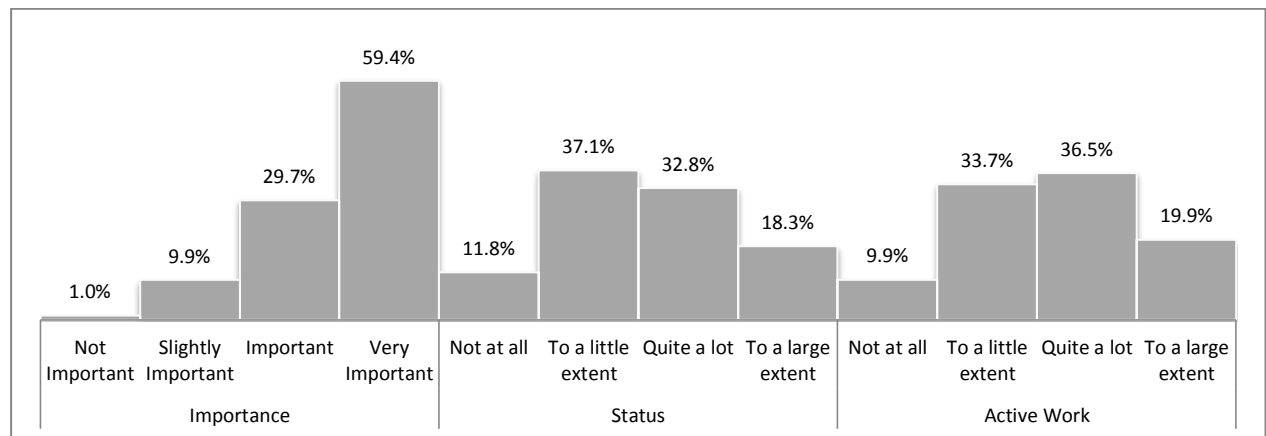
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 9

The IT leadership does well in demonstrating the strategic role of IT in meeting the organization's overall objectives

Importance: The importance of the characteristics of this dimension for your organization

2.9%	26.5%	69.6%
■ Not Important	■ Slightly Important ■ Important	■ Very Important

N	Mean	Std	Median	Mode
204	88.2	19.7	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

13.7%	42.1%	31.5%	12.7%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent
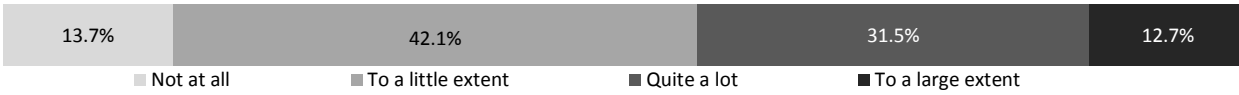
N	Mean	Std	Median	Mode
197	47.7	29.4	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

7.3%	31.6%	40.9%	20.2%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
193	58.0	28.8	Quite a lot	Quite a lot
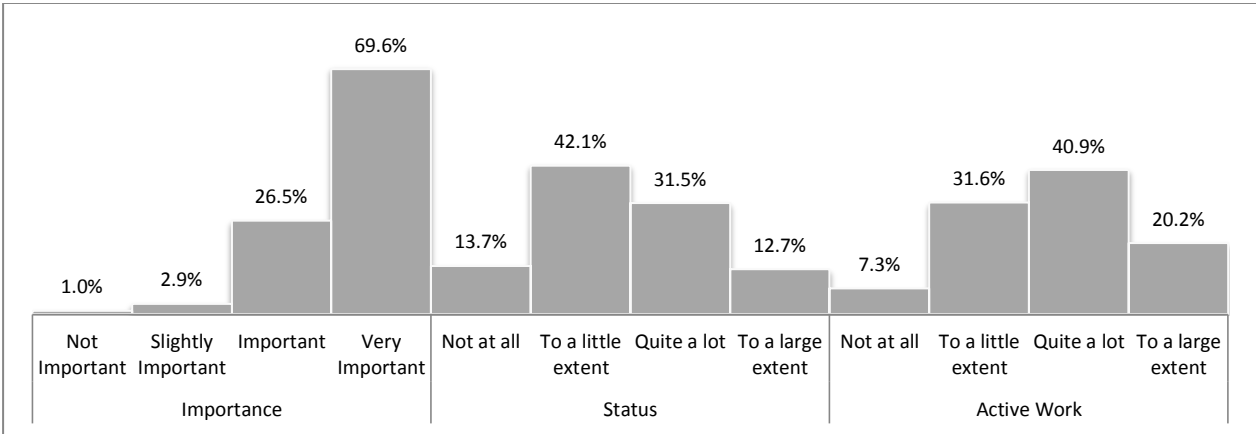
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT-Business Alignment - Characteristic No. 10

The leadership of business fully understands the strategic role of IT and how IT can add business value

Importance: The importance of the characteristics of this dimension for your organization

2.0%	22.1%		74.5%
■ Not Important	■ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
204	89.9	19.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

12.0%	42.0%	28.0%	18.0%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent
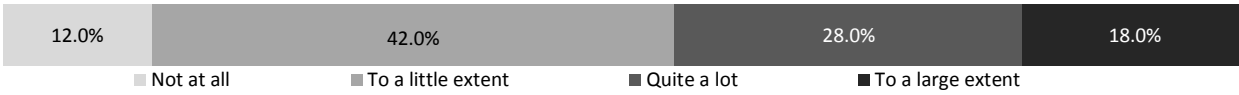
N	Mean	Std	Median	Mode
200	50.7	30.8	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

11.3%	26.2%	38.5%	24.1%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
195	58.5	31.6	Quite a lot	Quite a lot
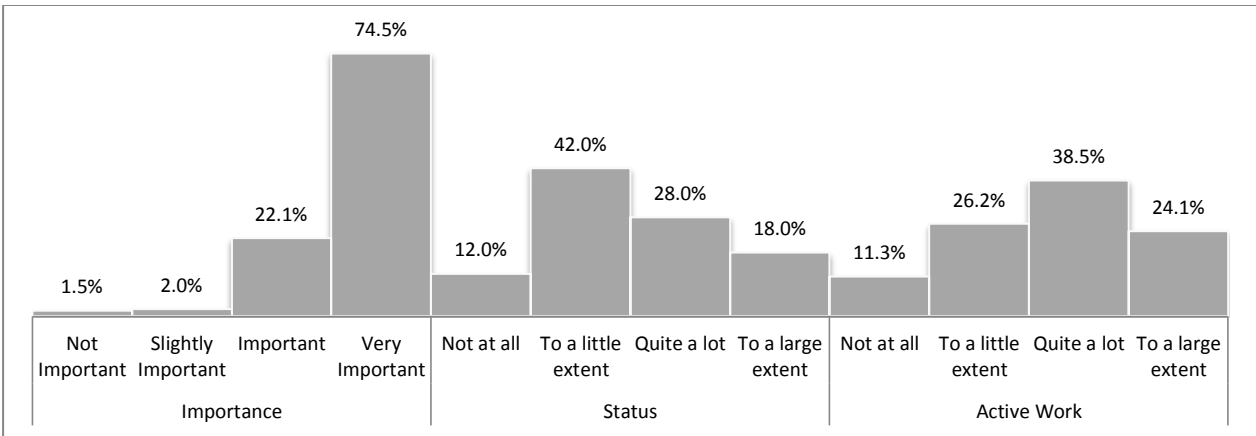
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Business Alignment – Summary of All Characteristics

Mean

Median

Characteristics	Importance	Status	Active Work
1. The IT leadership actively participates in business strategy and planning with senior business leaders	Very Important	To a little extent - Quite a lot	Quite a lot
2. Business and IT executives collaborate on setting strategic goals for IT	Very Important	To a little extent - Quite a lot	Quite a lot
3. The IT function has dedicated teams/individuals proactively and regularly engaging with business	Very Important	Quite a lot	Quite a lot
4. The IT function maintains an up-to-date picture of business priorities and how it can contribute to them	Very Important	Quite a lot	Quite a lot
5. The IT function proactively works across the business to identify and drive new opportunities for value creation through IT	Very Important	To a little extent	Quite a lot
6. The business units own and drive IS/IT enabled business cases in close collaboration with the IT function	Very Important	To a little extent	Quite a lot
7. The business units own and drive IS/IT enabled improvement projects in close collaboration with the IT function	Very Important	Quite a lot	Quite a lot
8. The IT leadership is concerned and cares about the same things as the leadership of business	Very Important	Quite a lot	Quite a lot
9. The IT leadership does well in demonstrating the strategic role of IT in meeting the organization's overall objectives	Very Important	To a little extent	Quite a lot
10. The leadership of business fully understands the strategic role of IT and how IT can add business value	Very Important	To a little extent	Quite a lot

Mode

Characteristics	Importance	Status	Active Work
1. The IT leadership actively participates in business strategy and planning with senior business leaders	Very Important	To a little extent	To a large extent
2. Business and IT executives collaborate on setting strategic goals for IT	Very Important	To a little extent	To a little extent
3. The IT function has dedicated teams/individuals proactively and regularly engaging with business	Very Important	To a large extent	To a large extent
4. The IT function maintains an up-to-date picture of business priorities and how it can contribute to them	Very Important	Quite a lot	Quite a lot
5. The IT function proactively works across the business to identify and drive new opportunities for value creation through IT	Very Important	To a little extent	To a little extent
6. The business units own and drive IS/IT enabled business cases in close collaboration with the IT function	Very Important	To a little extent	Quite a lot
7. The business units own and drive IS/IT enabled improvement projects in close collaboration with the IT function	Very Important	Quite a lot	Quite a lot
8. The IT leadership is concerned and cares about the same things as the leadership of business	Very Important	To a little extent	Quite a lot
9. The IT leadership does well in demonstrating the strategic role of IT in meeting the organization's overall objectives	Very Important	To a little extent	Quite a lot
10. The leadership of business fully understands the strategic role of IT and how IT can add business value	Very Important	To a little extent	Quite a lot

IT-Business Alignment - Comments

- *IT has started to become more important in the company, but we have a long way to go. The highest IT manager is a middle manager and is not directly linked to the top management, which should be the case.*

- *There is a prestige fight between IT and Business which is not conducive for the needs of the business*

- *Our municipality is currently working on introducing a new IT maintenance model with PM3 - and that is entirely in line with the questions asked here.*

- *You assume that IT plays a strategic role. The questions are not neutral and will therefore not receive a neutral response.*

- *It's still a fairly low IT maturity and the business continues to go outside "house IT" to procure services. And this still allowed.*

- *These questions are too many and they are not applicable to small businesses, but large companies.*

- *Others would have probably rated our Business and IT leadership higher. Personally I believe that both IT and Business leaderships' understanding and maturity level is low concerning how IT strategy should be set and driven, hence the low score.*

- *The organization currently has a federal structure where business units have their own corporate governance (political boards). The IT leadership talks mostly with a central governance board of business but the local federative structure is unchanged.*

- *We are currently implementing a new governance process to increase the degree of IT support and involvement with the business units. The needs of our customers in those business units are driving this support and engagement.*

- *These questions are very similar, have a narrow focus, and are exclusively asked from an IT perspective. In my world, it is not always IT that drives these issues, rather the contrary.*

- *As I was taught at the IT University, IT is not a goal but a means, and it is seen more as a hygiene factor today. We are supposed to know IT, but there is no training in-house.*

- *Question 3: The IT function in our organization has no SPECIAL teams or individuals. All staff collaborate regularly and (pro) actively with the business.*

- *Question 8: I do not think that "concern" and "caring" is relevant. The company has overall goals and strategies that everyone understands and applies, as appropriate in their respective roles. What counts in the actual work is the understanding of each other's businesses, prospects and challenges. Just as important are cooperation and collaboration.*

- *Generally, there is a very traditional view of IT as a cost and infrastructure services and not as an integral part of the business. It has also been very segmented between the different business areas within the business and IT has not been a natural partner internally. New management last year have begun to work hard to digitize the business and service provision, but it's a long way to go.*

- *The relation with the business is managed at different levels in the organization. At the highest level (CIO) there is a rather poor understanding of business needs and expectations, but at lower levels there is more active work between IT and business.*

- *The Company has no specific IT management*

- *Question 8: I think it is equally important that IT managers worry / care about other things, which business leadership is not in a position to keep track of.*

- *I believe that IT is important, but the leadership don't have the same opinion.*

- *We are a company that develops a variety of products for IT operation. Therefore, we have also very good handle on how this affects our company. We use our own products.*

- *The importance and understanding of the strategic role of IT exist, but there is not enough budget to carry out what is necessary*

2. Management and Leadership - Aggregated Results

Importance: The importance of the characteristics of this dimension for your organization

2.3%	8.8%	34.4%	54.5%

□ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
209	80.3	15.7	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

18.7%	35.9%	27.7%	17.8%

□ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
208	47.9	22.3	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

16.6%	32.6%	30.6%	20.2%

□ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
205	51.6	23.1	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 1

The IT leadership understands the importance of the IT organization's ability to adjust quickly to a changing market environment

Importance: The importance of the characteristics of this dimension for your organization

4.9%	23.5%	71.1%
Not Important	Slightly Important	Important ■ Very Important

N	Mean	Std	Median	Mode
204	88.4	19.9	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

10.3%	32.5%	35.1%	22.2%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
194	56.4	31.0	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

8.4%	31.4%	33.0%	27.2%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
191	59.7	31.3	Quite a lot	Quite a lot
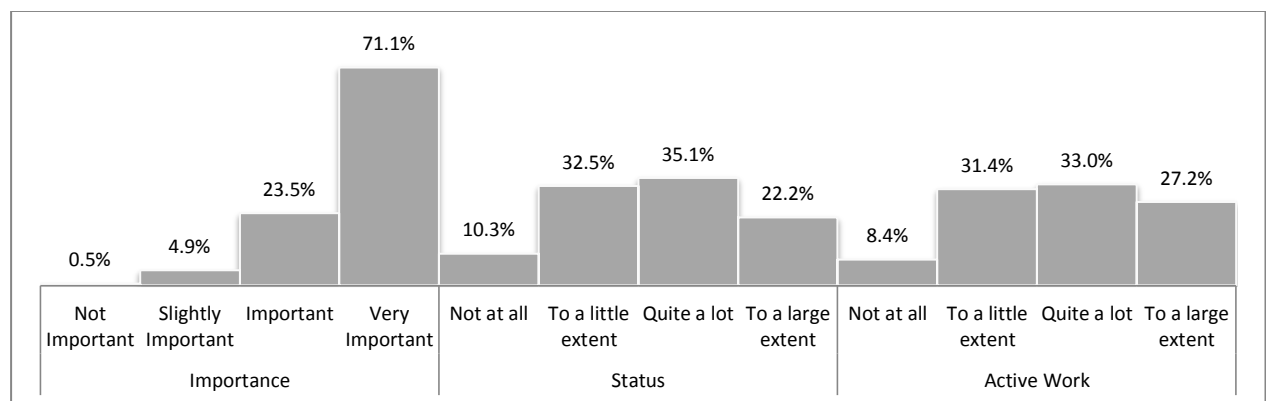
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 2

The IT leadership promotes and rewards change, innovation and organizational learning

Importance: The importance of the characteristics of this dimension for your organization

3.4%	37.1%	58.0%

☐ Not Important   ▨ Slightly Important   ▨ Important   ■ Very Important

N	Mean	Std	Median	Mode
205	83.9	21.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

16.4%	43.1%	22.6%	17.9%

☐ Not at all   ▨ To a little extent   ▨ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
195	47.4	32.2	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

19.2%	35.8%	29.0%	16.1%

☐ Not at all   ▨ To a little extent   ▨ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
193	47.3	32.5	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 3

The IT leadership has a clear strategy that is well communicated throughout the organization

Importance: The importance of the characteristics of this dimension for your organization

6.8%	30.1%	62.6%
Not Important	Slightly Important ■ Important	■ Very Important

N	Mean	Std	Median	Mode
206	85.0	21.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

22.0%	40.5%	25.5%	12.0%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
200	42.5	31.3	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

16.1%	35.2%	33.2%	15.5%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
193	49.4	31.4	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 4

The IT strategy is dynamic and possible to adjust and reformulate in case of changes to the business environment

Importance: The importance of the characteristics of this dimension for your organization

6.8%	37.7%	55.0%

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
191	82.4	21.6	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

18.1%	33.5%	33.5%	14.8%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
182	48.4	31.8	To a little extent	To a little extent, Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

15.1%	32.6%	34.9%	17.4%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
172	51.6	31.7	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 5

Ongoing IS/IT investments not in line with the business strategy are stopped or put on hold in spite of already made investments

Importance: The importance of the characteristics of this dimension for your organization

2.8%	9.7%	43.2%	44.3%
■ Not Important	■ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
176	76.3	25.2	Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

27.9%	32.6%	24.4%	15.1%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
172	42.2	34.4	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

25.0%	34.1%	25.6%	15.2%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
164	43.7	33.8	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 6

The IT leadership drives and manages the shortening of IS/IT project time plans

Importance: The importance of the characteristics of this dimension for your organization

4.3%	11.9%	43.8%	40.0%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
185	73.2	27.0	Important	Important

Status: The existence of the characteristics of this dimension in your organization

25.3%	41.8%	23.6%	9.3%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
182	39.0	30.5	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

18.9%	38.3%	25.7%	17.1%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
175	47.0	32.8	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 7

The IT budget can be reassigned any time during a fiscal year

Importance: The importance of the characteristics of this dimension for your organization

5.9%	18.4%	38.9%	36.8%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
185	68.8	29.6	Important	Important

Status: The existence of the characteristics of this dimension in your organization

22.0%	31.1%	24.9%	22.0%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
177	49.0	35.5	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

24.1%	27.6%	27.6%	20.6%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
170	48.2	35.7	To a little extent	Quite a lot, To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 8

Governance of IS/IT investments is continuously aligned with business governance

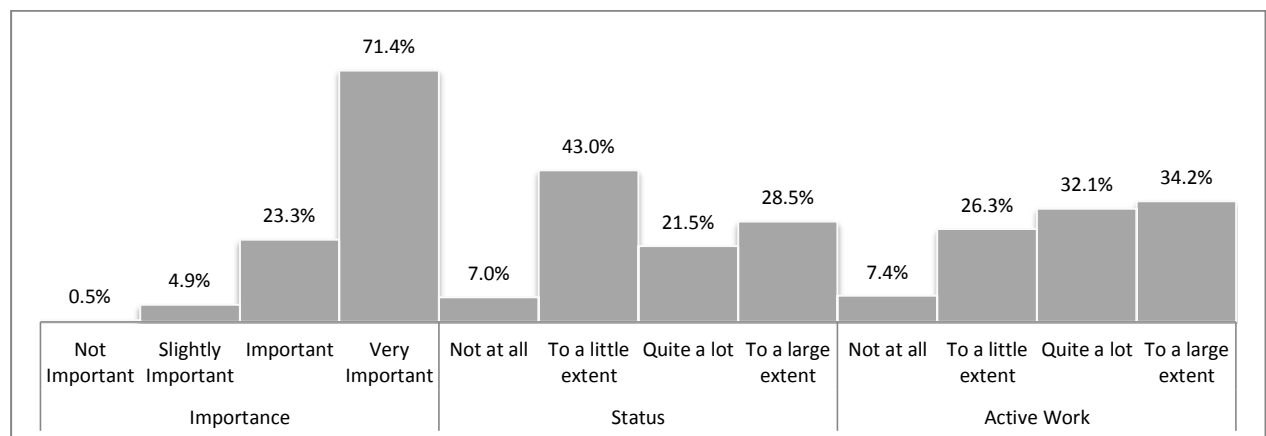**Importance:** The importance of the characteristics of this dimension for your organization

1.1%			
6.6%	37.9%	54.4%	

■ Not Important ■ Slightly Important ■ Important ■ Very Important

N	Mean	Std	Median	Mode
182	81.9	22.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

14.1%	39.4%	29.4%	17.1%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
170	49.8	31.2	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

9.6%	31.9%	41.0%	17.5%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
166	55.4	29.3	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership – Characteristic No. 9

For outsourcing contracts, the IT leadership focuses a lot on maximizing service flexibility from the outsourcing provider

Importance: The importance of the characteristics of this dimension for your organization

3.4%	8.6%	28.7%	59.2%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
174	81.2	26.4	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

18.9%	28.7%	28.7%	23.8%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
164	52.4	35.0	Quite a lot	Quite a lot, To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

17.6%	28.9%	27.0%	26.4%
Not at all	To a little extent	Quite a lot	To a large extent

