IT Barometer 2012 – Summary

A survey on the importance of IT in Finnish companies from the perspective of IT and business management

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1. Introduction

The annual IT barometer of the Finnish Information Processing Association studies the significance of IT for the executives of Finnish companies. With a survey for IT and business managers, we study how IT is utilized in Finnish organizations, what kind of added value IT produces for their business, and what factors and competences connected to IT are considered to be important in terms of future success. Furthermore, we describe how successful IT projects are, whether the organizations have wished to outsource their IT, and if so, how successful the outsourcing project has been, how extensively best IT management practices are used, how the impact of IT on the business is being assessed, and whether data is being managed with data. In addition, we study how the organizations use new technologies, such as online business, social media, innovation systems, cloud services, and own hardware/software, as part of their business.

This is the fifth IT Barometer, and during those five years we have seen dramatic changes in IT and the role of IT in Finnish companies. IT is used to process information. It has been estimated that more than 95% of all the information is currently processed in digital format, compared to less than 5% in 1972. In addition to so-called 'structured data', the quantity of unstructured data in particular has exponentially increased in the past few years. Organizations use more and more external data obtained from networks in addition to their internal data. Everybody is now aware of new consumer technologies such as social media, smart devices and cloud services, and their use has started to become established during the five years of surveying. IT has also undergone a process of consumerization – new technologies and services are now invariably launched in consumer markets prior to corporate markets. During these five years, we have gone through one recession and are currently living another, potentially long-term, period of slow economic growth.

IT Barometer 2012 was yet again conducted in a vastly different business environment than the last year's survey. The data for the 2011 IT Barometer was collected in April and May 2011. In the spring of 2011, Finland was going through a period of growth and recovery from the downswing of 2008–2009. This period proved temporary, however. The threats of indebtedness in several Eurozone countries and credit risks of financial institutions have since become reality, which has caused Finland, the Eurozone, and the entire world to enter a period of even slower growth. It seems that Finland will experience a full-blown recession. The period during which the data for this survey was gathered – between June and August 2012 – was characterized by the long-term poor economic situation and expected slow, non-existent, or even negative short-term growth. The respondents' outlook continued to grow bleaker during the time the data was being collected.

In the IT Barometer, we have always included specific sections on current trends in IT. In this year's IT Barometer, we continued with all the previous themes, including management of outsourcing, the impact of IT, management of online business, utilization of social media, IT management, specifically the use of best IT management practices, utilization of the consumerization of IT, and the management and utilization of cloud services. A new theme added to the IT Barometer this year is management of data and management with data. We studied this theme with a series of seven statements. We also deleted some irrelevant or non-functional questions from the IT Barometer questionnaire.

As last year, we drafted a summary of the IT Barometer that is available free of charge, and a full version in which all the research data is studied in detail. The introduction, the second chapter in which the data is presented, and the third chapter in which the three IT indices are studied are the same in both report versions. These chapters also comprise the research report summary that is available free of charge. Furthermore, there is a summary of the full report at the end of the free version. This summary is based on the full report's table of contents.

This report covers the main results of the 2012 IT Barometer survey. There are also comparisons of the data collected in 2012 with the results of 2011 and 2010. The comparisons also include the years 2008 and 2009 in terms of the IT Barometer, and other key figures. The changes are reviewed and their results analysed.

The annually published IT barometer is the value of the IT index. The 2008 index that was generated from eight variables was given a rating of 100. The IT index describes the significance of IT for Finnish organizations. This year's IT Barometer includes two new indices that summarise the research results: IT utilization index and IT management index. We set the initial value of both indices at 100 based on the observations made in 2012 and retroactively calculated the values of the indices for 2009–2011.

As the name suggests, the IT utilization index provides an overall idea of how IT is used by organizations, how successful IT projects are, what kind of impacts IT has, and how well people are aware of the benefits IT offers. The IT management index offers an overall idea of how IT is managed as a combination of several sectors of IT management. Our goal with these three indices is to offer a comprehensive picture of the perceived significance of IT, the current status of IT management, and the ability of Finnish organizations to use IT.