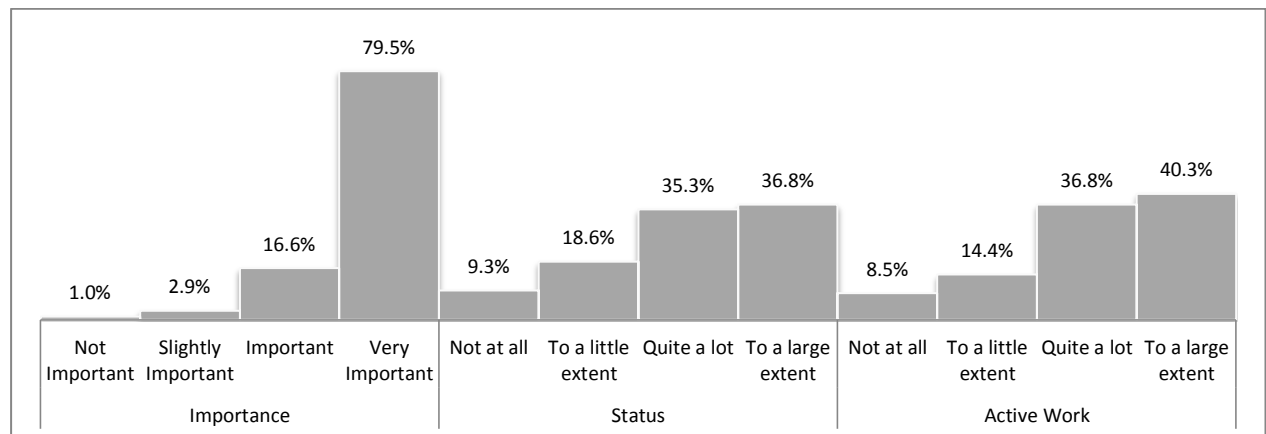| N	Mean	Std	Median	Mode
159	54.1	35.3	Quite a lot	To a little extent
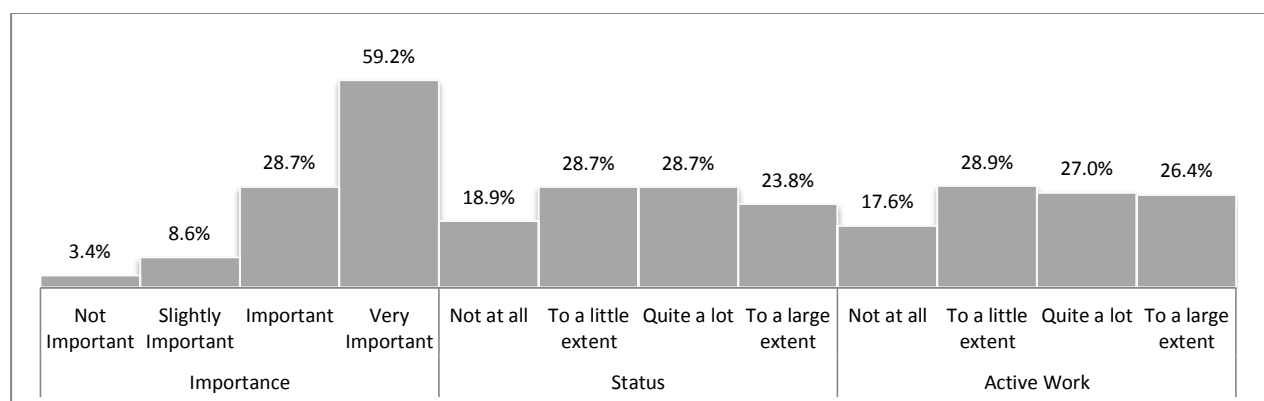
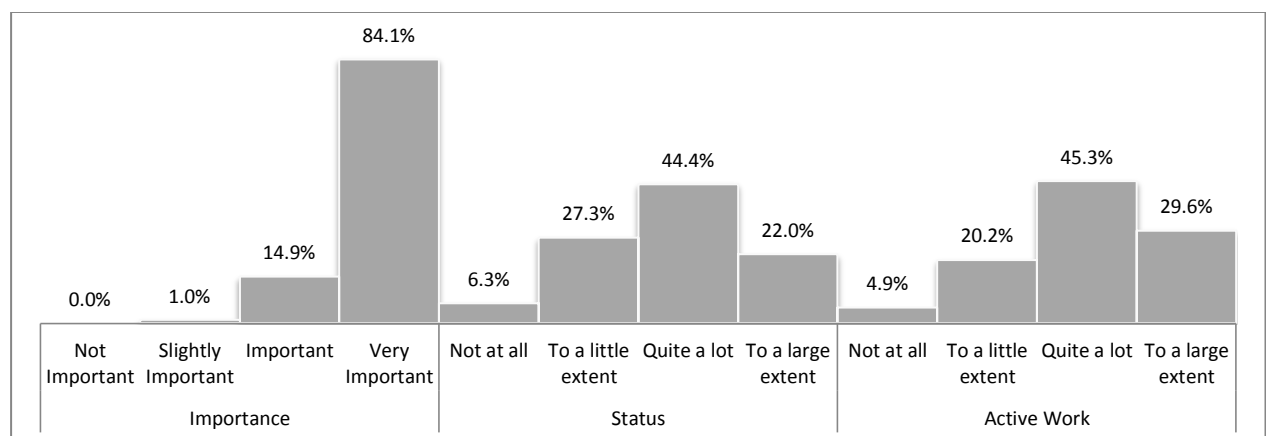**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

Management and Leadership – Characteristic No. 10

For outsourcing contracts, the IT leadership focuses a lot on controlling the outsourcing provider

Importance: The importance of the characteristics of this dimension for your organization

2.9%	12.0%	24.0%	61.1%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
175	81.1	27.1	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

11.6%	34.1%	29.3%	25.0%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
164	55.9	32.6	Quite a lot	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

13.0%	28.6%	28.6%	29.8%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
161	58.4	34.2	Quite a lot	To a large extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Management and Leadership - Summary of All Characteristics

Mean

Median

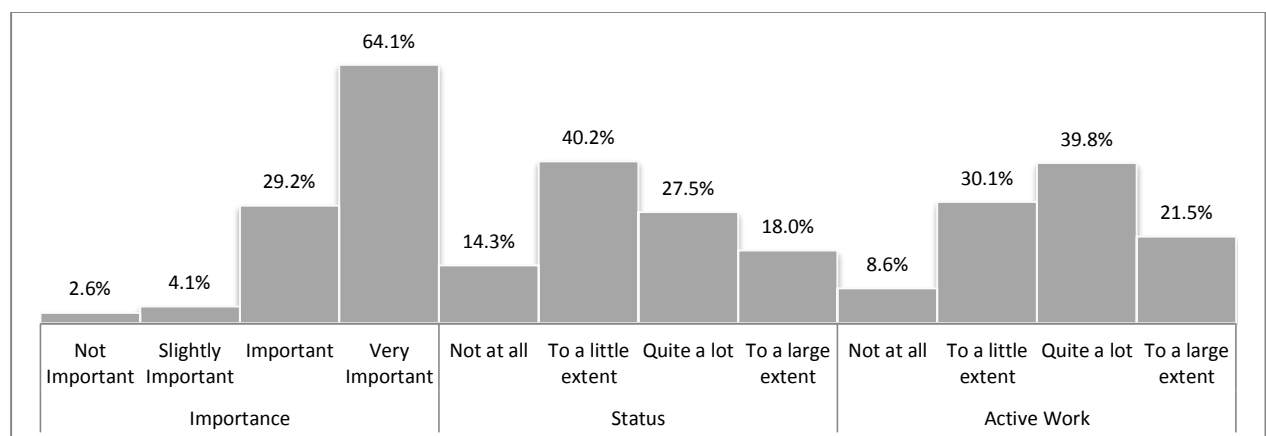| Characteristics	Importance	Status	Active Work
1. The IT leadership understands the importance of the IT organization's ability to adjust quickly to a changing market environment	Very Important	Quite a lot	Quite a lot
2. The IT leadership promotes and rewards change, innovation and organizational learning	Very Important	To a little extent	To a little extent
3. The IT leadership has a clear strategy that is well communicated throughout the organization	Very Important	To a little extent	To a little extent
4. The IT strategy is dynamic and possible to adjust and reformulate in case of changes to the business environment	Very Important	To a little extent	Quite a lot
5. Ongoing IS/IT investments not in line with the business strategy are stopped or put on hold in spite of already made investments	Important	To a little extent	To a little extent
6. The IT leadership drives and manages the shortening of IS/IT project time plans	Important	To a little extent	To a little extent
7. The IT budget can be reassigned any time during a fiscal year	Important	To a little extent	To a little extent
8. Governance of IS/IT investments is continuously aligned with business governance	Very Important	To a little extent	Quite a lot
9. For outsourcing contracts, the IT leadership focuses a lot on maximizing service flexibility from the outsourcing provider	Very Important	Quite a lot	Quite a lot
10. For outsourcing contracts, the IT leadership focuses a lot on controlling the outsourcing provider	Very Important	Quite a lot	Quite a lot

Mode

Characteristics	Importance	Status	Active Work
1. The IT leadership understands the importance of the IT organization's ability to adjust quickly to a changing market environment	Very Important	Quite a lot	Quite a lot
2. The IT leadership promotes and rewards change, innovation and organizational learning	Very Important	To a little extent	To a little extent
3. The IT leadership has a clear strategy that is well communicated throughout the organization	Very Important	To a little extent	To a little extent
4. The IT strategy is dynamic and possible to adjust and reformulate in case of changes to the business environment	Very Important	To a little extent, Quite a lot	Quite a lot
5. Ongoing IS/IT investments not in line with the business strategy are stopped or put on hold in spite of already made investments	Very Important	To a little extent	To a little extent
6. The IT leadership drives and manages the shortening of IS/IT project time plans	Important	To a little extent	To a little extent
7. The IT budget can be reassigned any time during a fiscal year	Important	To a little extent	Quite a lot, To a little extent
8. Governance of IS/IT investments is continuously aligned with business governance	Very Important	To a little extent	Quite a lot
9. For outsourcing contracts, the IT leadership focuses a lot on maximizing service flexibility from the outsourcing provider	Very Important	Quite a lot, To a little extent	To a little extent
10. For outsourcing contracts, the IT leadership focuses a lot on controlling the outsourcing provider	Very Important	To a little extent	To a large extent

Management and Leadership - Comments

- *Q10. 10: we control the deliverables, not the supplier.*

- *Communicating strategies (both upwards and downwards and side wise in the organization) is a challenge and can always be improved.*

- *Good questions*

- *I am the only one working with IT in the company so most of the questions are not applicable*

- *Several of these questions are not applicable to our business (e.g. the outsourcing). The answer "Do not know" becomes then a little misleading. Question 1 implies that it is important that an IT organization can change quickly. Perhaps true, but not so good in this kind of survey, if you want a correct answer.*

- *Question 3: I think that the most important thing is that the IT department has a good handle on the IT goals. There is no need to anchor and communicate these goals throughout the organization.*

- *Question 10: Do not think you need to check the provider, but the result.*

- *Question 5, we are working to avoid making wrong investments without being too "cowardly"*

- *Question 6: Shortening of the timetables is not a measure of success. Question 9: Relevant only if it's flexibility we were looking for. Sometimes we want stability and predictability. Question 10: We place great emphasis on collaboration and being flexible with the supplier.*

- *Question 6: do not really know what is meant by "IT management succeed in shortening timelines" We are agile and a project takes the time it takes. In addition we launch things as soon as we have something that works and provides business benefits.*

- *Did not understand question no 10. Is the meaning of "control" something like "slave laborers" or is it to have the opportunity to "review"?. I replied based on the latter*

- *No specific IT leadership*

- *Yes, they are all important -> No, there is no status in IT, IT is low on the status list, unfortunately -> No, no ongoing work to achieve, maintain .... how much did you know of our flexibility, actually…*

- *I have not been here long enough to have a good idea about this area*

- *I think the questions reveal an attitude with you that the ideal world would be "business-IT alignment". I think the ideal situation is for IT to be a fully integrated part of the business. Let's fix the underlying problem and not the symptoms!*

- *I do not feel that there is any IT leadership in our organization. It was a lot of talk about IT / IS at school but at work it does not have the same distinctive role. IT is more some kind of a service provider for business units, not a business developing and driving entity as I was taught at the school.*

- *Very little is outsourced in our municipality, hence a small issue.*

- *New outsourcing partner since one year back, which means that they are not yet up to full speed.*

- *Outsourcing is not an option for us.*

- *The implementation of PM3 introduction has removed the possibility of redistribution of IT budget*

- *Who governs and controls who? Business or IT? Business should govern IT resources, and make prioritization in dialogue with IT.*

- *We are more or less forced to procure things from IT supplier no matter if they are talented and delivers or not.*

- *Again, questions sound more appropriate for larger companies, not small firms.*

3. Organization Structure and Culture - Aggregated Results

Importance: The importance of the characteristics of this dimension for your organization

1.9%	7.2%	35.6%	55.3%
◻ Not Important	▨ Slightly Important	▨ Important	■ Very Important

N	Mean	Std	Median	Mode
208	81.3	15.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

18.5%	36.0%	28.0%	17.5%
◻ Not at all	▨ To a little extent	▨ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
208	47.5	25.6	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

16.6%	33.5%	30.7%	19.2%
◻ Not at all	▨ To a little extent	▨ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
204	50.5	25.7	To a little extent	To a little extent
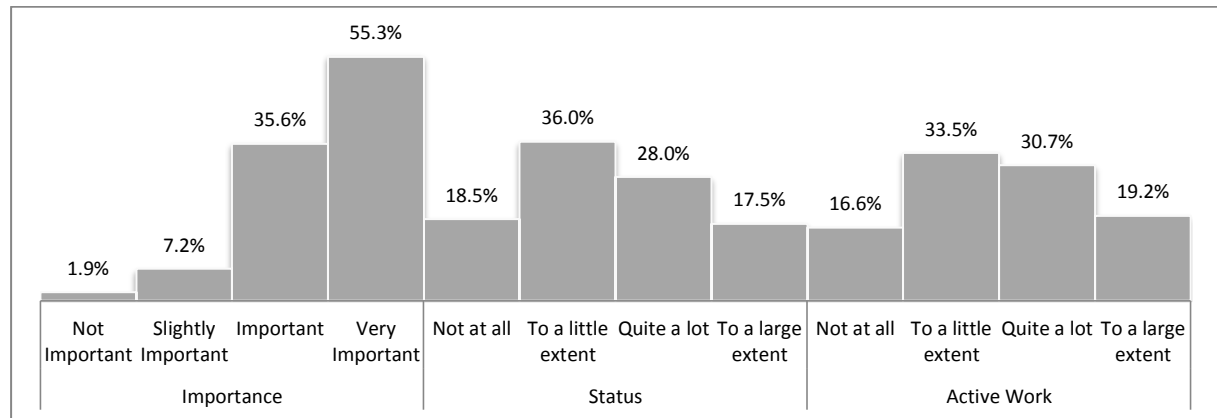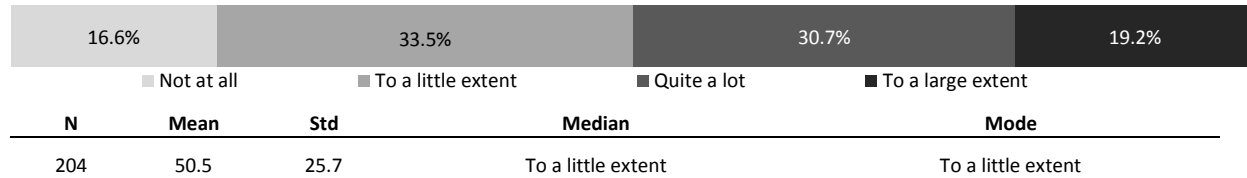
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Organization Structure and Culture – Characteristic No. 1

The IT organization has an open structure and culture where people feel encouraged to be creative and innovative

Importance: The importance of the characteristics of this dimension for your organization

3.4%	26.8%	69.3%
■ Not Important	■ Slightly Important	■ Important ■ Very Important

N	Mean	Std	Median	Mode
205	88.3	19.1	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

12.1%	38.4%	28.8%	20.7%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
198	52.7	31.7	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

11.7%	34.0%	31.0%	23.4%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
197	55.3	32.1	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Organization Structure and Culture – Characteristic No. 2

People working in IT feel empowered to take leadership in decision making and execution of these decisions

Importance: The importance of the characteristics of this dimension for your organization

3.5%	40.7%	55.3%
▪ Not Important	▪ Slightly Important	▪ Important ▪ Very Important

N	Mean	Std	Median	Mode
199	83.6	19.8	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

13.2%	41.3%	24.9%	20.6%
▪ Not at all	▪ To a little extent	▪ Quite a lot	▪ To a large extent

N	Mean	Std	Median	Mode
189	51.0	32.2	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

15.5%	33.2%	29.4%	21.9%
▪ Not at all	▪ To a little extent	▪ Quite a lot	▪ To a large extent

N	Mean	Std	Median	Mode
187	52.6	33.3	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Organization Structure and Culture – Characteristic No. 3

The IT function has a flat organization where decision-making authority is mostly distributed across the organization

Importance: The importance of the characteristics of this dimension for your organization

5.1%	12.2%	43.9%	38.8%
▪ Not Important	▪ Slightly Important	▪ Important	▪ Very Important

N	Mean	Std	Median	Mode
196	72.1	27.7	Important	Important

Status: The existence of the characteristics of this dimension in your organization

26.8%	30.4%	26.3%	16.5%
▪ Not at all	▪ To a little extent	▪ Quite a lot	▪ To a large extent

N	Mean	Std	Median	Mode
194	44.2	34.8	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

23.3%	30.7%	31.2%	14.8%
▪ Not at all	▪ To a little extent	▪ Quite a lot	▪ To a large extent

N	Mean	Std	Median	Mode
189	45.9	33.4	To a little extent	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Organization Structure and Culture – Characteristic No. 4

There is an IT organizational identity that inspires people's mind set and beliefs and guides them in their work

Importance: The importance of the characteristics of this dimension for your organization

2.1%	8.0%	44.7%	45.2%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
188	77.7	23.8	Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

24.6%	38.8%	25.1%	11.5%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
183	41.2	31.7	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

23.7%	36.7%	27.7%	11.9%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
177	42.6	31.9	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

## Organization Structure and Culture – Characteristic No. 5

IT staff have a positive image of their IT organization

Importance: The importance of the characteristics of this dimension for your organization

1.0%	28.3%	70.7%

 Not Important Slightly Important Important Very Important

N	Mean	Std	Median	Mode
205	89.9	16.0	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

14.3%	29.6%	33.2%	23.0%

 Not at all To a little extent Quite a lot To a large extent

N	Mean	Std	Median	Mode
196	54.9	33.0	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

11.6%	30.0%	36.8%	21.6%

 Not at all To a little extent Quite a lot To a large extent

N	Mean	Std	Median	Mode
190	56.1	31.3	Quite a lot	Quite a lot

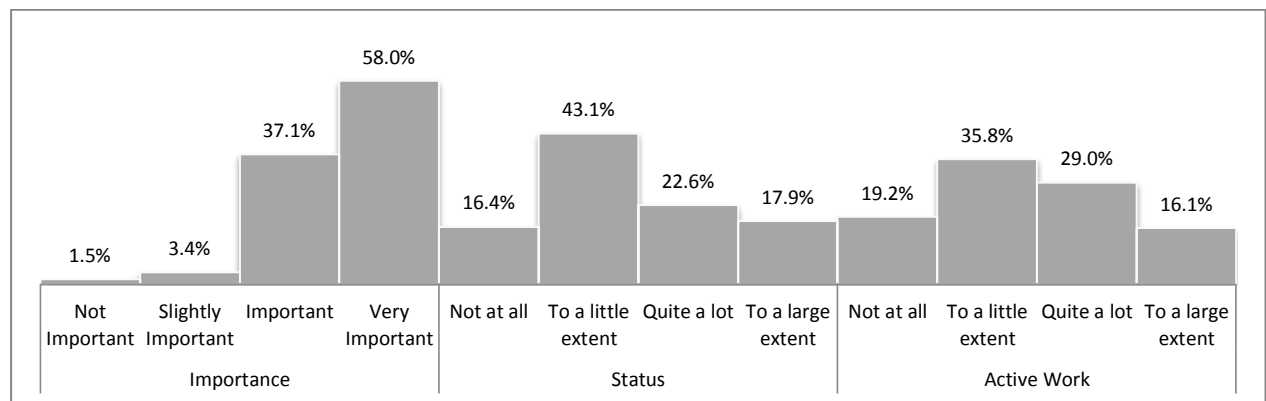**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

Organization Structure and Culture – Characteristic No. 6

IT staff have a shared understanding of what is core and distinctive about their IT organization

Importance: The importance of the characteristics of this dimension for your organization

4.5%	29.6%	64.8%

☐ Not Important   ☐ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
199	86.1	21.0	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

14.8%	30.6%	31.7%	23.0%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
183	54.3	33.2	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

11.7%	29.4%	35.0%	23.9%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

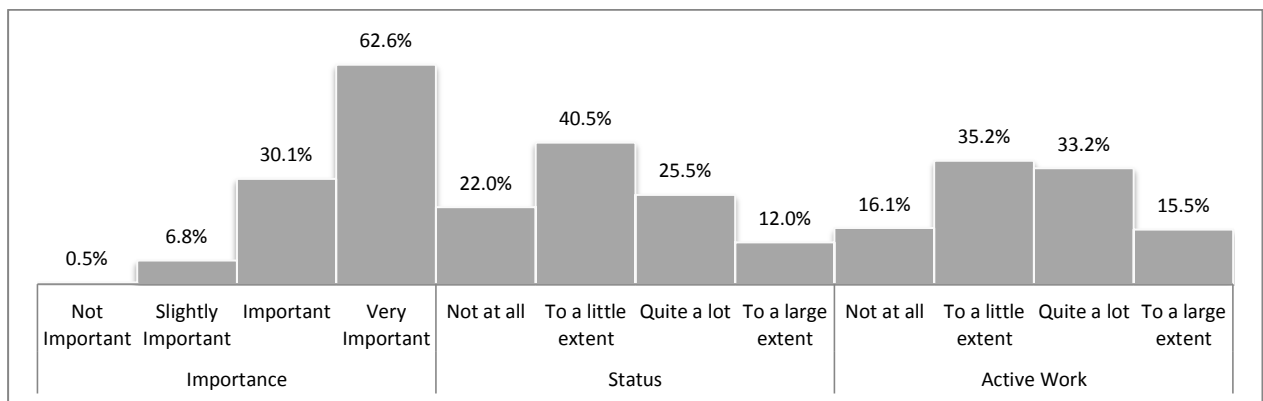| N	Mean	Std	Median	Mode
180	57.0	32.0	Quite a lot	Quite a lot

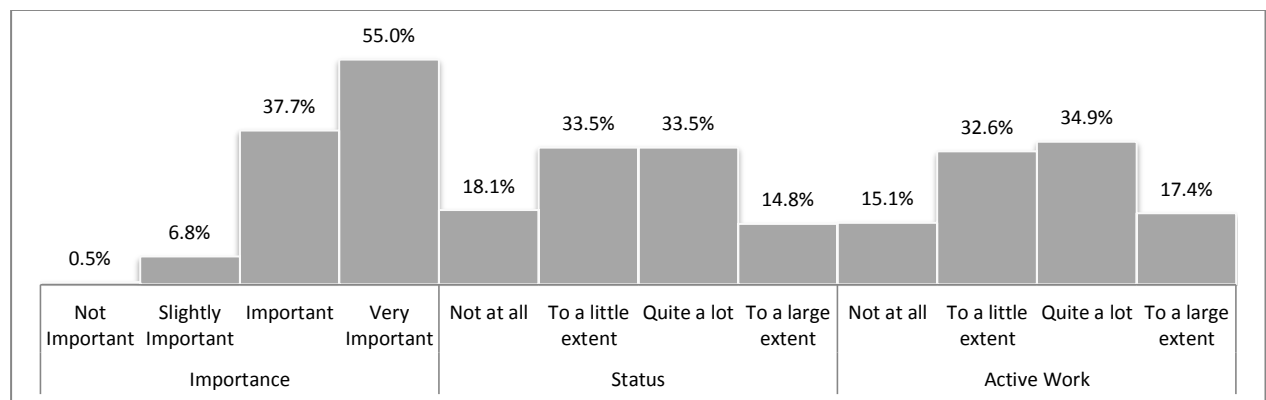**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

Organization Structure and Culture – Characteristic No. 7

The outside world (e.g. other employees, and partners) has a clear and positive view of the IT organization

Importance: The importance of the characteristics of this dimension for your organization

7.5%	31.2%	60.3%

▪ Not Important   ▪ Slightly Important   ▪ Important   ▪ Very Important

N	Mean	Std	Median	Mode
199	83.6	22.7	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

16.8%	35.1%	33.0%	15.2%

▪ Not at all   ▪ To a little extent   ▪ Quite a lot   ▪ To a large extent

N	Mean	Std	Median	Mode
191	48.9	31.5	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

14.1%	31.4%	28.6%	25.9%

▪ Not at all   ▪ To a little extent   ▪ Quite a lot   ▪ To a large extent

N	Mean	Std	Median	Mode
185	55.5	33.8	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Organization Structure and Culture – Characteristic No. 8

The IT function provides efficient and effective knowledge management and learning services, such as good search capabilities, distance learning, online training, and discussion forums for the entire organization

Importance: The importance of the characteristics of this dimension for your organization

4.9%	17.6%	40.5%	37.1%
■ Not Important	■ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
205	69.9	28.6	Important	Important

Status: The existence of the characteristics of this dimension in your organization

25.4%	43.4%	21.5%	9.8%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
205	38.5	30.5	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

21.3%	42.1%	25.9%	10.7%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
197	42.0	30.5	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Organization Structure and Culture - Summary of All Characteristics

Mean

Median

Characteristics	Importance	Status	Active Work
1. The IT organization has an open structure and culture where people feel encouraged to be creative and innovative	Very Important	To a little extent	Quite a lot
2. People working in IT feel empowered to take leadership in decision making and execution of these decisions	Very Important	To a little extent	Quite a lot
3. The IT function has a flat organization where decision-making authority is mostly distributed across the organization	Important	To a little extent	To a little extent
4. There is an IT organizational identity that inspires people's mind set and beliefs and guides them in their work	Important	To a little extent	To a little extent
5. IT staff have a positive image of their IT organization	Very Important	Quite a lot	Quite a lot
6. IT staff have a shared understanding of what is core and distinctive about their IT organization	Very Important	Quite a lot	Quite a lot
7. The outside world (e.g. other employees, and partners) has a clear and positive view of the IT organization	Very Important	To a little extent	Quite a lot
8. The IT function provides efficient and effective knowledge management and learning services, such as good search capabilities, distance learning, online training, and discussion forums for the entire organization	Important	To a little extent	To a little extent

Mode

	Characteristics	Importance	Status	Active Work
1.	The IT organization has an open structure and culture where people feel encouraged to be creative and innovative	Very Important	To a little extent	To a little extent
2.	People working in IT feel empowered to take leadership in decision making and execution of these decisions	Very Important	To a little extent	To a little extent
3.	The IT function has a flat organization where decision-making authority is mostly distributed across the organization	Important	To a little extent	Quite a lot
4.	There is an IT organizational identity that inspires people's mind set and beliefs and guides them in their work	Very Important	To a little extent	To a little extent
5.	IT staff have a positive image of their IT organization	Very Important	Quite a lot	Quite a lot
6.	IT staff have a shared understanding of what is core and distinctive about their IT organization	Very Important	Quite a lot	Quite a lot
7.	The outside world (e.g. other employees, and partners) has a clear and positive view of the IT organization	Very Important	To a little extent	To a little extent
8.	The IT function provides efficient and effective knowledge management and learning services, such as good search capabilities, distance learning, online training, and discussion forums for the entire organization	Important	To a little extent	To a little extent

Organization Structure and Culture - Comments

- *Question no 8: This is not an IT service with our organization, it is delivered by HR*

- *The big problem is a culture of very large projects, programs instead of continuous agile development. Also the projects aim more toward delivering IT support instead of developing business operations as a whole.*

- *I am the only working with IT in the company so most of the questions are not applicable*

- *Several restructuring, outsourcing and downsizing programs in the IT organization has led to a deterioration in working conditions for employees*

- *Question 4: Identity is a strange word, I interpret as "People's perception of the IT organization affected their way of thinking and guides them in their work."*

- *Question 2: I do not understand the question.*

- *Question 4: ???*

- *Question 7: Our main business is not the IS/IT, so this question becomes less relevant for us.*

- *Too many changes over time has resulted in many people losing their motivation and ignoring the initiatives taken by the management. Large variation between different groups; some are engaged and driving and others are negative and passive.*

- *Do not understand what you mean question 4. What is meant by the "Identity" of an organization?*

- *I think it is positive if there is no special status in a certain type of job, because then there will be no territorial mindset and a more open climate, but you seem to think the opposite ... Strange, I think.*

- *I do not see that we have an IT function - an IT security manager is there but that is similar to marketing and other support functions.*

4. People, Skills and Capabilities - Aggregated Results

Importance: The importance of the characteristics of this dimension for your organization

4.0%	11.0%	36.0%	49.0%

☐ Not Important   ☐ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
209	76.8	15.3	Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

9.3%	31.0%	39.4%	20.4%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
207	56.8	19.5	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

14.4%	29.9%	34.7%	21.0%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
204	54.1	21.8	Quite a lot	Quite a lot
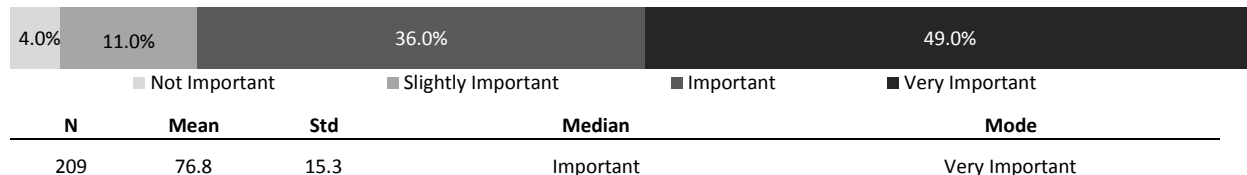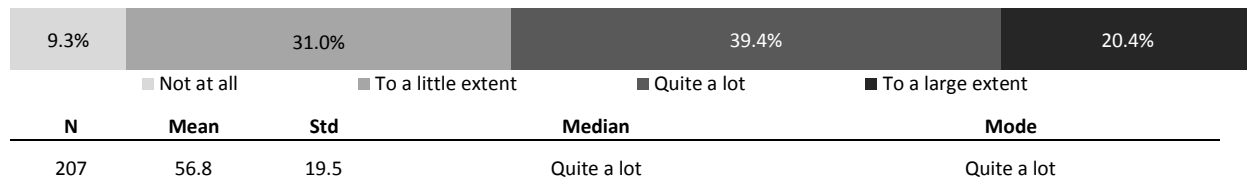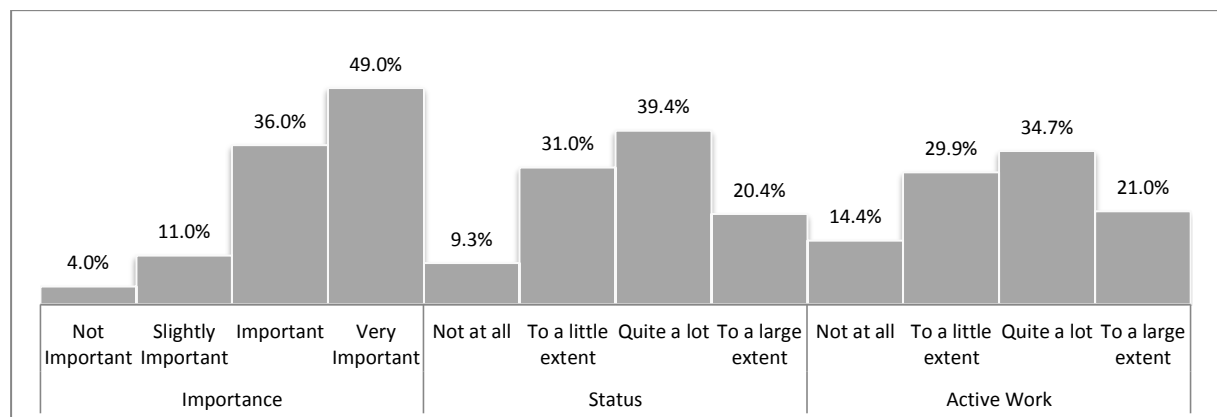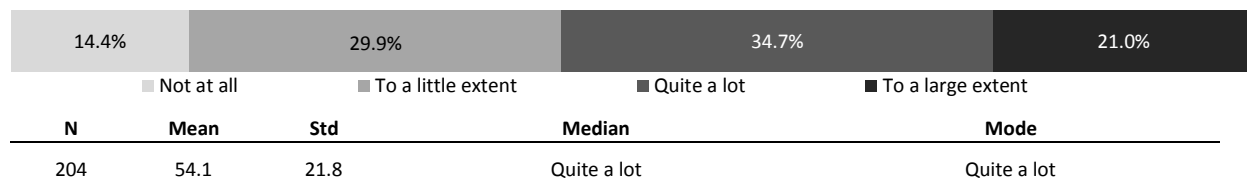
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

People, Skills and Capabilities – Characteristic No. 1

IT staff possesses good skills and competencies related to the business domain, processes, and capabilities

Importance: The importance of the characteristics of this dimension for your organization

1.4%	27.3%	70.8%

Not Important ■ Slightly Important ■ Important ■ Very Important

N	Mean	Std	Median	Mode
209	89.5	17.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

4.0%	22.8%	44.1%	29.2%

Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
202	66.2	27.5	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

5.1%	20.4%	44.4%	30.1%

Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
196	66.5	28.1	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

People, Skills and Capabilities – Characteristic No. 2

IT staff has a good understanding of business strategy, competition and market influences

Importance: The importance of the characteristics of this dimension for your organization

2.0%	11.9%	45.5%	40.6%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
202	74.9	24.6	Important	Important

Status: The existence of the characteristics of this dimension in your organization

9.6%	42.6%	34.6%	13.3%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
188	50.5	28.1	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

11.5%	41.8%	31.3%	15.4%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
182	50.2	29.7	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

People, Skills and Capabilities – Characteristic No. 3

IT staff possesses good relational and social skills such as interpersonal communication and collaboration skills

Importance: The importance of the characteristics of this dimension for your organization

1.9%	28.0%		69.1%

■ Not Important ■ Slightly Important ■ Important ■ Very Important

N	Mean	Std	Median	Mode
207	88.4	19.0	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

2.0%	22.1%	47.1%	28.9%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
204	67.6	25.6	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

9.7%	26.5%	35.7%	28.1%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

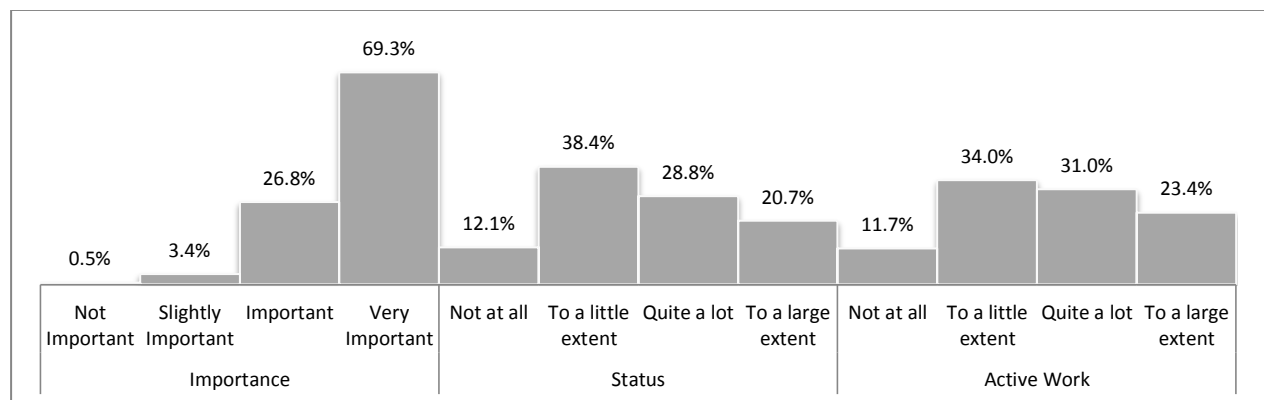| N	Mean	Std	Median	Mode
196	60.7	31.7	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

People, Skills and Capabilities – Characteristic No. 4

IT staff possesses good management skills, such as planning, project management, and change management skills.

Importance: The importance of the characteristics of this dimension for your organization

4.9%	34.6%	59.0%

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
205	83.7	22.0	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

7.5%	30.3%	46.8%	15.4%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
201	56.7	27.3	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

8.2%	27.8%	41.2%	22.7%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

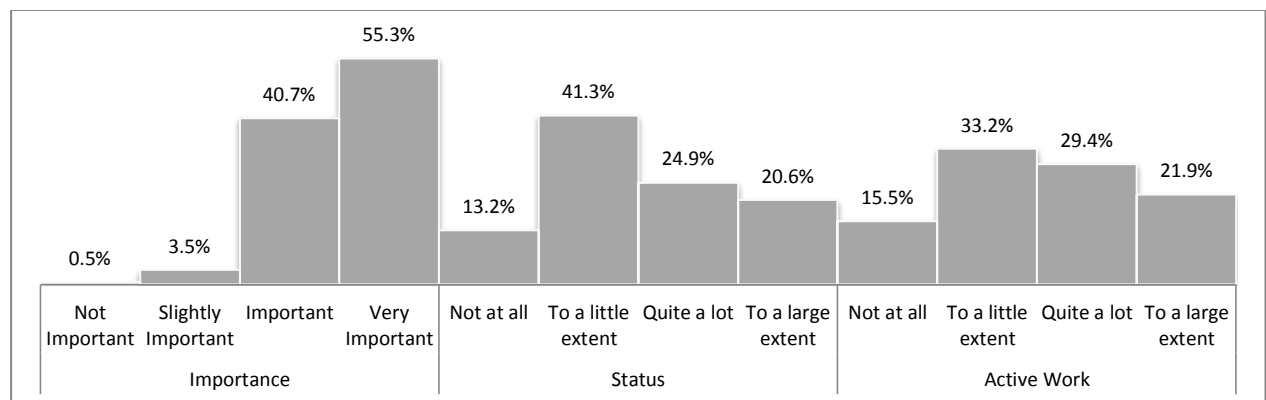| N	Mean	Std	Median	Mode
194	59.5	29.7	Quite a lot	Quite a lot

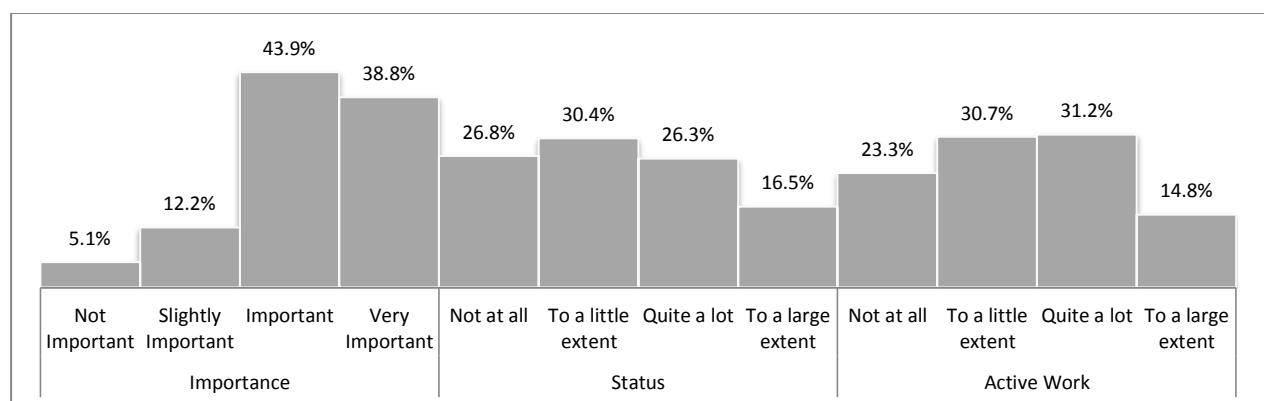**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

People, Skills and Capabilities – Characteristic No. 5

IT staff have in general varied and broad skills and capabilities and are therefore easily re-deployable in times of change

Importance: The importance of the characteristics of this dimension for your organization

3.6%	17.9%	42.6%	35.9%
■ Not Important	■ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
195	70.3	27.4	Important	Important

Status: The existence of the characteristics of this dimension in your organization

8.9%	33.9%	39.6%	17.7%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
192	55.4	29.0	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

17.6%	34.8%	35.8%	11.8%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

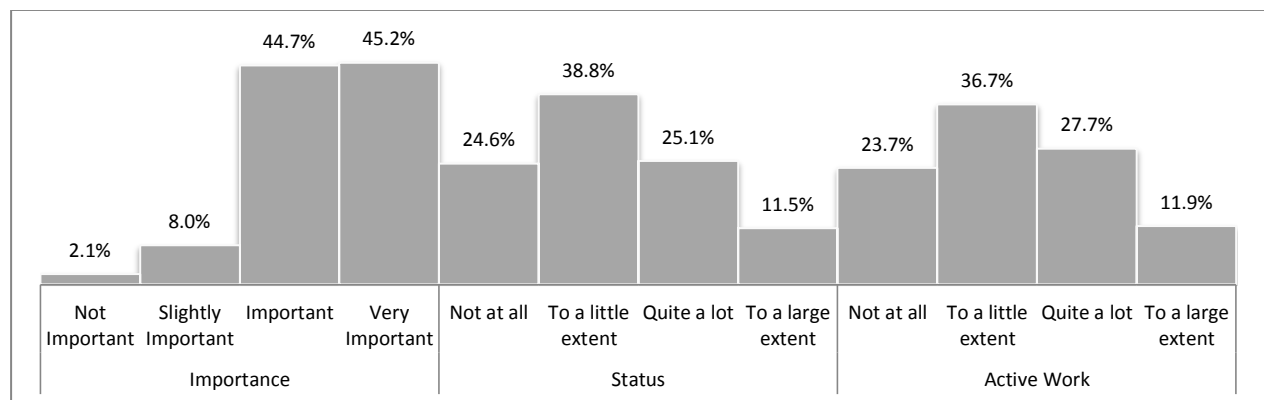| N	Mean	Std	Median	Mode
187	47.2	30.5	To a little extent	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

People, Skills and Capabilities – Characteristic No. 6

The majority of the IT staff would be good candidates for job rotation outside the IT organization

Importance: The importance of the characteristics of this dimension for your organization

20.7%	38.3%	26.9%	14.0%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
193	44.7	32.0	Slightly Important	Slightly Important

Status: The existence of the characteristics of this dimension in your organization

30.4%	38.2%	20.9%	10.5%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
191	37.2	32.0	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

44.9%	31.9%	16.2%	7.0%
Not at all	To a little extent	Quite a lot	To a large extent

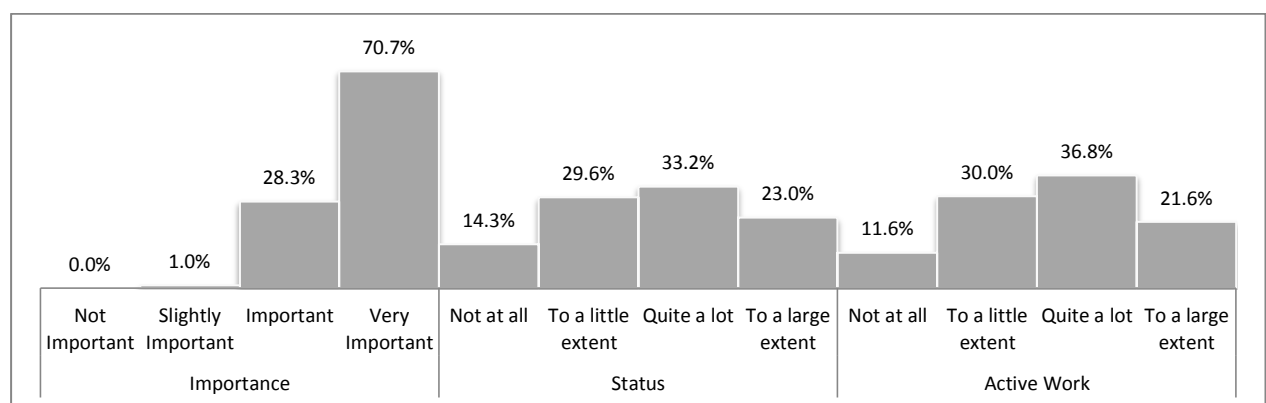| N	Mean	Std	Median	Mode
185	28.5	31.2	To a little extent	Not at all