Structure of the IT Barometer as a research report is described below. The first three chapters include an introduction, a presentation of the research data, and a summary of the key contents based on the three indices. The fourth, fifth, and sixth chapters involve the significance of IT, the utilization of IT, and the success of management and IT projects, respectively. These chapters also report any interdependencies between each analysed variable and the other IT Barometer variables, such as a description of the factors that are connected to the estimated share of IT costs in a company's revenue and the factors that are connected to the school grade given to the application of IT. Chapters 7–12 include results of the special IT Barometer themes: estimates of the respondents on utilization of IT and IT management in the near future, i.e. impact of the business cycle on IT, are discussed in Chapter 7. Chapter 8 involves management and use of IT outsourcing and cloud services, and Chapter 9 answers to the question as to which extent the five best IT governance and/or IT management practices (OBIT, ITIL, PRINCE2, ISO/IEC 27000, TOGAF, or similar) are used. Chapter 10 focuses on the management of data and management with data. Online business, utilization of social media in business, and the use of innovation systems are discussed in Chapter 11. Chapter 12 focuses on management of the consumerization of IT, the benefits and disadvantages of using own hardware and software, how often their use is allowed, and how it is supported.

By repeating the same questions each year, the IT Barometer has been turned into a series of research reports offering an ever-deepening view of the significance, utilization, and management of IT. The English versions of the survey implemented in Finland have also stirred some interest globally. Since the IT Barometer data is very extensive in terms of the themes discussed, it can be used as the basis for discussion on organizations or the society, or even used as the basis for further studies. Such discussions and studies could focus on the underlying reasons for the observations made in the IT Barometer surveys, or a comparison of the results with the results of other studies. We believe that one of the key themes is the connection between IT and the growth of profitability, the economy and wellbeing, and studying the factors creating such an interconnection. The significance of IT in securing public services or reforming the products, services, or business of organizations is another important theme. We encourage debaters and researchers to use the IT Barometer data more extensively than before. The data is available for further studies.

We have been monitoring the interconnection between business cycles and people's views on IT since the IT Barometer 2009. The replies given in the four IT Barometers completed since then offer a globally unique opportunity to assess the impact of business cycles on people's views regarding IT, its utilization, and its management. We have found that there is a clear connection between business cycles and the utilization of IT: we have noted that during an upswing, organizations invest in IT even after the rise of the economy has started but when the economy enters a downswing, organizations postpone their IT investments and cut their

costs. Based on our observations, we are of the opinion that decisions on IT investments and IT expenses are made based on the organization's current financial latitude.

The mechanism works roughly as follows: When a downswing starts, organizations begin to plan postponing and cutting their IT investments and costs, but continue with implementing the IT investments they have already started. Furthermore, the postponing and cutting of costs occurs after a delay. When the times are financially rough, organizations focus on cost savings and ensuring disturbance-free flow of their current business, thus postponing the utilization of IT to improve the organization's profitability by means of changing the ways of working or creating new products, services, or business. Similarly, this financial latitude in IT costs starts to increase when the economy enters an upswing: the organizations start to implement maintenance measures, increases of capacity, and replacement investments they postponed during the downswing. In addition, they start to plan new IT investments and update postponed plans. This also causes a delay.

According to the IT Barometer results obtained during the previous recession, a downswing causes organizations to stop utilizing the IT solutions they already have in improving their profitability and developing their business. Even projects that require little investment, such as improving the quality of data or training users, are postponed in the name of saving costs. Our results suggest that these are issues in which organizations invest when the situation is good. This observation of ours is clearly inconsistent with the results of several studies stating that IT is a key source of profitability, economic growth, innovations, and new business.

Another important observation made during the five years of IT Barometer surveys is that there is an inconsistency between what people believe the significance of IT to be and how it is actually utilized. This is a recurring phenomenon in the IT Barometer: on one hand, people believe that IT has provided clear business benefits for their organization and they believe it will become even more significant for the organization in the future. On the other hand, people have a clearly poorer view of the organization's ability to utilize and govern IT. Respondents gave the lowest grades when assessing knowledge of the impacts of the utilization of IT on the business. Some of the results of the IT Barometers are somewhat confusing. For example, the respondents have estimated that at the most one third of IT projects reach their goal within the planned schedule and budget, but 80% of the respondents still feel that the IT projects were successful. These contradictions are becoming a more and more burning question as data and IT to process this data become pervasive in both society and organizations. When referring to the spreading of IT, we refer to IT solutions that are part of the so-called 'traditional data administration', in particular. The IT Barometers also indicate that their share of the IT costs has rapidly increased.

The third key observation during the five years of IT Barometers is the continued expansion of IT management. New technologies require the attention of managers, but the old technologies requiring IT management have not disappeared. This may be why it takes a fairly long time before new technologies are utilized in business. For example, the respondents stated that only one third of organizations have conducted strategic discussions on whether and how they should utilize social media in their business. The share of such organizations in 2009 was one sixth, which means that IT management actions proceed clearly more slowly than the IT phenomenon in Finland does.