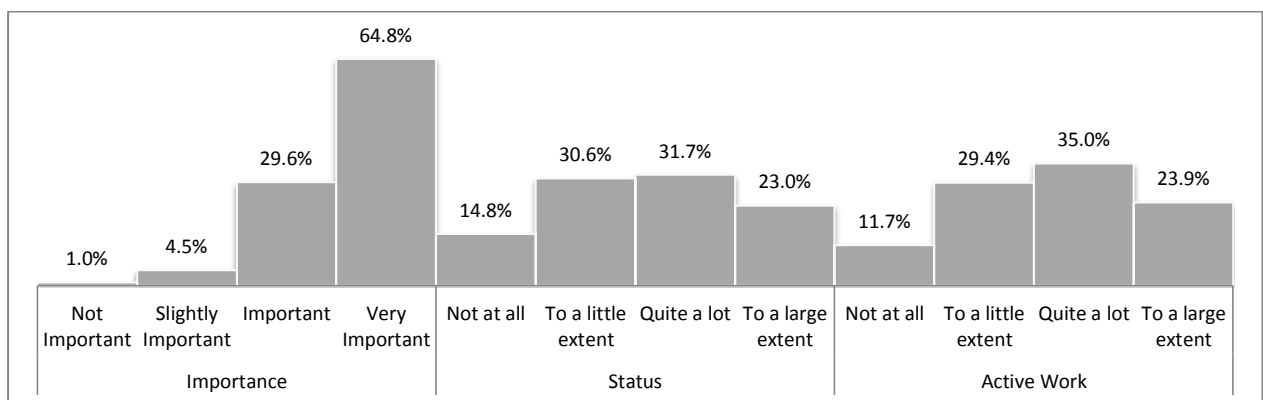**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

People, Skills and Capabilities – Characteristic No. 7

The IT organization effectively utilizes skills and knowledge from external partners

Importance: The importance of the characteristics of this dimension for your organization

5.5%	43.2%	49.7%

☐ Not Important ☐ Slightly Important ☐ Important ☐ Very Important

N	Mean	Std	Median	Mode
199	80.4	22.2	Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

5.7%	33.3%	39.6%	21.4%

☐ Not at all ☐ To a little extent ☐ Quite a lot ☐ To a large extent

N	Mean	Std	Median	Mode
192	58.9	28.4	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

10.3%	32.4%	33.5%	23.8%

☐ Not at all ☐ To a little extent ☐ Quite a lot ☐ To a large extent

N	Mean	Std	Median	Mode
185	56.9	31.5	Quite a lot	Quite a lot

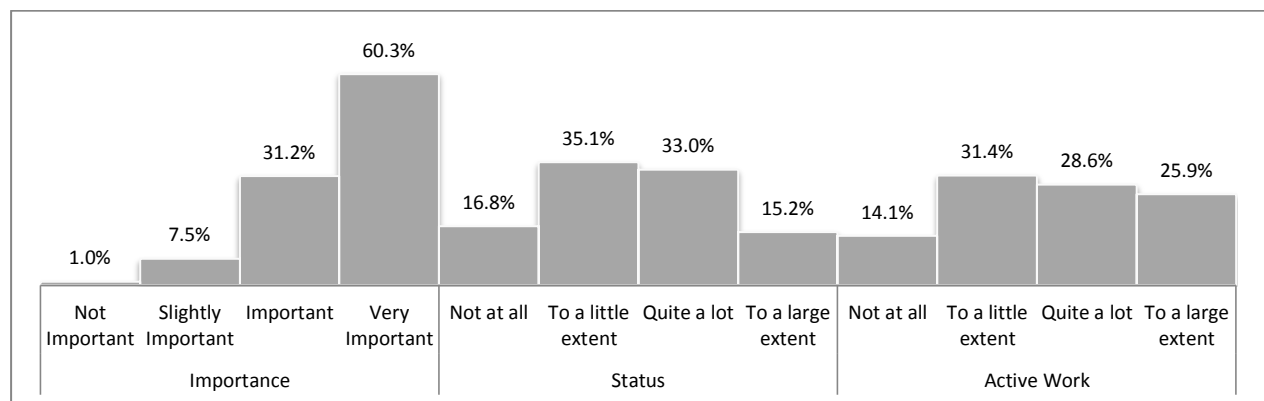**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

People, Skills and Capabilities – Characteristic No. 8

IT staff possesses knowledge about new, innovative, and collaborative ways of working, such as virtual workplace and mobile working

Importance: The importance of the characteristics of this dimension for your organization

2.0%	8.4%	40.4%	49.3%

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
203	79.0	24.1	Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

7.4%	26.1%	40.9%	25.6%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
203	61.6	29.7	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

9.1%	24.9%	38.1%	27.9%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

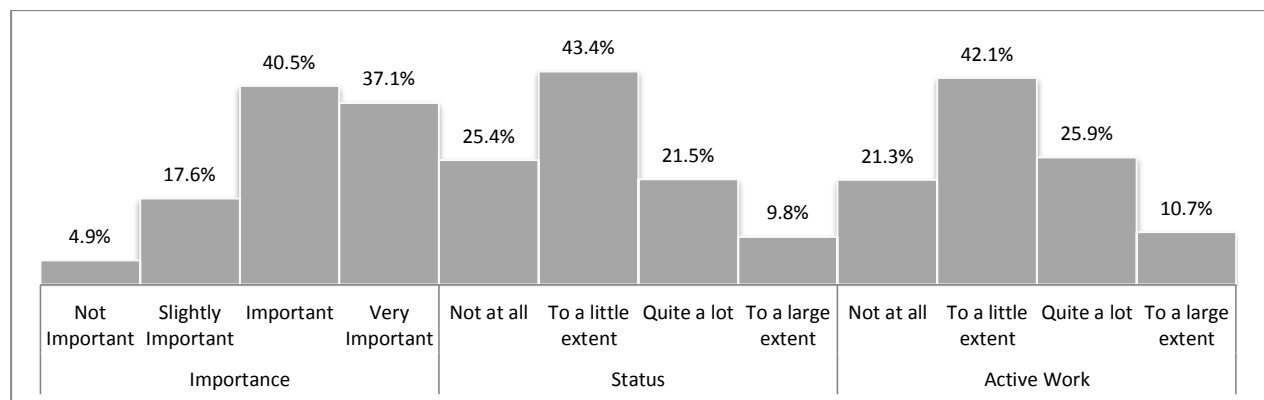| N	Mean	Std	Median	Mode
197	61.6	31.2	Quite a lot	Quite a lot
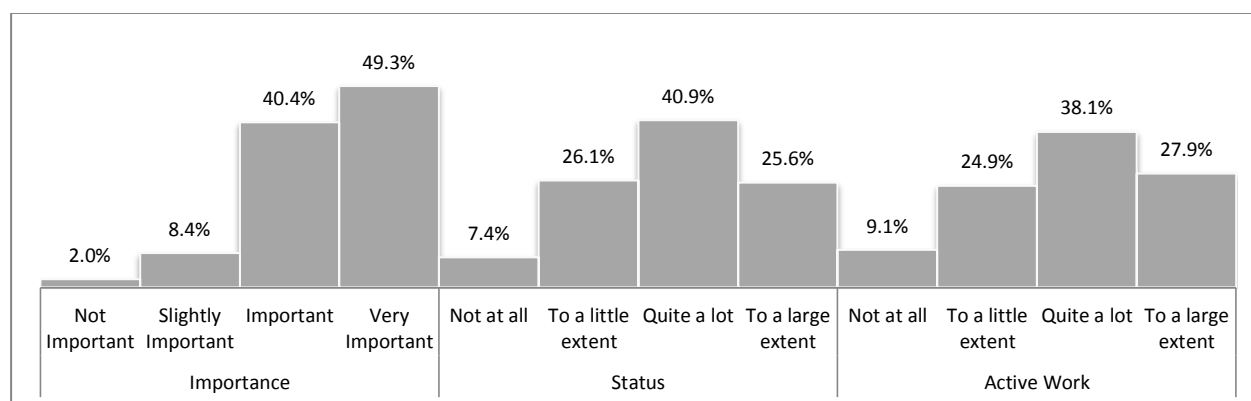
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

People, Skills and Capabilities - Summary of All Characteristics

<u>Mean</u>
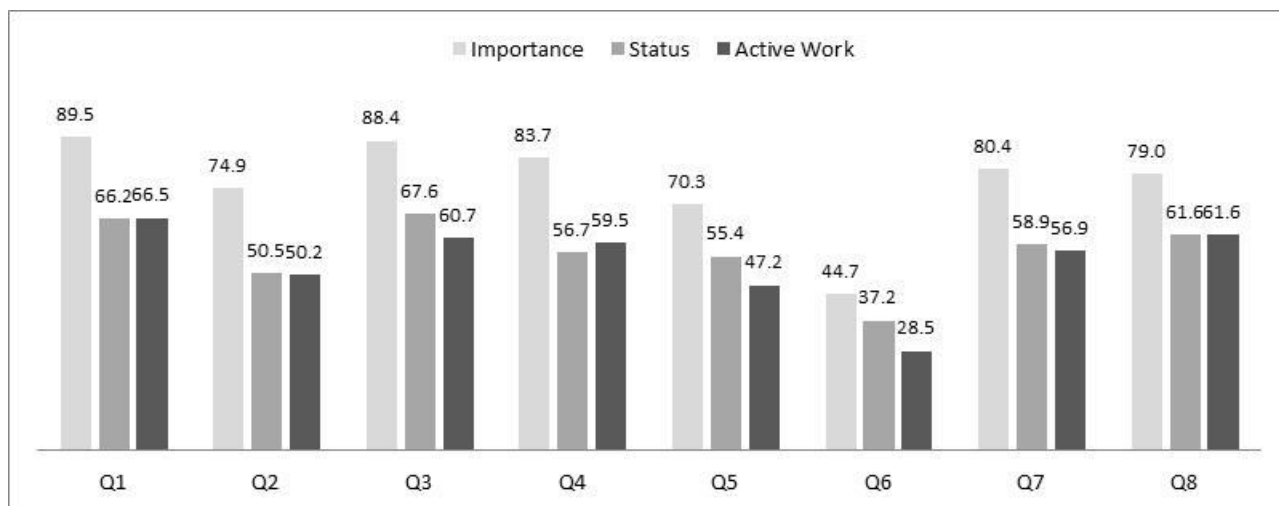
<u>Median</u>

Question	Importance	Status	Active Work
1. IT staff possesses good skills and competencies related to the business domain, processes, and capabilities	Very Important	Quite a lot	Quite a lot
2. IT staff has a good understanding of business strategy, competition and market influences	Important	To a little extent	To a little extent
3. IT staff possesses good relational and social skills such as interpersonal communication and collaboration skills	Very Important	Quite a lot	Quite a lot
4. IT staff possesses good management skills, such as planning, project management, and change management skills.	Very Important	Quite a lot	Quite a lot
5. IT staff have in general varied and broad skills and capabilities and are therefore easily re-deployable in times of change	Important	Quite a lot	To a little extent
6. The majority of the IT staff would be good candidates for job rotation outside the IT organization	Slightly Important	To a little extent	To a little extent
7. The IT organization effectively utilizes skills and knowledge from external partners	Important	Quite a lot	Quite a lot
8. IT staff possesses knowledge about new, innovative, and collaborative ways of working, such as virtual workplace and mobile working	Important	Quite a lot	Quite a lot

Mode

Question	Importance	Status	Active Work
1. IT staff possesses good skills and competencies related to the business domain, processes, and capabilities	Very Important	Quite a lot	Quite a lot
2. IT staff has a good understanding of business strategy, competition and market influences	Important	To a little extent	To a little extent
3. IT staff possesses good relational and social skills such as interpersonal communication and collaboration skills	Very Important	Quite a lot	Quite a lot
4. IT staff possesses good management skills, such as planning, project management, and change management skills.	Very Important	Quite a lot	Quite a lot
5. IT staff have in general varied and broad skills and capabilities and are therefore easily re-deployable in times of change	Important	Quite a lot	To a little extent
6. The majority of the IT staff would be good candidates for job rotation outside the IT organization	Slightly Important	To a little extent	To a little extent
7. The IT organization effectively utilizes skills and knowledge from external partners	Important	Quite a lot	Quite a lot
8. IT staff possesses knowledge about new, innovative, and collaborative ways of working, such as virtual workplace and mobile working	Important	Quite a lot	Quite a lot

People, Skills and Capabilities - Comments

- *We do not have a dedicated IT department as we consultants working with customers in different assignments. Therefore it is not an issue with the redeployment of staff when they do not have specific IT tasks internally. They might be brought in into customer projects if they do not have internal stuff to work with.*

- *Question 3: We have no problem with this and we are therefore not working actively on it. It is very much about people's personalities so it is part of the recruitment process, not a continuous work.*

- *Question 7: Are there any competent and knowledgeable external partners?*

- *In our organization, we try to promote agile / lean but we don't seem to understand that it is not about top-down governance and waterfalls methods. Results: We introduce things on surface with lots of ceremonies, but no real change.*

- *Our helpdesk is operating from abroad*

5. IT Infrastructure and Standards - Aggregated Results

Importance: The importance of the characteristics of this dimension for your organization

2.4%	9.6%	36.2%	51.9%

☐ Not Important ☐ Slightly Important ■ Important ■ Very Important

N	Mean	Std	Median	Mode
207	79.0	15.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

10.9%	29.4%	34.9%	24.8%

☐ Not at all ☐ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
207	57.6	19.8	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

10.1%	24.3%	35.7%	29.9%

☐ Not at all ☐ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
202	61.2	21.2	Quite a lot	Quite a lot
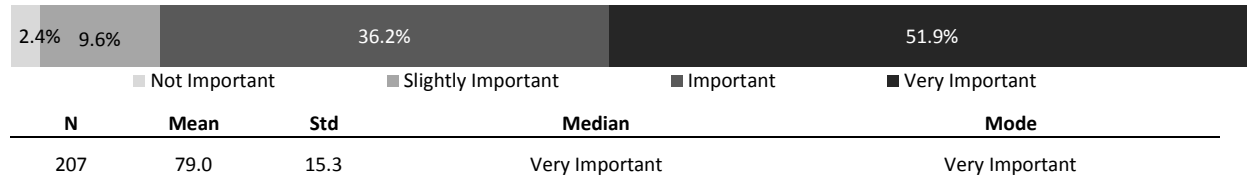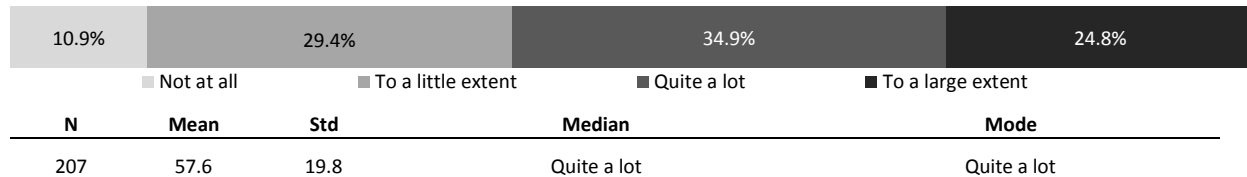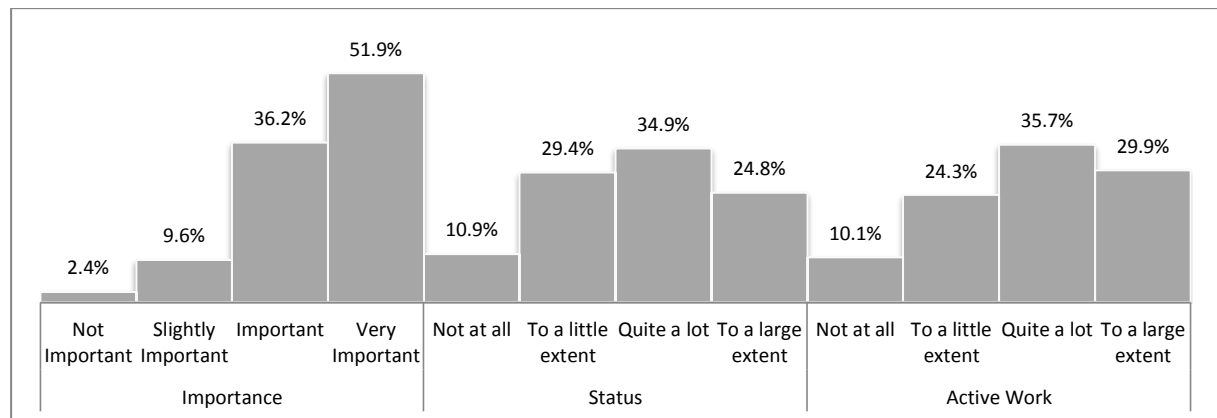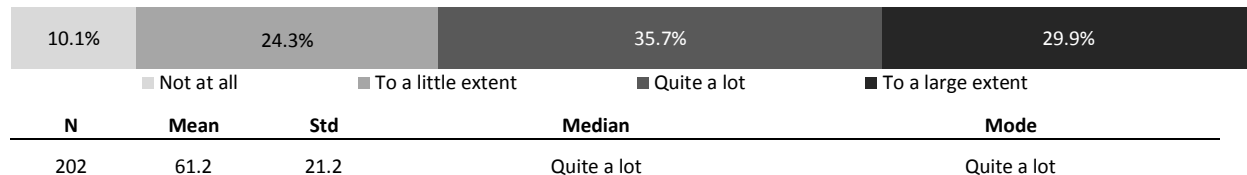
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT Infrastructure and Standards – Characteristic No. 1

The IT function provides reliable and extensive firm-wide IT infrastructure services (hardware, software and people capabilities)

Importance: The importance of the characteristics of this dimension for your organization

| 1.0% | 21.5% | 77.1% |

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
205	91.7	16.2	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

| 1.5% | 13.2% | 38.0% | 47.3% |

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
205	77.1	25.1	Quite a lot	To a large extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

| 2.0% | 10.7% | 38.6% | 48.7% |

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

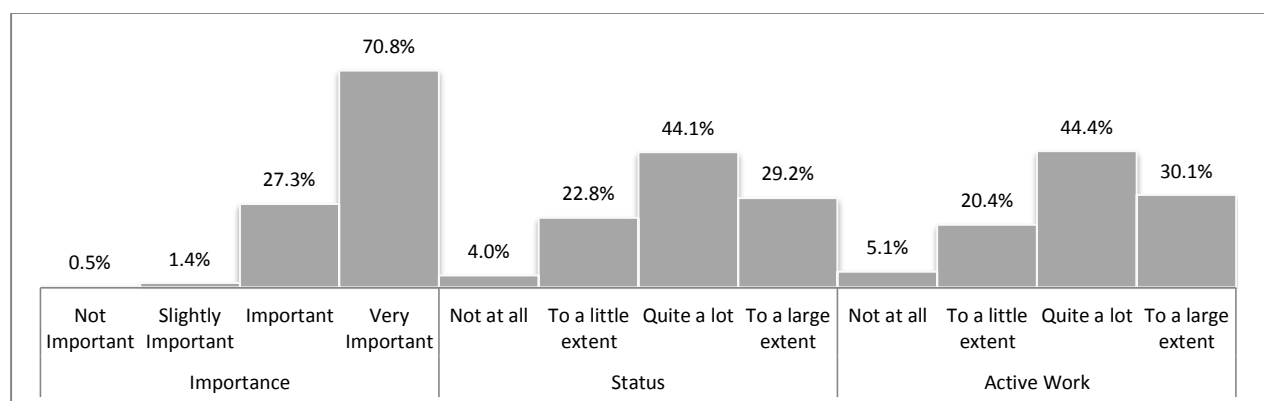| N	Mean	Std	Median	Mode
197	78.0	25.0	Quite a lot	To a large extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT Infrastructure and Standards – Characteristic No. 2

Adding new system or information capability can relatively easily be accommodated within existing IT infrastructure

Importance: The importance of the characteristics of this dimension for your organization

10.3%	36.5%	52.2%

Not Important | Slightly Important | Important | Very Important

N	Mean	Std	Median	Mode
203	80.0	23.8	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

6.1%	27.8%	35.9%	30.3%

Not at all | To a little extent | Quite a lot | To a large extent

N	Mean	Std	Median	Mode
198	63.5	30.2	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

5.8%	19.5%	40.5%	34.2%

Not at all | To a little extent | Quite a lot | To a large extent

N	Mean	Std	Median	Mode
190	67.7	29.3	Quite a lot	Quite a lot

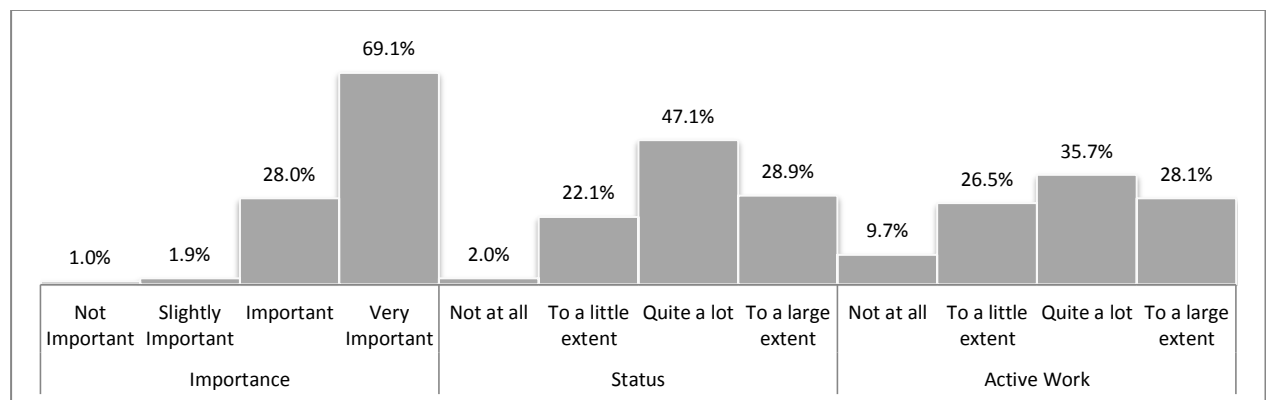**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