The IT Barometer results give plenty of food for thought when it comes to the ability of Finnish organizations to govern their IT solutions and utilize IT in their business. Could the observations on IT's key significance for the growth of profitability and the rudimentary way of utilizing IT both be true? The answer is probably yes. In our opinion, these contradictory observations suggest that there are major defects in IT management competence and thus the Finnish national economy is not utilizing all of its potential for profitability and growth. The question is what should be done about this.

Our answer is two-fold:

- we must add more courses and/or parts of courses that teach students to utilize and govern IT in second level and higher educational establishments. Particularly students whose major is not IT, data systems or information systems sciences should attend these courses. The current courses focus too much on teaching students how to use a variety of hardware, software, and services. Knowing how to use IT solutions is a basic skill, but it is not enough when you need to utilize the data and IT solutions used by the different units of an organization, not to mention understand how these should be managed.

- Other managers of organizations, in addition to IT managers, should be more adept in utilizing and managing IT. They should be able to govern the use of data and IT in the business of their organization, particularly in their own area of responsibility, with the help of an IT professional. A business manager must be able to discuss with an IT professional the data and IT solutions used now and in the future in products and services ranging from product development to after-sales services, and internal functions to stakeholder relations management. The manager must ensure that the use of IT in business development is planned in a manner that supports the business goals, and then verify that the goals are reached.

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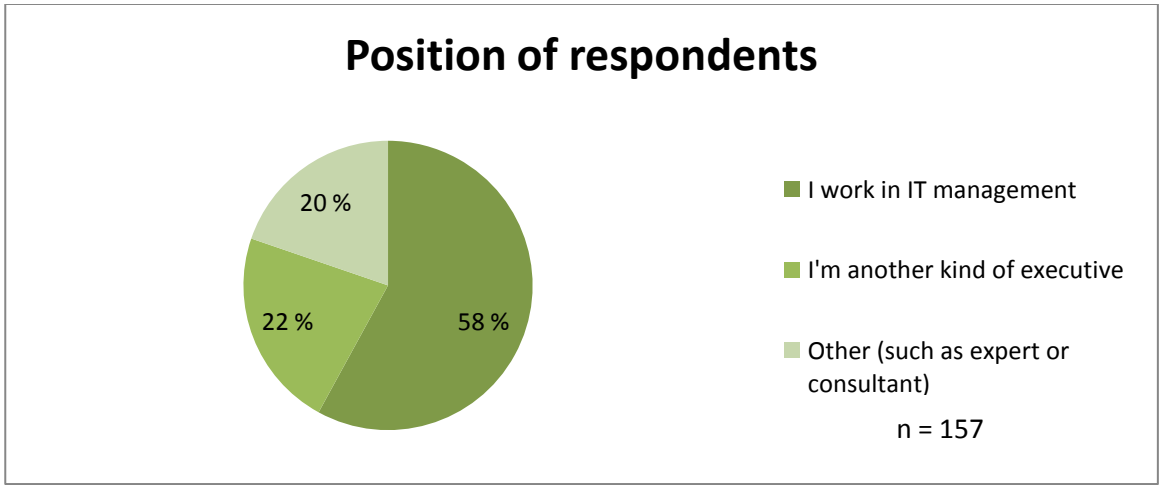
2. Implementation, respondents, and reliability

2.1 Data collection

Respondents for the IT Barometer were selected from the 500 largest Finnish companies in terms of revenue or the average employee count. In addition, a sample of respondents from organizations employing 100 to 500 people were selected based on an address database obtained from Fonecta. The Fonecta database was complemented with the address book of the Finnish Information Processing Association. From these organizations, executives and persons working in IT management or experts who are familiar with these issues were asked to participate. The data was collected using an online survey. E-mails with a link to the query and an invitation to participate were sent to the selected respondents between June and August 2012. The online survey consisted of 31 structured and open-ended questions. As in previous years, we deleted some of the questions from the previous survey to make room for new ones, to focus on the essential, and to keep the survey brief.

Executive Director Robert Serèn of the Finnish Information Processing Association and senior researcher Tomi Dahlberg of Turku School of Economics (University of Turku) designed the research questions and drafted the survey. The e-mail invitation was signed by both of them. The data was collected using a software program called Webropol. Pentti Saastamoinen of the Finnish Information Processing Association coded the survey in Webropol, sent the e-mails, and submitted the raw data to the researchers for analysis. In addition to Dahlberg, students Erkki Kallio and Taneli Ahonen of the Turku School of Economics participated in processing the data. Kallio and Ahonen also generated the graphs in this report. Tomi Dahlberg wrote the draft text, generated the tables, and finalized this report after a joint review.