IT Infrastructure and Standards – Characteristic No. 3

The IT infrastructure is characterized by a high degree of standardization and modularity

Importance: The importance of the characteristics of this dimension for your organization

6.6%	39.4%	53.0%

☐ Not Important   ☐ Slightly Important   ☐ Important   ■ Very Important

N	Mean	Std	Median	Mode
198	81.5	22.1	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

6.6%	25.4%	43.1%	24.9%

☐ Not at all   ☐ To a little extent   ☐ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
197	62.1	28.9	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

3.7%	17.8%	40.3%	38.2%

☐ Not at all   ☐ To a little extent   ☐ Quite a lot   ■ To a large extent

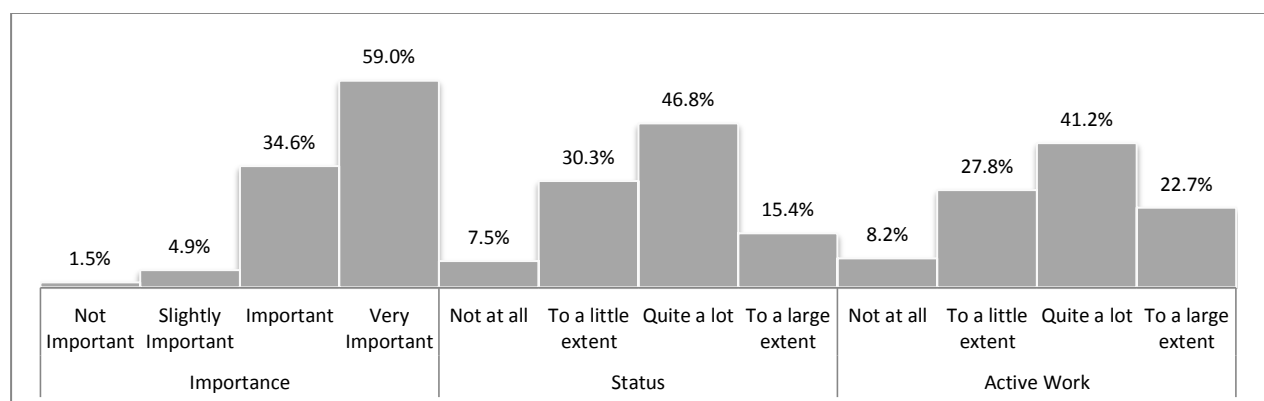| N	Mean	Std	Median	Mode
191	71.0	27.8	Quite a lot	Quite a lot

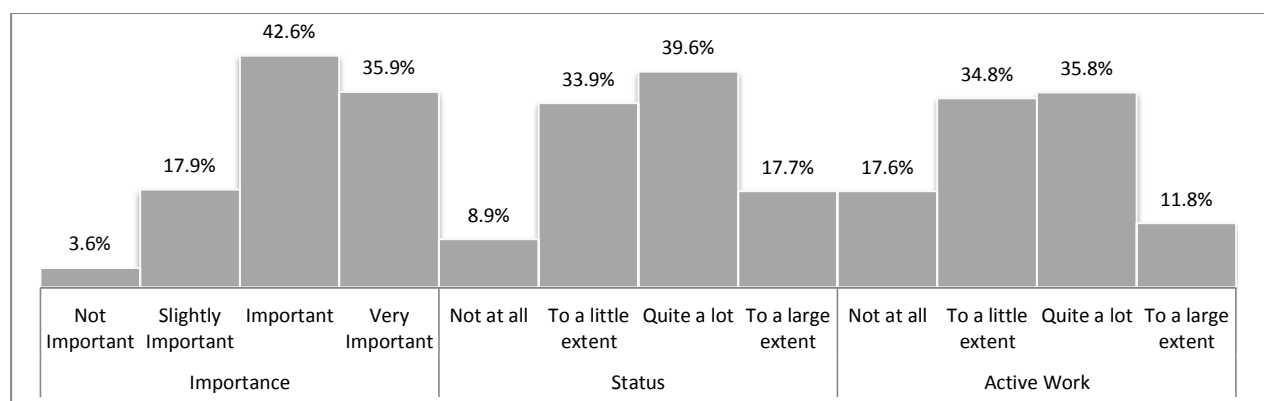**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

IT Infrastructure and Standards – Characteristic No. 4

It is reasonably easy to connect and disconnect IS/IT capabilities with the external world (e.g. email system, information systems, information resources, etc.)

Importance: The importance of the characteristics of this dimension for your organization

1.1%	12.3%	38.0%	48.7%
■ Not Important	■ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
187	78.1	24.5	Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

9.1%	30.9%	38.3%	21.7%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
175	57.5	30.2	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

7.2%	25.7%	42.5%	24.6%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
167	61.5	29.3	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT Infrastructure and Standards – Characteristic No. 5

The IT function provides a wide range of basic education and training services related to firm-wide IS/IT capabilities

Importance: The importance of the characteristics of this dimension for your organization

9.0%	22.0%	42.5%	26.5%
▪ Not Important	▪ Slightly Important	▪ Important	▪ Very Important

N	Mean	Std	Median	Mode
200	62.2	30.4	Important	Important

Status: The existence of the characteristics of this dimension in your organization

26.9%	39.1%	24.4%	9.6%
▪ Not at all	▪ To a little extent	▪ Quite a lot	▪ To a large extent

N	Mean	Std	Median	Mode
197	38.9	31.2	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

25.3%	38.4%	23.7%	12.6%
▪ Not at all	▪ To a little extent	▪ Quite a lot	▪ To a large extent

N	Mean	Std	Median	Mode
190	41.2	32.4	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

## IT Infrastructure and Standards – Characteristic No. 6

Business executives regard IT infrastructure as an asset that can create business value

Importance: The importance of the characteristics of this dimension for your organization

5.6%	40.0%	52.8%

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
195	81.4	22.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

15.9%	41.3%	29.6%	13.2%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
189	46.7	30.3	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

17.0%	34.6%	29.1%	19.2%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
182	50.2	33.0	To a little extent	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IT Infrastructure and Standards - Summary of All Characteristics

Mean

Median

Characteristics	Importance	Status	Active Work
1. The IT function provides reliable and extensive firm-wide IT infrastructure services (hardware, software and people capabilities)	Very Important	Quite a lot	Quite a lot
2. Adding new system or information capability can relatively easily be accommodated within existing IT infrastructure	Very Important	Quite a lot	Quite a lot
3. The IT infrastructure is characterized by a high degree of standardization and modularity	Very Important	Quite a lot	Quite a lot
4. It is reasonably easy to connect and disconnect IS/IT capabilities with the external world (e.g. email system, information systems, information resources, etc.)	Important	Quite a lot	Quite a lot
5. The IT function provides a wide range of basic education and training services related to firm-wide IS/IT capabilities	Important	To a little extent	To a little extent
6. Business executives regard IT infrastructure as an asset that can create business value	Very Important	To a little extent	To a little extent

Mode

Characteristics	Importance	Status	Active Work
1. The IT function provides reliable and extensive firm-wide IT infrastructure services (hardware, software and people capabilities)	Very Important	To a large extent	To a large extent
2. Adding new system or information capability can relatively easily be accommodated within existing IT infrastructure	Very Important	Quite a lot	Quite a lot
3. The IT infrastructure is characterized by a high degree of standardization and modularity	Very Important	Quite a lot	Quite a lot
4. It is reasonably easy to connect and disconnect IS/IT capabilities with the external world (e.g. email system, information systems, information resources, etc.)	Very Important	Quite a lot	Quite a lot
5. The IT function provides a wide range of basic education and training services related to firm-wide IS/IT capabilities	Important	To a little extent	To a little extent
6. Business executives regard IT infrastructure as an asset that can create business value	Very Important	To a little extent	To a little extent

IT Infrastructure and Standards - Comments

- *All IT infrastructure is IaaS, PaaS, or SaaS*

- *These questions are more applicable for large companies*

- *Operation and maintenance is outsourced with poor service and inefficiency. Integration is built only from a technical point of view, there is no understanding that integration is all about business.*

- *Don't understand question no 1.*

- *Question 2: I believe that IT should own all systems that the organization. On the other hand, catering for all new system owners in the organization is not reasonable either. It is a question that must solves when it is time to introduce a new system.*

- *Question 5: I believe it is the responsibility of the business to provide training for how systems should be used. IT should stand for support, development and maintenance.*

- *I don't understand question no 4.*

- *HR manages training and education*

- *IT security has higher priority than perceived user benefit.*

- *I give up. I do not understand this questionnaire. At the same time, I think it is important that you get this message so I will complete it*

- *As I mentioned before, one gets easily the perception that IT is the solution, but in most cases IT is just a vehicle towards the goal.*

6. IS Development and Delivery - Aggregated Results

Importance: The importance of the characteristics of this dimension for your organization

1.8%	6.7%	34.4%	57.0%
■ Not Important	■ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
208	82.1	17.0	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

13.0%	35.7%	33.3%	18.0%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
206	52.0	23.4	Quite a lot	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

10.7%	30.4%	35.0%	23.9%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
203	57.6	24.4	Quite a lot	Quite a lot
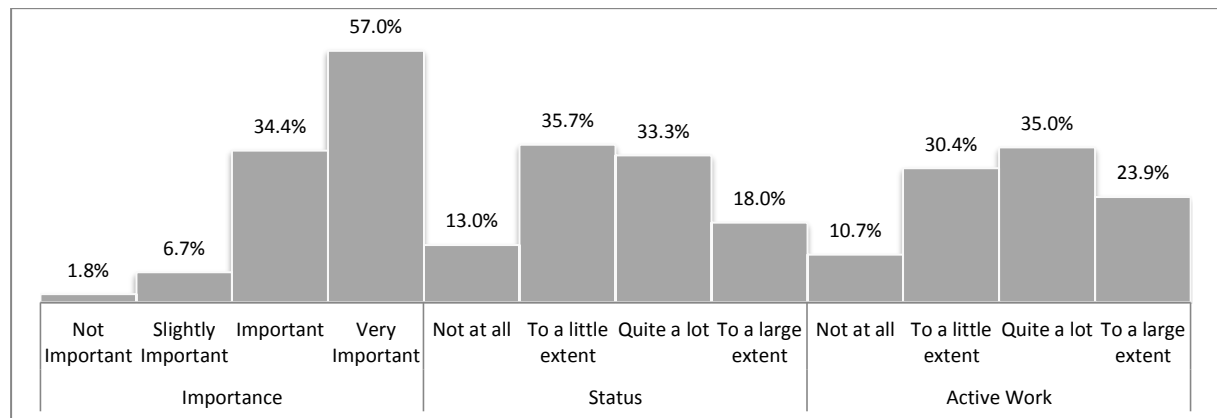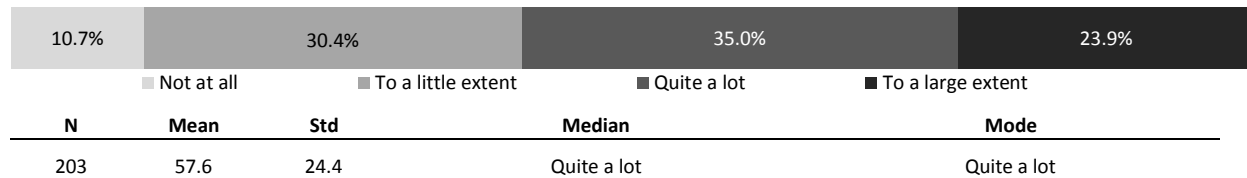
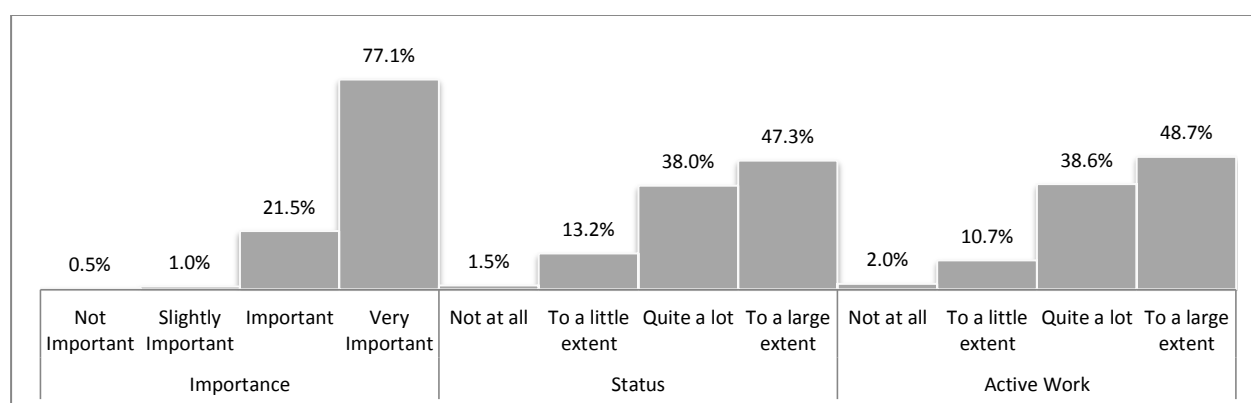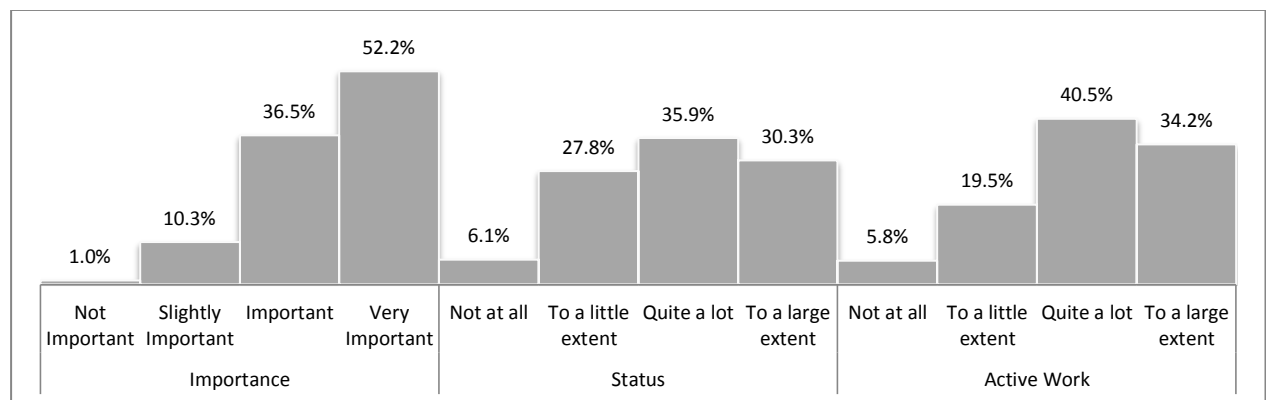**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

IS Development and Delivery – Characteristic No. 1

The IT organization has the capability to rapidly deliver and implement systems that satisfy current and emerging business needs

Importance: The importance of the characteristics of this dimension for your organization

5.3%	31.1%	62.1%
■ Not Important	■ Slightly Important	■ Important ■ Very Important

N	Mean	Std	Median	Mode
206	84.6	22.2	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

12.9%	42.6%	33.2%	11.4%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
202	47.7	28.6	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

6.5%	32.7%	38.7%	22.1%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

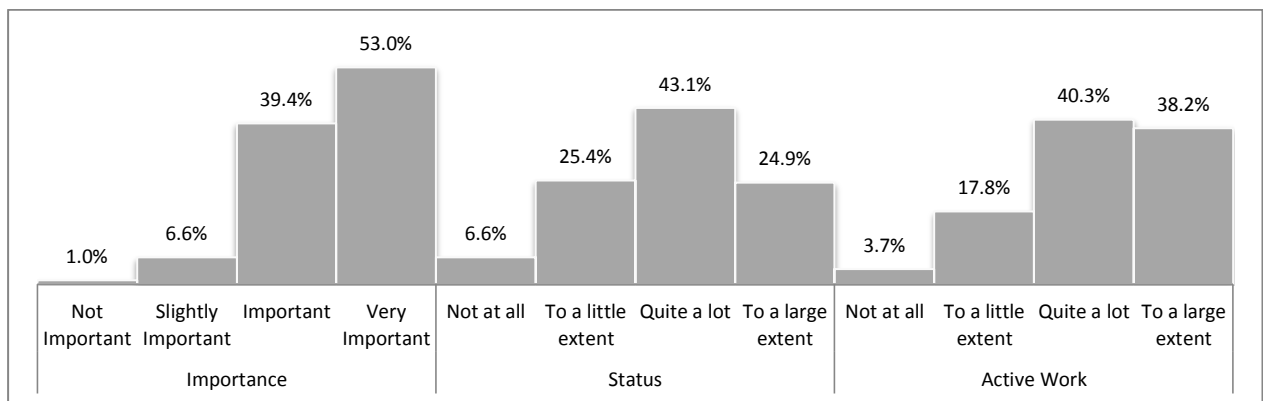| N	Mean	Std	Median	Mode
199	58.8	29.0	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IS Development and Delivery – Characteristic No. 2

New systems are delivered through very close collaboration between IT and business customers

Importance: The importance of the characteristics of this dimension for your organization

3.4%	27.1%		69.5%	

Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
203	88.7	18.1	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

6.1%	29.8%	35.9%	28.3%

Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
198	62.1	30.0	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

5.1%	25.0%	35.2%	34.7%

Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
196	66.5	29.9	Quite a lot	Quite a lot

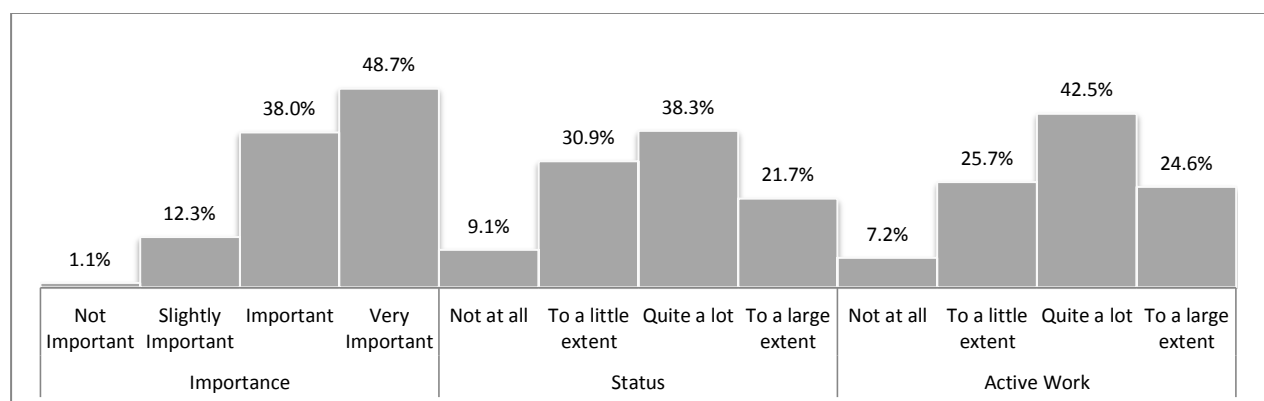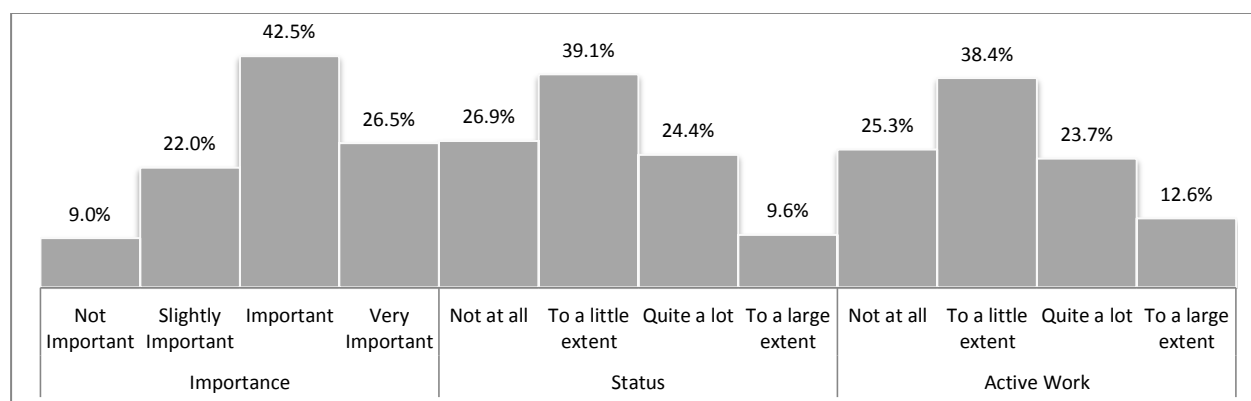**Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work**

IS Development and Delivery – Characteristic No. 3

The IT organization has flexible IS delivery teams and methods that can adapt to changing business circumstances

Importance: The importance of the characteristics of this dimension for your organization

2.6%	4.6%	39.0%	53.8%

Not Important ▪ Slightly Important ▪ Important ▪ Very Important

N	Mean	Std	Median	Mode
195	81.4	23.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

17.0%	36.2%	32.4%	14.4%

Not at all ▪ To a little extent ▪ Quite a lot ▪ To a large extent

N	Mean	Std	Median	Mode
188	48.0	31.3	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

13.6%	32.1%	36.4%	17.9%

Not at all ▪ To a little extent ▪ Quite a lot ▪ To a large extent

N	Mean	Std	Median	Mode
184	52.9	31.2	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

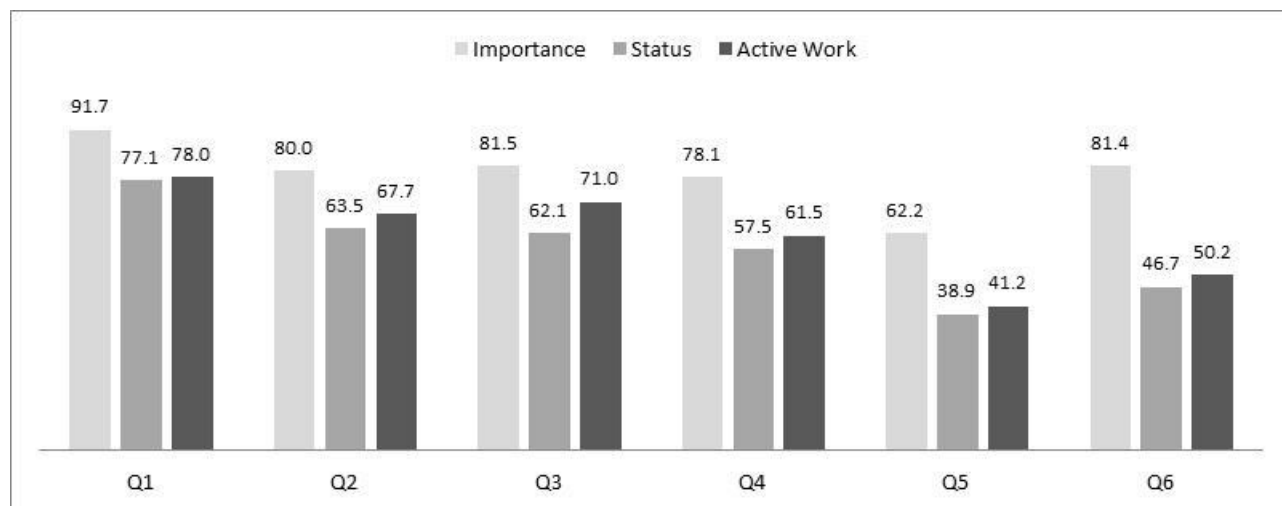## IS Development and Delivery – Characteristic No. 4

The IT organization has flexible IS delivery teams and methods that can adapt to rapid technology changes

Importance: The importance of the characteristics of this dimension for your organization

2.1%	5.6%	39.5%	52.8%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
195	81.0	23.2	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

16.5%	36.7%	32.4%	14.4%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
188	48.2	31.1	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

13.6%	34.2%	32.6%	19.6%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
184	52.7	31.8	Quite a lot	To a little extent
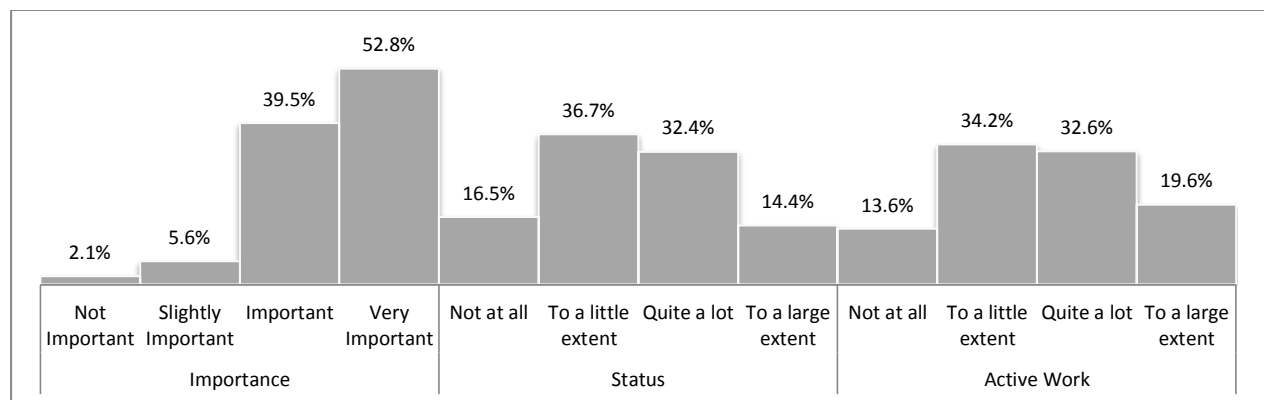
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IS Development and Delivery – Characteristic No. 5

The IT organization uses flexible IS delivery teams and methods that can alleviate rigid formal controls whilst maintaining quality

Importance: The importance of the characteristics of this dimension for your organization

3.9%	14.6%	33.7%	47.8%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
178	75.1	28.3	Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

14.5%	37.8%	33.7%	14.0%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
172	49.0	30.3	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

14.0%	36.3%	31.0%	18.7%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
171	51.5	31.8	To a little extent	To a little extent
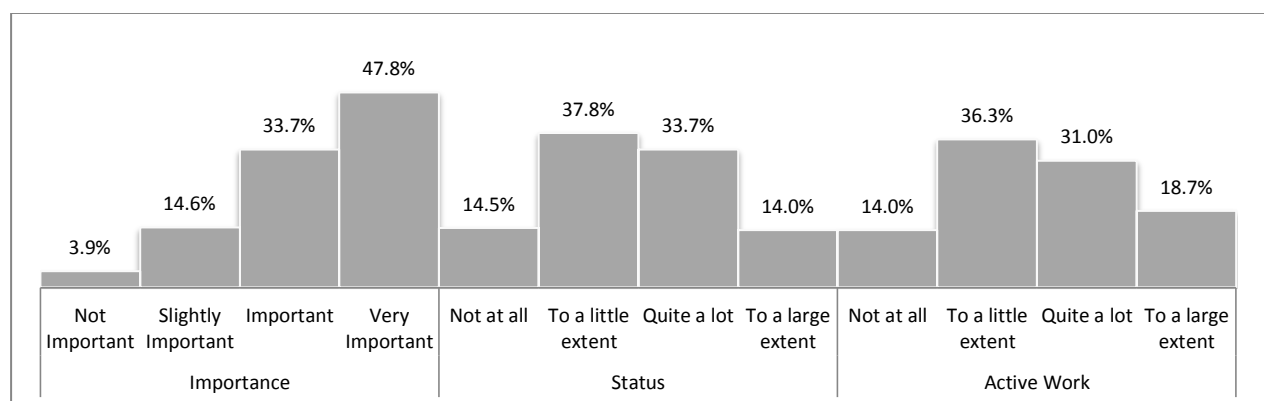
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IS Development and Delivery – Characteristic No. 6

The IT organization uses project management frameworks that can deliver in an incremental manner

Importance: The importance of the characteristics of this dimension for your organization

2.1%	9.3%	35.6%	53.1%

☐ Not Important ☐ Slightly Important ■ Important ■ Very Important

N	Mean	Std	Median	Mode
194	79.9	24.8	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

10.5%	31.9%	33.0%	24.6%

☐ Not at all ☐ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
191	57.2	31.8	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

10.2%	25.3%	37.1%	27.4%

☐ Not at all ☐ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
186	60.6	31.7	Quite a lot	Quite a lot
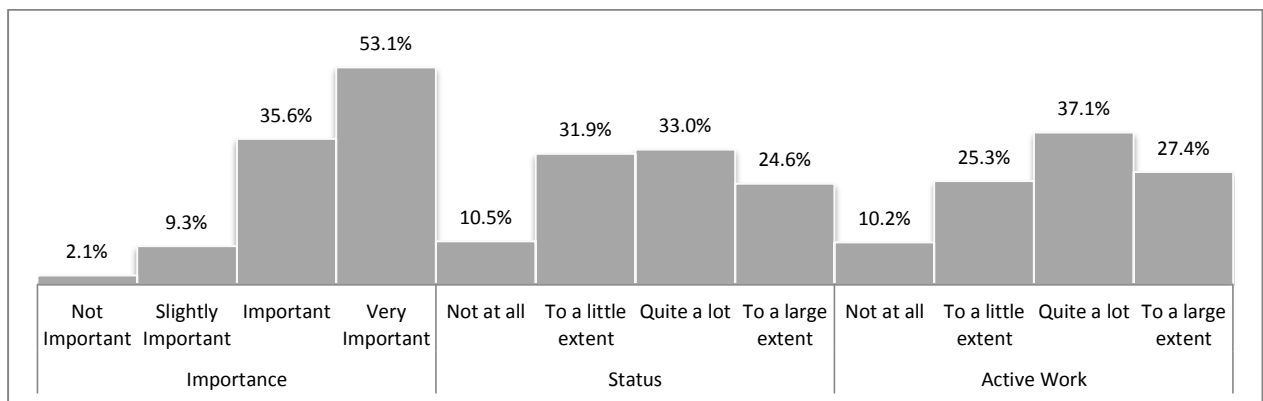
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IS Development and Delivery – Characteristic No. 7

Long IS/IT projects are usually broken down to phases resulting in deliverables within months rather than years

Importance: The importance of the characteristics of this dimension for your organization

5.1%	35.4%	58.5%
■ Not Important	■ Slightly Important	■ Important ■ Very Important

N	Mean	Std	Median	Mode
195	83.8	21.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

14.1%	34.9%	32.3%	18.8%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent
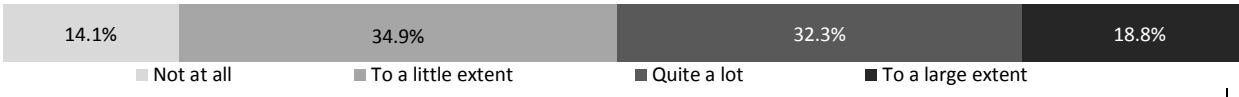
N	Mean	Std	Median	Mode
192	51.9	31.8	Quite a lot	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

12.8%	27.8%	33.7%	25.7%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

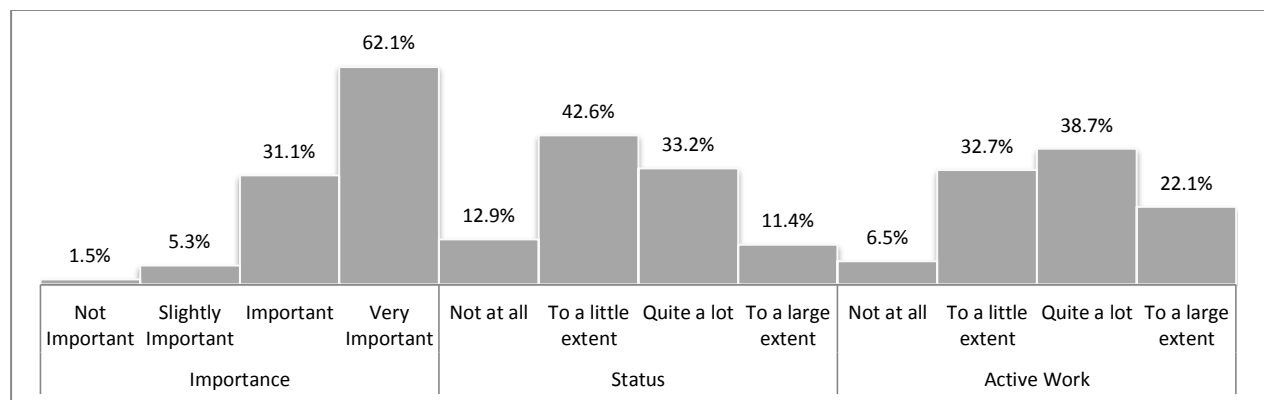| N	Mean	Std	Median	Mode
187	57.4	32.9	Quite a lot	Quite a lot
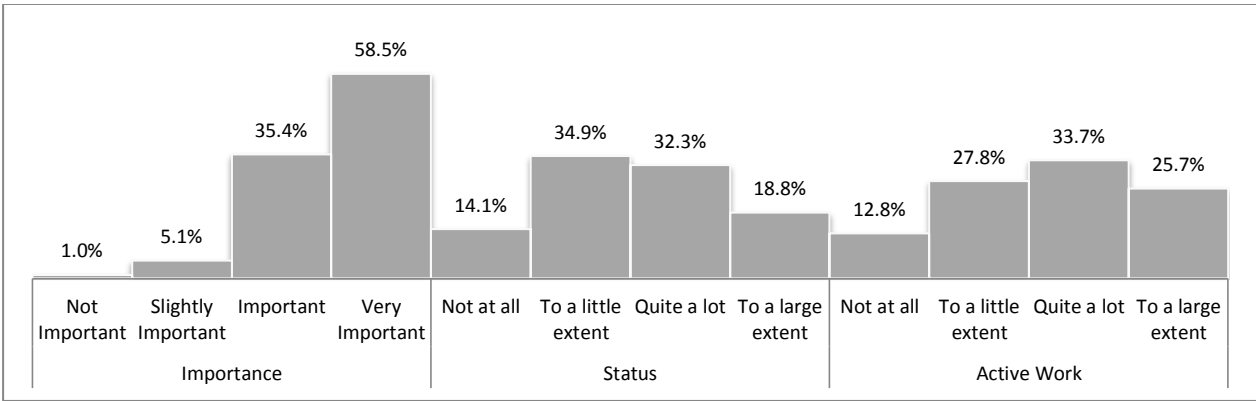
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

IS Development and Delivery - Summary of All Characteristics

Mean

Median

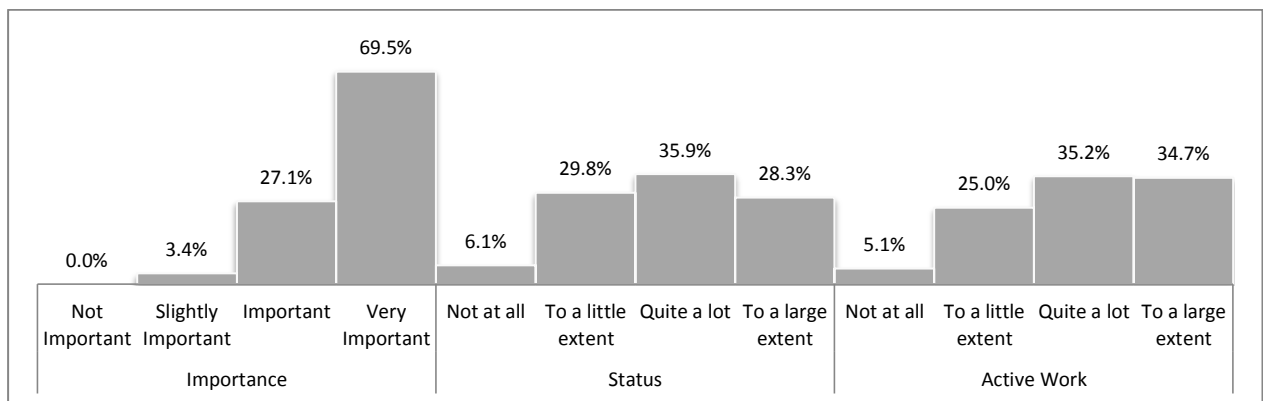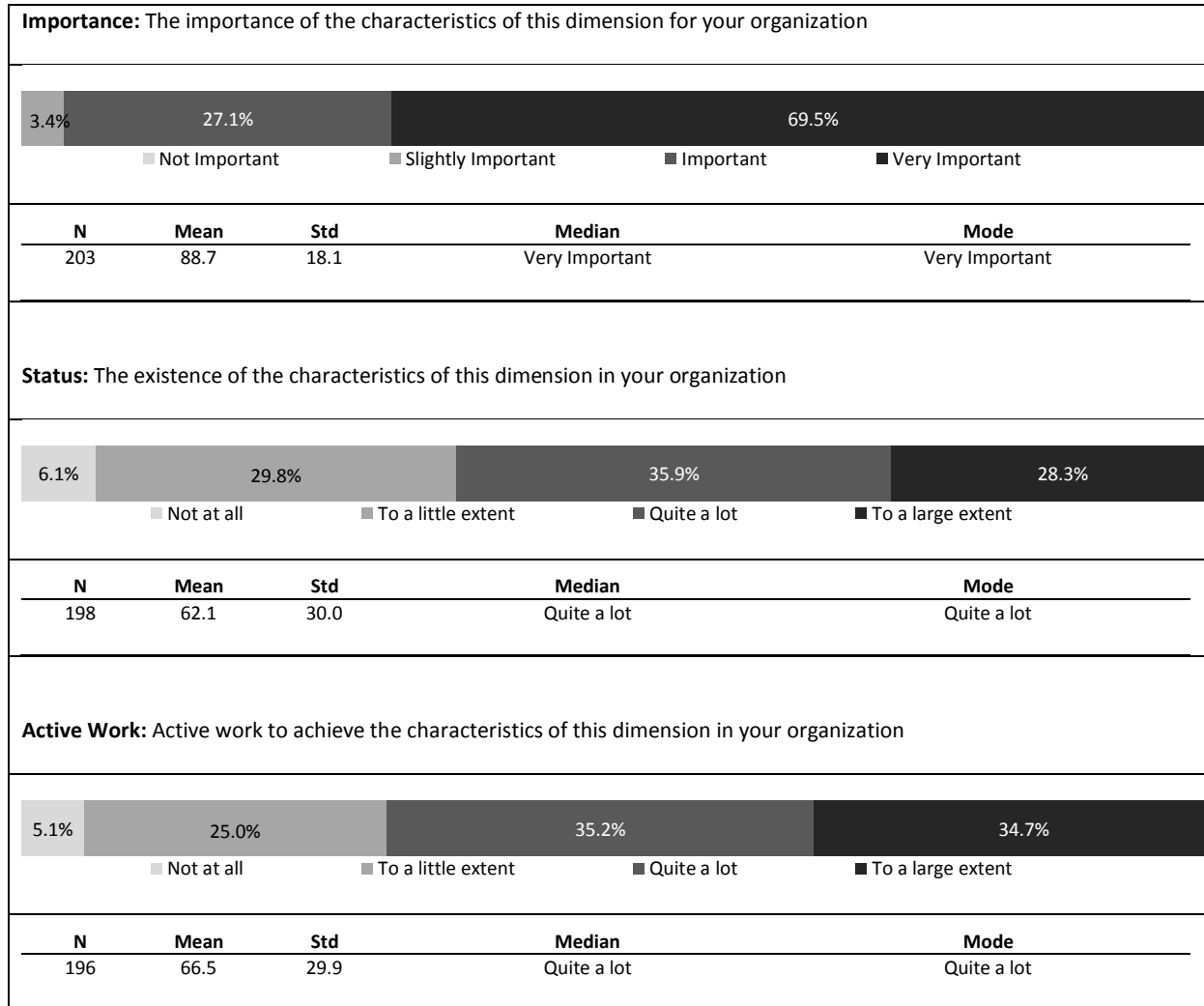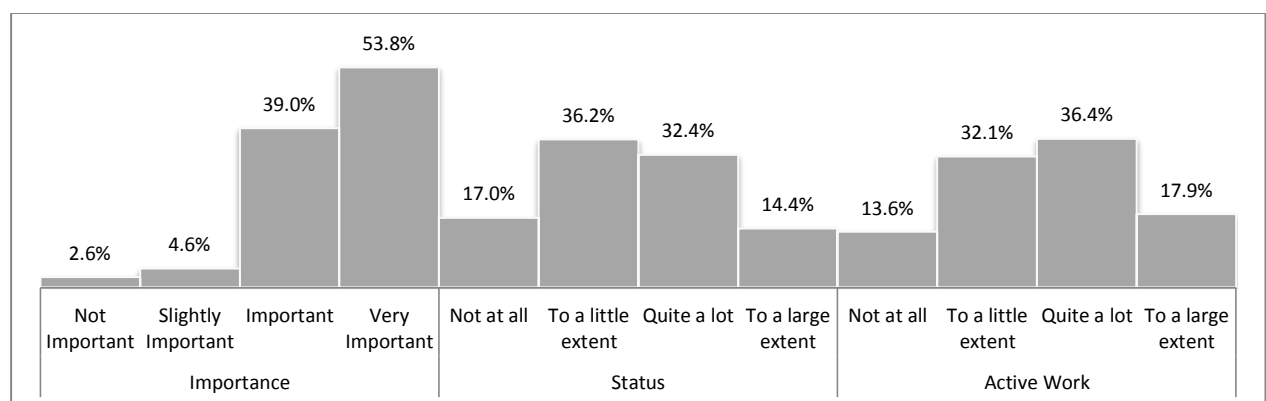| Characteristics	Importance	Status	Active Work
1. The IT organization has the capability to rapidly deliver and implement systems that satisfy current and emerging business needs	Very Important	To a little extent	Quite a lot
2. New systems are delivered through very close collaboration between IT and business customers	Very Important	Quite a lot	Quite a lot
3. The IT organization has flexible IS delivery teams and methods that can adapt to changing business circumstances	Very Important	To a little extent	Quite a lot
4. The IT organization has flexible IS delivery teams and methods that can adapt to rapid technology changes	Very Important	To a little extent	Quite a lot
5. The IT organization uses flexible IS delivery teams and methods that can alleviate rigid formal controls whilst maintaining quality	Important	To a little extent	To a little extent
6. The IT organization uses project management frameworks that can deliver in an incremental manner	Very Important	Quite a lot	Quite a lot
7. Long IS/IT projects are usually broken down to phases resulting in deliverables within months rather than years	Very Important	Quite a lot	Quite a lot