157 people or experts working in business or IT management replied to the IT Barometer 2012. The pie chart below shows division of the respondents into these groups.



A total of 157 respondents, most of them from the 500 largest companies. 91 respondents working in IT management (93 in 2011), 35 in business management (127 in 2011), and 31 in other positions, usually as consultants or experts (20 in 2011).

The distribution is different from the respondent distribution of previous years. Now, 58% of the respondents worked in IT management (39% in 2011), 22% in business management (53% in 2011), and 20% were experts or consultants (8% in 2011). The number of respondents working in IT management remained around the same as in 2011, whereas the number of respondents in business management experienced a dramatic decrease. We are not fully aware of the underlying reasons for this change. It could have been

caused by the fact that the address databases of Fonecta and the Finnish Information Processing Association were complemented in the previous years with addresses from a database of a media agency that was involved in the survey at that time. That database most likely included more people working in business management than the other databases. The number of consultants and experts increased because of the Finnish Information Processing Association's address database was used.

155 of the respondents replied to questions regarding the number of people employed by their employer, their field of business, and their status in the organization. 5% of the respondents are members of an organization with less than 100 people, 34% are in an organization with 101–500 people, and 61% are in an organization with more than 500 people.

34% of the respondents work in industry, 17% in trade and commerce, 37% in the service sector, and 12% in the public sector. The share of public sector employees among the respondents is lower than the share of public sector employees of the entire Finnish workforce, mainly due to the dataset of the survey: public sector companies employing 100–500 people were not even considered when selecting the respondents.

As in previous years, around 40% of the IT Barometer respondents stated that the IT manager in their organization reports to the chief executive officer. The exact share of respondents replying in this manner was 42%. The rest of the respondents, 58% of them, stated that the IT manager reports to the chief financial officer, 9% that they report to the operative business manager, and 14% that they report to another executive. The 'other executive' mentioned most often was R&D manager.

2.2 Remarks on research data and validity

As noted above, the dataset of the IT Barometer 2012 is slightly different from the dataset used in 2011. We used the same dataset as in 2008, 2009, and 2010, i.e. we used Fonecta's database including companies and other organizations employing more than 500 people, and complemented it with the address database of the Finnish Information Processing Association. The change made the results less comparable with the 2011 survey, but more comparable with the 2008, 2009, and 2010 surveys. In 2010 and 2011, the replies from persons working in the same company were rated as one reply. The differences between the results this year were so minor that we did not consider the rating necessary. A total of eighteen replies from the same organizations were obtained. Most of these organizations are very large and their business scope is extensive. Blank fields were not taken into account in the analyses and thus the number of observations is stated in connection with most of the replies.

We would like to remind the readers yet again that the IT Barometer measures the respondents' view at the time of surveying. When assessing the validity and reliability of the IT Barometer results and conclusions, it is important to also note that these views are personal and may not reflect the official view of the organization nor accurately describe the situation in the companies. People who consider the subject matter important reply voluntary surveys most often. This is why surveys may not offer a completely reliable view of the situation. Since IT is most often depicted by the media as a positive issue that promotes the development of organizations and the national economy, the IT Barometer results are more likely to be too positive than too negative when compared to the actual significance and status of IT in Finnish organizations. To prevent this, the wording of the research questions is as neutral as possible. This duly noted, we consider the results of the survey reliable.

3. Key figures and IT indices of the IT Barometer

3.1 IT index

One of the key objectives of the IT Barometer is offering an overview of the importance of IT to Finnish organizations. To provide such an overview, the research results are summarized in an IT index that is based on the key figures in the table below. The index is a numerical indicator of the significance and status of IT in Finnish organizations. Comparison of different years is possible with the separate key figures and the IT index. The index base value, 100, was determined based on the 2008 key figures.