Mode

Characteristics	Importance	Status	Active Work
1. The IT organization has the capability to rapidly deliver and implement systems that satisfy current and emerging business needs	Very Important	To a little extent	Quite a lot
2. New systems are delivered through very close collaboration between IT and business customers	Very Important	Quite a lot	Quite a lot
3. The IT organization has flexible IS delivery teams and methods that can adapt to changing business circumstances	Very Important	To a little extent	Quite a lot
4. The IT organization has flexible IS delivery teams and methods that can adapt to rapid technology changes	Very Important	To a little extent	To a little extent
5. The IT organization uses flexible IS delivery teams and methods that can alleviate rigid formal controls whilst maintaining quality	Very Important	To a little extent	To a little extent
6. The IT organization uses project management frameworks that can deliver in an incremental manner	Very Important	Quite a lot	Quite a lot
7. Long IS/IT projects are usually broken down to phases resulting in deliverables within months rather than years	Very Important	To a little extent	Quite a lot

IS Development and Delivery - Comments

- *I work in the public sector where we must apply the Public Procurement Act when introducing new systems. Then it slow...*
- *Question 1: "rapid" is a relative term. To do things too quickly, in most cases, is not the best solution because it can create a lot of problems in further down the line. Well thought solutions combined with more and right resources is a "speedier" way according to me.*
- *Question 1: Rapid delivery is not generally necessary. Speed is important when it is needed. Not otherwise, because it costs unnecessary money and entails unnecessary risks. Question 3, 4 and 5: People are flexible, methods are often limiting.*
- *Question 4: the business is such that rapid IT changes (whatever that is) very slightly affects the IT organization. Question 5: Why would stiff formal controls lead to inferior quality? (or for that matter any better?)*
- *These questions assume a certain size of a company, with a clear IT organization. We do not have it and therefore many questions are difficult to answer.*
- *The company as a whole work based on LeanStartup. Small ideas for improvements are implemented in typically a week's lead time and are evaluated by measurements of user behavior. Development and maintenance of the systems is done with Continuous Deploy (about 10 new releases per day to the production environment).*
- *Many large projects/programs are launched and then they live their own lives with very slow and inefficient deliveries.*
- *Large programs are launched in which delivery time is so long that changes kill the deliverables*
- *We work with Scrum and one of my duties as a relatively new employee and product manager (product owner) is to develop agile ways of working with my previous knowledge of having implemented Scrum.*
- *We are 100% steered by law which is why we have to be very flexible in case of changes to the law!*

7. System Capabilities - Aggregated Results

Importance: The importance of the characteristics of this dimension for your organization

4.0%	38.1%	56.6%
▪ Not Important	▪ Slightly Important	▪ Important ▪ Very Important

N	Mean	Std	Median	Mode
206	83.2	16.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

17.0%	41.3%	28.3%	13.4%
▪ Not at all	▪ To a little extent	▪ Quite a lot	▪ To a large extent

N	Mean	Std	Median	Mode
203	46.2	25.4	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

10.8%	34.4%	33.8%	20.9%
▪ Not at all	▪ To a little extent	▪ Quite a lot	▪ To a large extent

N	Mean	Std	Median	Mode
200	54.5	25.7	Quite a lot	To a little extent
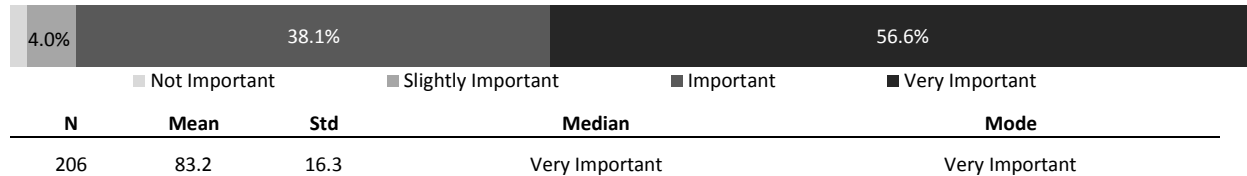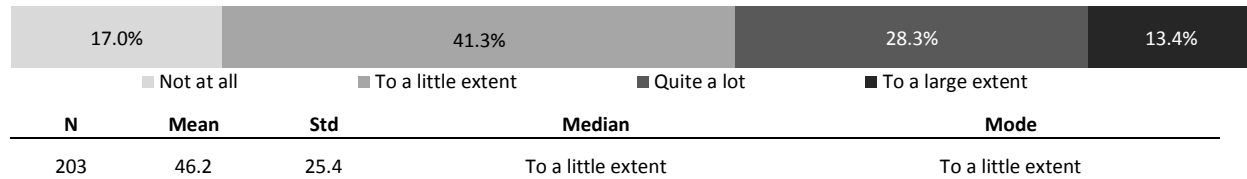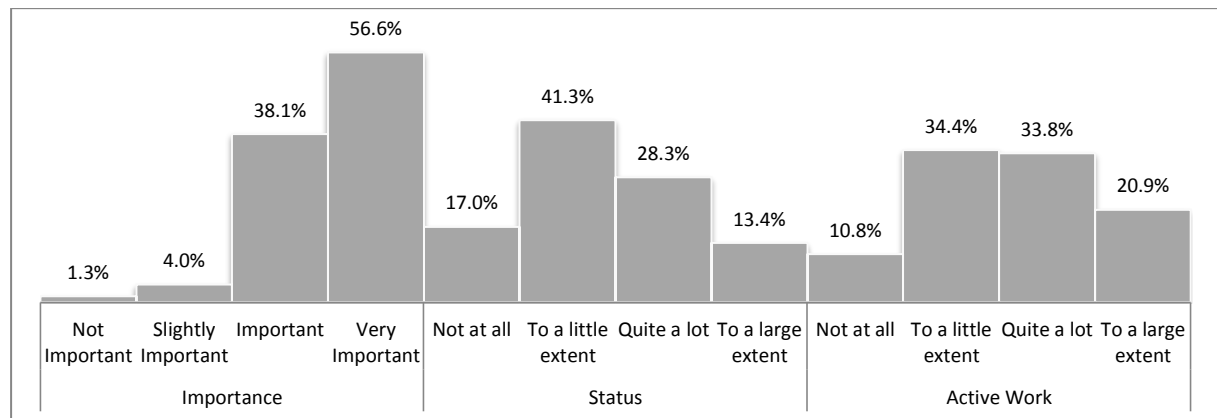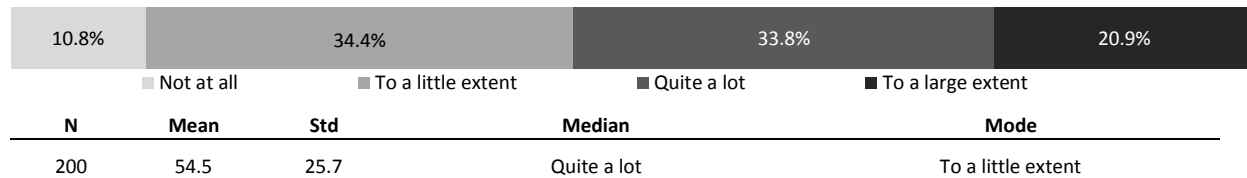
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work
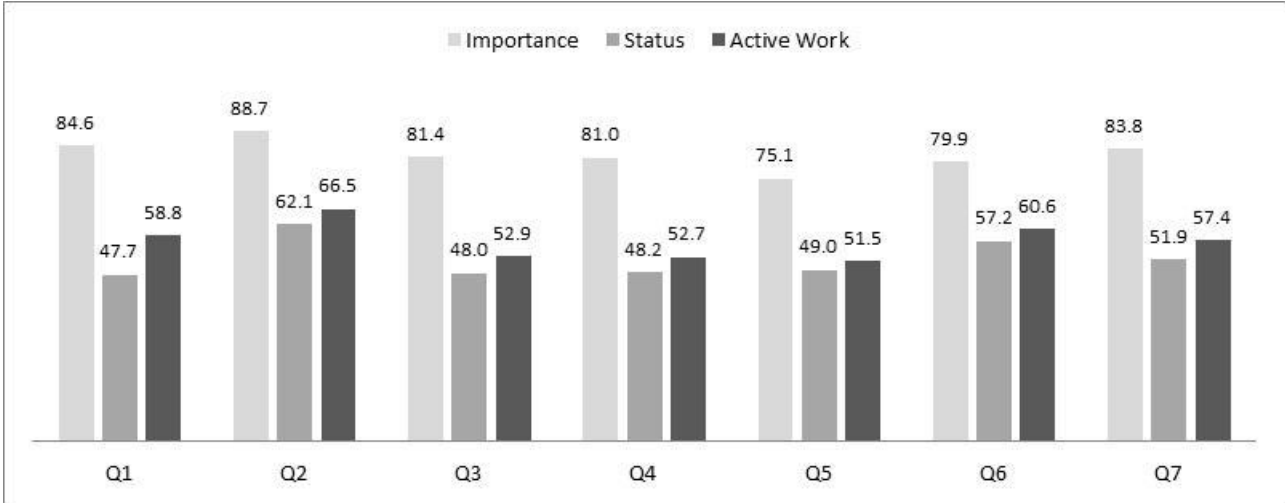
System Capabilities – Characteristic No. 1

Adding new features to existing applications is relatively straightforward and is done at reasonable cost

Importance: The importance of the characteristics of this dimension for your organization

2.0% 2.0%	41.4%	54.7%
Not Important	Slightly Important	Important	Very Important

N	Mean	Std	Median	Mode
203	82.9	21.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

16.3%	41.8%	26.0%	15.8%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
196	47.1	31.4	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

9.4%	36.5%	35.4%	18.8%
Not at all	To a little extent	Quite a lot	To a large extent

N	Mean	Std	Median	Mode
192	54.5	29.8	Quite a lot	To a little extent
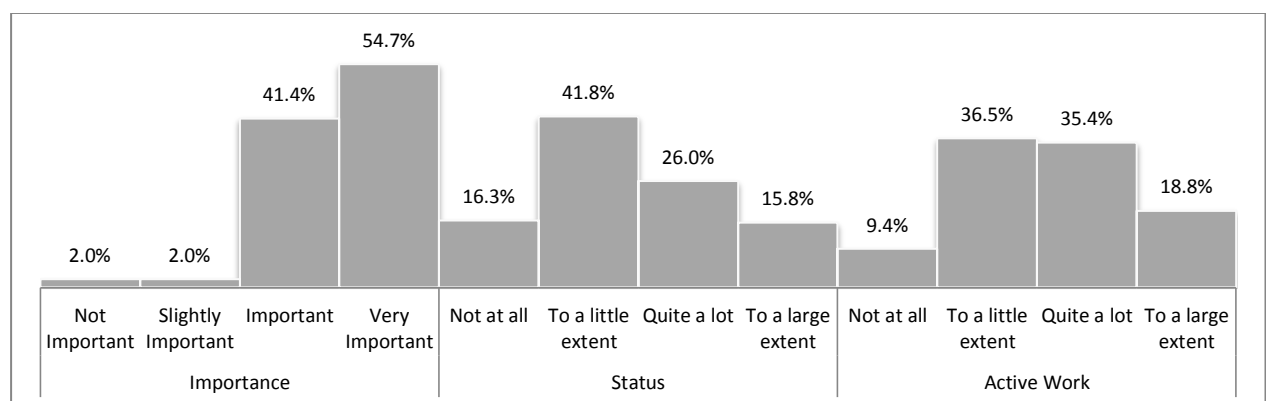
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

System Capabilities – Characteristic No. 2

Existing applications are relatively easy to integrate with other internal applications

Importance: The importance of the characteristics of this dimension for your organization

2.0%		35.3%			61.8%	

☐ Not Important   ☐ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
204	85.9	19.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

13.1%	42.4%		28.8%	15.7%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
198	49.0	30.4	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

9.3%	30.4%		36.1%	24.2%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
194	58.4	30.9	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

System Capabilities – Characteristic No. 3

Existing applications are relatively easy to integrate with external applications

Importance: The importance of the characteristics of this dimension for your organization

1.5%	8.0%	43.3%	47.3%
■ Not Important	■ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
201	78.8	23.2	Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

20.1%	44.8%	23.7%	11.3%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
194	42.1	30.3	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

10.6%	37.6%	33.9%	18.0%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
189	53.1	30.1	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

System Capabilities – Characteristic No. 4

Existing applications have such features that make their support and maintenance cost efficient

Importance: The importance of the characteristics of this dimension for your organization

3.5%	37.9%	58.1%

☐ Not Important   ☐ Slightly Important   ☐ Important   ☐ Very Important

N	Mean	Std	Median	Mode
198	84.5	19.8	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

15.0%	39.0%	34.2%	11.8%

☐ Not at all   ☐ To a little extent   ☐ Quite a lot   ☐ To a large extent

N	Mean	Std	Median	Mode
187	47.6	29.5	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

10.9%	36.4%	33.7%	19.0%

☐ Not at all   ☐ To a little extent   ☐ Quite a lot   ☐ To a large extent

N	Mean	Std	Median	Mode
184	53.6	30.6	Quite a lot	To a little extent
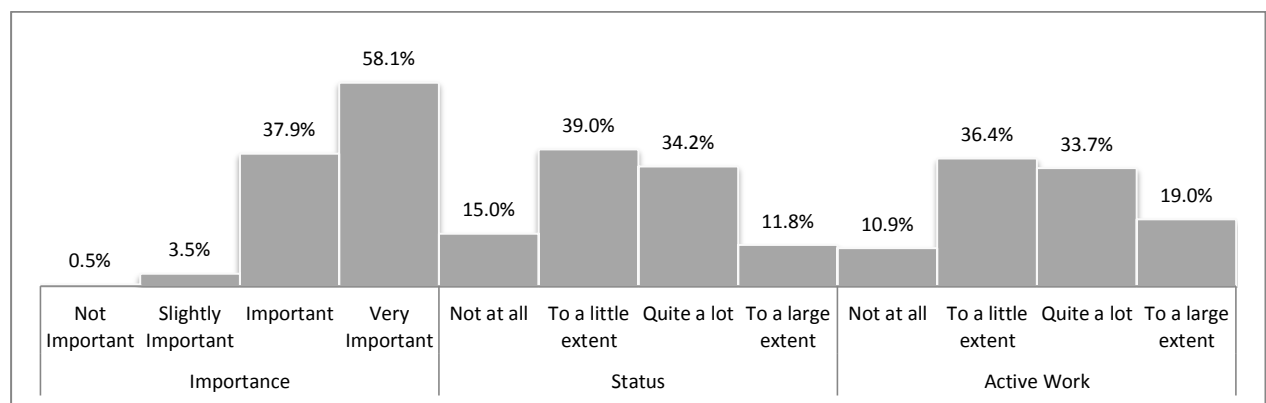
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

System Capabilities – Characteristic No. 5

The support and maintenance of the application portfolio is efficient and effective

Importance: The importance of the characteristics of this dimension for your organization

4.6%	32.7%	61.2%

Not Important ■ Slightly Important ■ Important ■ Very Important

N	Mean	Std	Median	Mode
196	84.5	22.0	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

20.9%	38.0%	28.9%	12.3%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
187	44.2	31.4	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

14.3%	31.3%	29.7%	24.7%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
182	54.9	33.6	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

System Capabilities - Summary of All Characteristics

Mean

Median

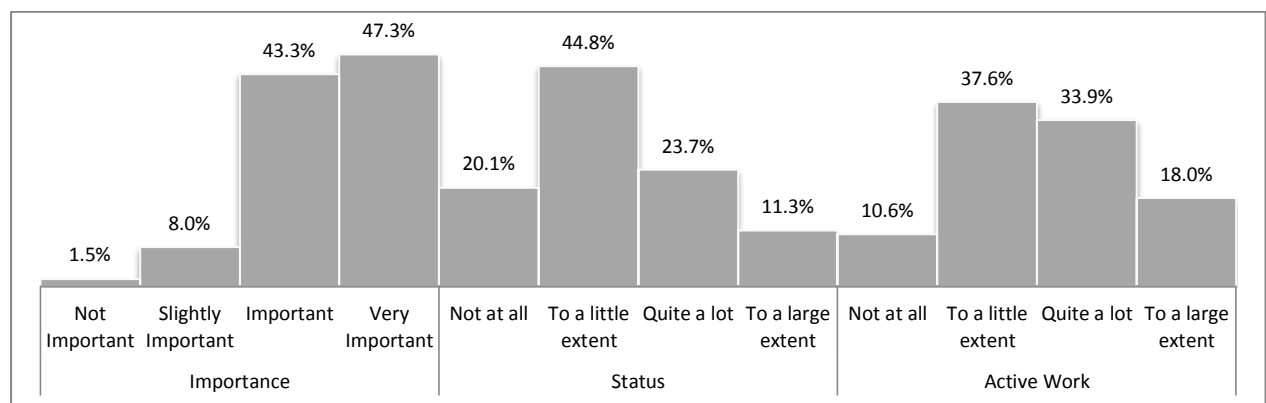| Characteristics	Importance	Status	Active Work
1. Adding new features to existing applications is relatively straightforward and is done at reasonable cost	Very Important	To a little extent	Quite a lot
2. Existing applications are relatively easy to integrate with other internal applications	Very Important	To a little extent	Quite a lot
3. Existing applications are relatively easy to integrate with external applications	Important	To a little extent	Quite a lot
4. Existing applications have such features that make their support and maintenance cost efficient	Very Important	To a little extent	Quite a lot
5. The support and maintenance of the application portfolio is efficient and effective	Very Important	To a little extent	Quite a lot

Mode

Characteristics	Importance	Status	Active Work
1. Adding new features to existing applications is relatively straightforward and is done at reasonable cost	Very Important	To a little extent	To a little extent
2. Existing applications are relatively easy to integrate with other internal applications	Very Important	To a little extent	Quite a lot
3. Existing applications are relatively easy to integrate with external applications	Very Important	To a little extent	To a little extent
4. Existing applications have such features that make their support and maintenance cost efficient	Very Important	To a little extent	To a little extent
5. The support and maintenance of the application portfolio is efficient and effective	Very Important	To a little extent	To a little extent

System Capabilities – Summary

- *It is never easy and inexpensive!*

- *Formal structures often prevent effective maintenance when everything must be pushed into dysfunctional templates.*

- *Question 1: Simple and cheap is not always needed. It should be based on the needs, if it is complex and highly beneficial; it is it okay that it is difficult and expensive.*

- *Integration is largely about managing concepts, language and information. This fails. Since the focus is on technology, the rest will suffer. Symptoms of unfortunate division Business-IT.*

- *IT security is overriding connections to external systems*

- *Business systems are owned and maintained by the business.*

8. Information Capabilities – Aggregated Results

Table 1: Descriptive statistics for the Importance, Status, and Active Work of the IT-Business Alignment dimension

Importance: The importance of the characteristics of this dimension for your organization

5.1%	36.3%	58.4%

☐ Not Important	☐ Slightly Important	■ Important	■ Very Important

N	Mean	Std	Median	Mode
208	84.0	14.9	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

11.6%	39.9%	31.9%	16.6%

☐ Not at all	☐ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
207	50.6	24.0	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

7.2%	32.8%	37.5%	22.5%

☐ Not at all	☐ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
203	57.8	24.4	Quite a lot	Quite a lot
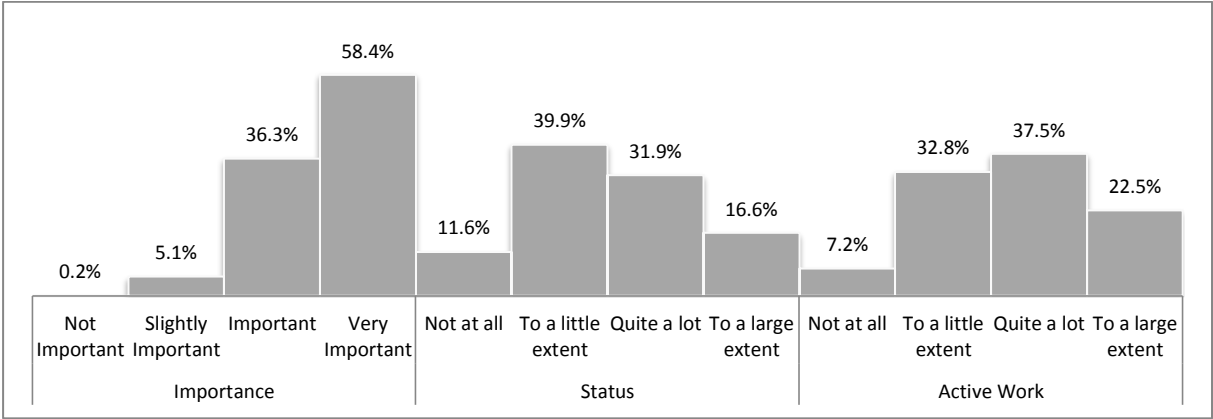
Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Information Capabilities – Characteristic No. 1

The right information is accessible at the right time across the organization
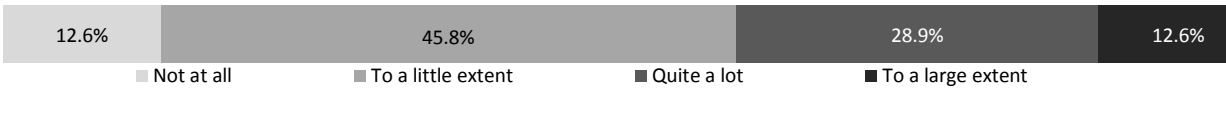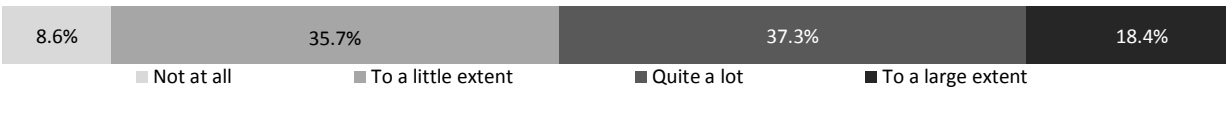
Importance: The importance of the characteristics of this dimension for your organization

2.4%	22.8%	74.3%

Not Important · Slightly Important · Important · Very Important

N	Mean	Std	Median	Mode
206	90.3	17.8	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

10.0%	39.3%	34.3%	16.4%

Not at all · To a little extent · Quite a lot · To a large extent

N	Mean	Std	Median	Mode
201	52.4	29.4	Quite a lot	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

5.6%	24.0%	45.4%	25.0%

Not at all · To a little extent · Quite a lot · To a large extent

N	Mean	Std	Median	Mode
196	63.3	28.0	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Information Capabilities – Characteristic No. 2

The organization has a good capability to adapt the use of information resources in line with new information needs

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Importance: The importance of the characteristics of this dimension for your organization

4.5%	39.5%	55.5%

■ Not Important ■ Slightly Important ■ Important ■ Very Important

N	Mean	Std	Median	Mode
200	83.3	20.3	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

12.6%	45.8%	28.9%	12.6%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

N	Mean	Std	Median	Mode
190	47.2	28.9	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

8.6%	35.7%	37.3%	18.4%

■ Not at all ■ To a little extent ■ Quite a lot ■ To a large extent

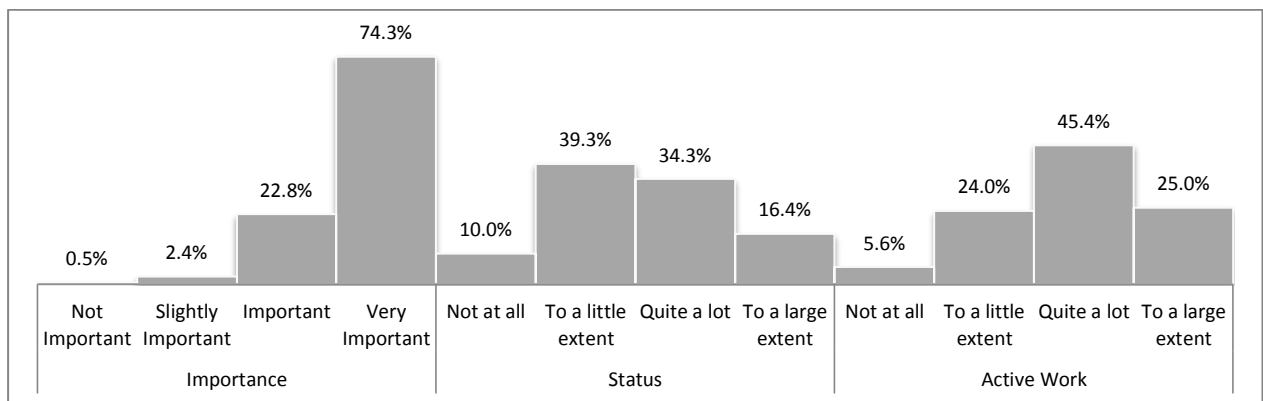| N	Mean	Std	Median	Mode
185	55.1	29.3	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Information Capabilities – Characteristic No. 3

It is relatively easy to integrate information across business domains within the company

Importance: The importance of the characteristics of this dimension for your organization

5.9%	43.2%	50.8%

☐ Not Important   ☐ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
185	81.6	20.2	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

18.4%	40.2%	26.3%	15.1%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
179	46.0	31.8	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

8.5%	34.7%	38.1%	18.8%

☐ Not at all   ☐ To a little extent   ■ Quite a lot   ■ To a large extent

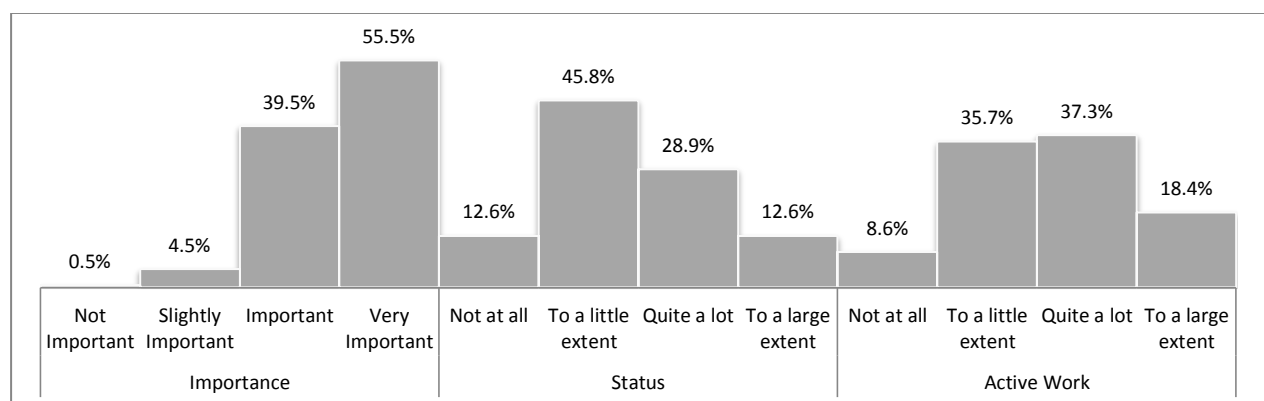| N	Mean	Std	Median	Mode
176	55.7	29.3	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Information Capabilities – Characteristic No. 4

The IT function provides flexible infrastructure to access external information sources

Importance: The importance of the characteristics of this dimension for your organization

8.6%	40.1%	51.3%
■ Not Important	■ Slightly Important ■ Important	■ Very Important

N	Mean	Std	Median	Mode
187	80.9	21.6	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

10.3%	36.6%	36.6%	16.6%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

N	Mean	Std	Median	Mode
175	53.1	29.5	Quite a lot	To a little extent, Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

7.6%	38.2%	30.6%	23.5%
■ Not at all	■ To a little extent	■ Quite a lot	■ To a large extent

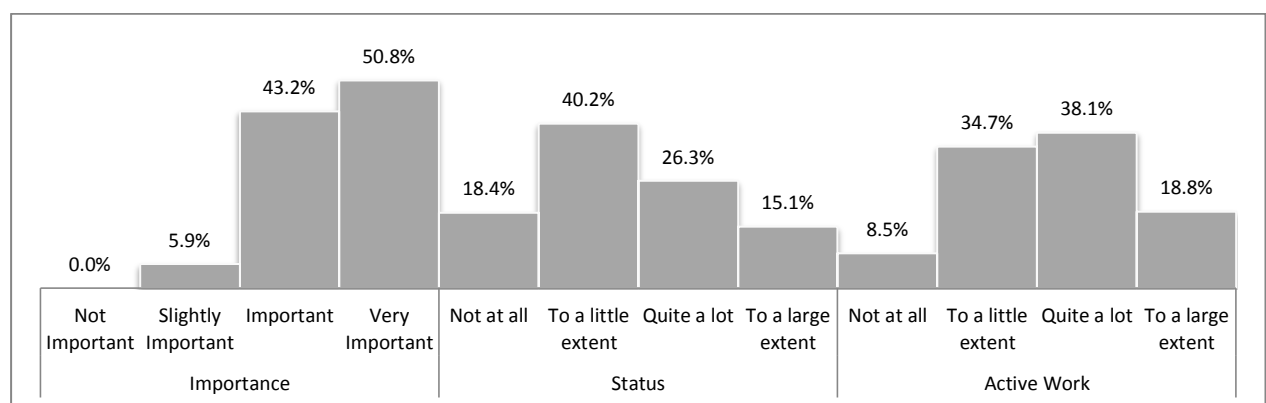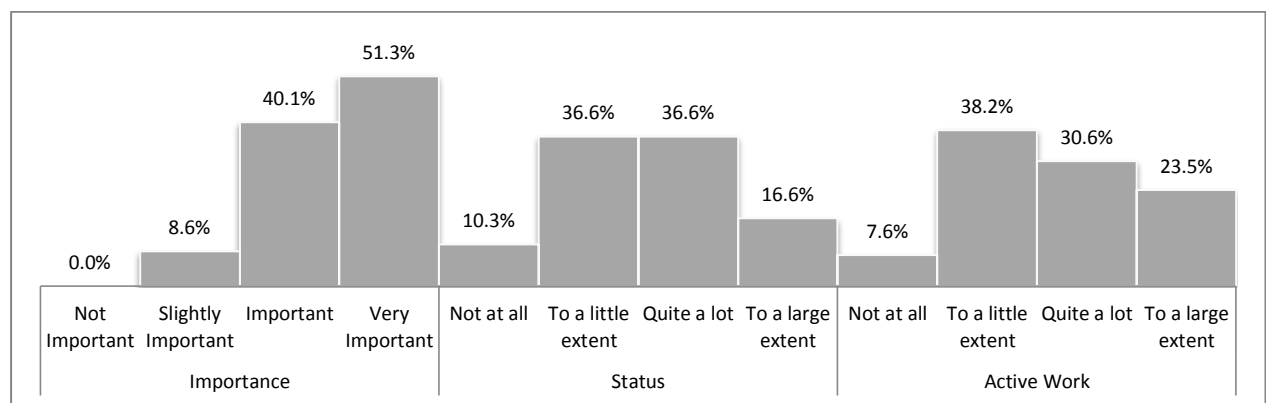| N	Mean	Std	Median	Mode
170	56.7	30.5	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Information Capabilities – Characteristic No. 5

It is relatively easy to exchange and transfer information with the outside world

Importance: The importance of the characteristics of this dimension for your organization

3.4%	35.5%	61.1%

☐ Not Important   ☐ Slightly Important   ☐ Important   ☐ Very Important

N	Mean	Std	Median	Mode
203	85.9	18.7	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

8.6%	32.0%	36.0%	23.4%

☐ Not at all   ☐ To a little extent   ☐ Quite a lot   ☐ To a large extent

N	Mean	Std	Median	Mode
197	58.0	30.5	Quite a lot	Quite a lot

Active Work: Active work to achieve the characteristics of this dimension in your organization

6.8%	27.7%	38.2%	27.2%

☐ Not at all   ☐ To a little extent   ☐ Quite a lot   ☐ To a large extent

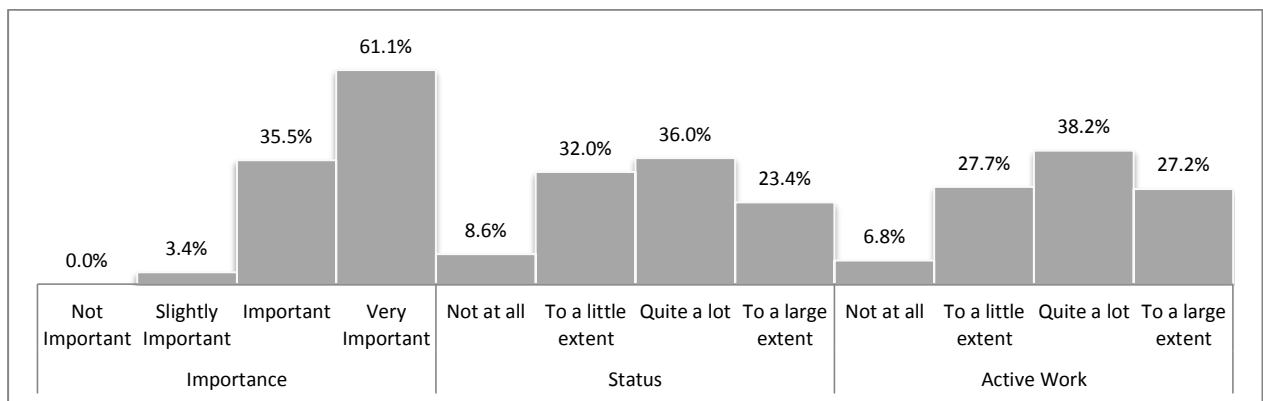| N	Mean	Std	Median	Mode
191	62.0	29.9	Quite a lot	Quite a lot

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Information Capabilities – Characteristic No. 6

It is relatively easy to integrate information from internal and external sources

Importance: The importance of the characteristics of this dimension for your organization

6.3%	38.0%	55.7%

■ Not Important   ■ Slightly Important   ■ Important   ■ Very Important

N	Mean	Std	Median	Mode
192	83.2	20.5	Very Important	Very Important

Status: The existence of the characteristics of this dimension in your organization

10.3%	45.9%	28.6%	15.1%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

N	Mean	Std	Median	Mode
185	49.5	29.1	To a little extent	To a little extent

Active Work: Active work to achieve the characteristics of this dimension in your organization

6.2%	37.6%	34.3%	21.9%

■ Not at all   ■ To a little extent   ■ Quite a lot   ■ To a large extent

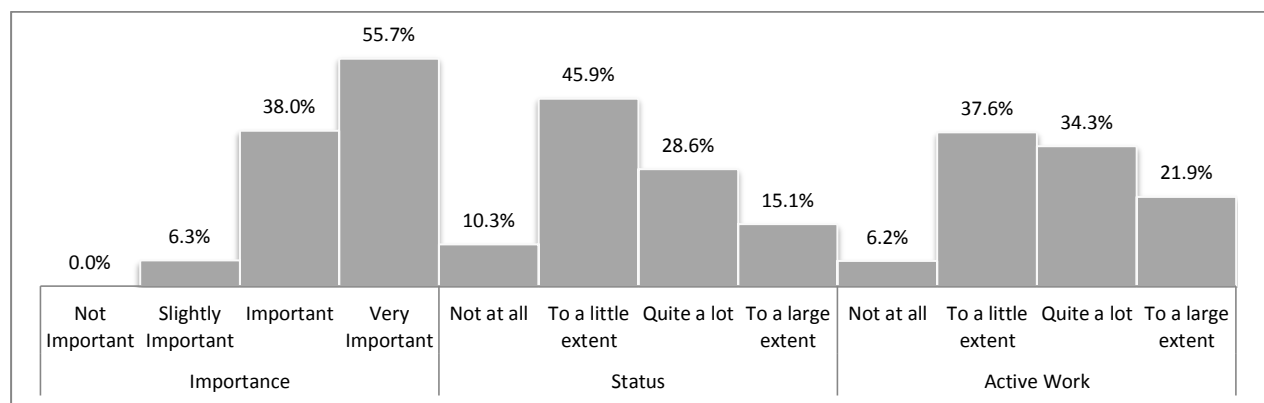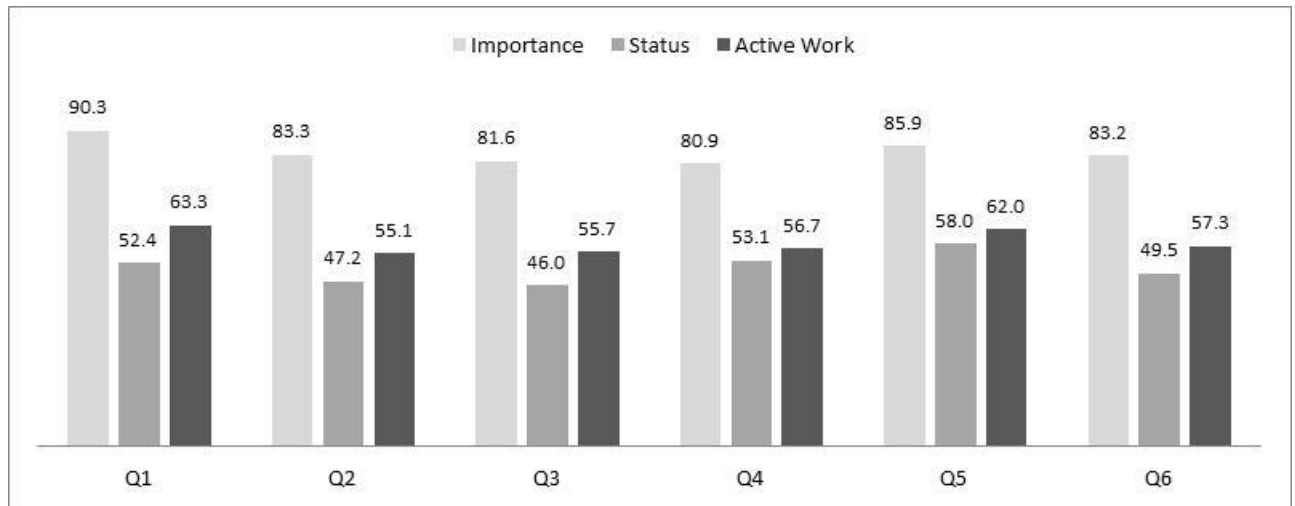| N	Mean	Std	Median	Mode
178	57.3	29.2	Quite a lot	To a little extent

Histogram (frequency distribution) of the answers to the three evaluations questions of Importance, Status, and Active Work

Information Capabilities - Summary of All Characteristics

Mean

Median

Characteristics	Importance	Status	Active Work
1. The right information is accessible at the right time across the organization	Very Important	Quite a lot	Quite a lot
2. The organization has a good capability to adapt the use of information resources in line with new information needs	Very Important	To a little extent	Quite a lot
3. It is relatively easy to integrate information across business domains within the company	Very Important	To a little extent	Quite a lot
4. The IT function provides flexible infrastructure to access external information sources	Very Important	Quite a lot	Quite a lot
5. It is relatively easy to exchange and transfer information with the outside world	Very Important	Quite a lot	Quite a lot
6. It is relatively easy to integrate information from internal and external sources	Very Important	To a little extent	Quite a lot

Mode

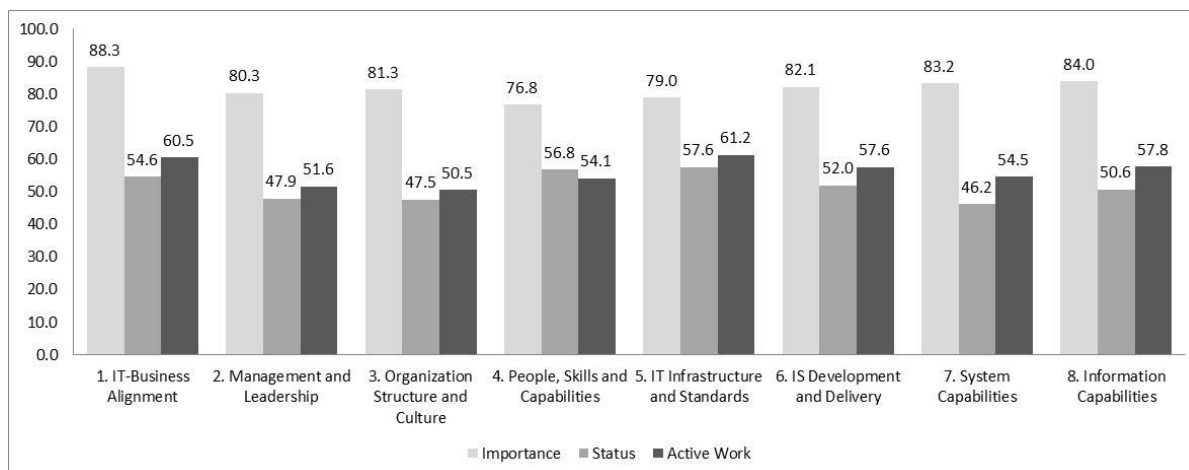| Characteristics	Importance	Status	Active Work
1. The right information is accessible at the right time across the organization	Very Important	To a little extent	Quite a lot
2. The organization has a good capability to adapt the use of information resources in line with new information needs	Very Important	To a little extent	Quite a lot
3. It is relatively easy to integrate information across business domains within the company	Very Important	To a little extent	Quite a lot
4. The IT function provides flexible infrastructure to access external information sources	Very Important	To a little extent, Quite a lot	To a little extent
5. It is relatively easy to exchange and transfer information with the outside world	Very Important	Quite a lot	Quite a lot
6. It is relatively easy to integrate information from internal and external sources	Very Important	To a little extent	To a little extent

Information Capabilities - Summary

- *Question 4 - All connections must be secure. This may cause less flexible infrastructure if a certain structure considered less secure.*

- *There is no Data Management, Information Architecture, and modern work with BI. When we sometimes try to improve this, we make it clumsy and top-down.*

- *Question 1: Tricky question, what information? Who can assess the entire organization when the organization has over 16 000 employees?*

- *IT security requirements entail a clear and strong separation of internal and external. For access to and interaction with external systems we have special solutions.*

- *We are not good at collaboration across borders.*

- *Lots of information exchange is limited by law. Many logins is a waste of time and impede accessibility to information. Mobility is not yet resolved - you have to re-start your own session and log into a number of necessary systems. The nature of the work requires continuous movements across systems and also change of computer. This happens many times per day.*

- *We operate in Stockholm so it's no problem whatsoever.*

Aggregation of All Dimensions

Mean

Median

Dimensions	Importance	Status	Active Work
1. IT-Business Alignment	Very Important	Quite a lot	Quite a lot
2. Management and Leadership	Very Important	To a little extent	Quite a lot
3. Organization Structure and Culture	Very Important	To a little extent	To a little extent
4. People, Skills and Capabilities	Important	Quite a lot	Quite a lot
5. IT Infrastructure and Standards	Very Important	Quite a lot	Quite a lot
6. IS Development and Delivery	Very Important	Quite a lot	Quite a lot
7. System Capabilities	Very Important	To a little extent	Quite a lot
8. Information Capabilities	Very Important	To a little extent	Quite a lot

Mode

Dimensions	Importance	Status	Active Work
1. IT-Business Alignment	Very Important	To a little extent	Quite a lot
2. Management and Leadership	Very Important	To a little extent	To a little extent
3. Organization Structure and Culture	Very Important	To a little extent	To a little extent
4. People, Skills and Capabilities	Very Important	Quite a lot	Quite a lot
5. IT Infrastructure and Standards	Very Important	Quite a lot	Quite a lot
6. IS Development and Delivery	Very Important	To a little extent	Quite a lot
7. System Capabilities	Very Important	To a little extent	To a little extent
8. Information Capabilities	Very Important	To a little extent	Quite a lot