IT index 2012	2008	2009	2010	2011	2012
IT costs as percentage of revenue currently	4.45%	4.46%	4.47%	3.35%	4.89%
IT costs as percentage of revenue three years from now	4.84%	4.49%	4.94%	3.83%	5.51%
Impact of IT-enabled innovations on revenue as percentage of revenue last year	4.27%	8.19%	3.66%	6.34%	4.89%
Cost saving influence of IT on costs as percentage of revenue	4.54%	7.57%	4.28%	5.28%	6.46%
Organizations that consider finding suitable IT personnel difficult	52%	47%	44%	39%	44%
Organizations where IT produces added value by enabling new innovations and development of the business	78%	81%	81%	76%	78%
Organizations where IT is developed strategically	68%	77%	63%	69%	62%
IT index	**100**	**123**	**94**	**99**	**108**
IT index without the share of IT costs	**100**	**133**	**92**	**107**	**107**

In 2012, the IT index value continued to rise from 2011. The year-on-year increase was almost completely due to the fact that the share of IT costs from revenue increased from 2011. Compared to the other years, the 2011 respondents included relatively less people from highly IT-intensive organizations. In such organizations, the share of IT costs from the organization's revenue is several dozen per cent or even more than half. The fact that only a few replies suggesting that were received describes well how small a share IT-intensive organizations have among all organizations. On the other hand, each reply by a person working in such an organization will increase the mean value of the share of IT costs from revenue. 139 out of a total of 157 people (89%) replied to the question as to how large a share their organization's revenue or total budget is used to cover IT costs.

We also calculated the median for the share of IT costs in revenue (the value lying at the midpoint of the replies), which was 2.0%. The median for estimated share of IT costs from the organizations' revenue in three years is 2.5%. The median and mean value together describe the average share of IT costs from revenue of Finnish organizations.

For some respondents, the concept 'revenue of your organisation' was not a meaningful idea. We requested such respondents instead to answer the question of how large a share IT costs take up from the organization's total budget. The mean values (12.55% now and 12.80% in three years) and the medians (7% both now and and in three years) calculated from these replies for the share of IT costs from the total budget were clearly higher than the mean values and medians for the share of IT costs from revenue. This issue will be discussed further in Chapter 4.

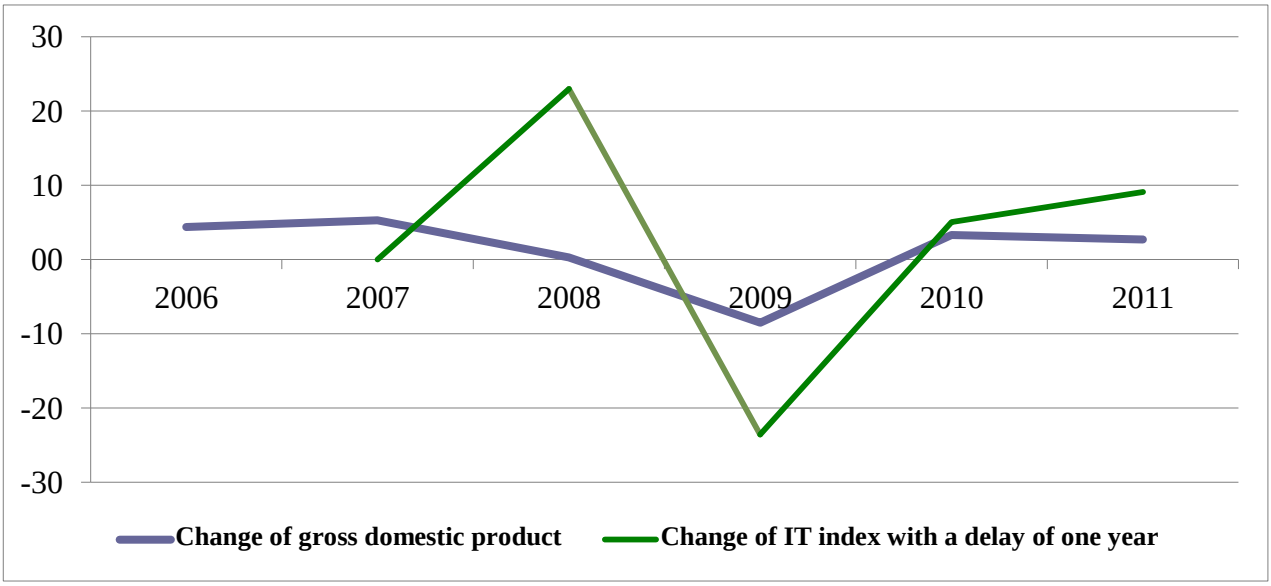
Except for 2009, the respondents of the IT Barometer have estimated that the share of IT costs from revenue will increase by around 0.5% in the next three years. The estimates have remained the same when using the mean value and the median as the indicator. However, the IT Barometer replies do not show such a growth between 2008 and 2011. On the other hand, the replies show that the share of IT costs from revenue increased by almost 0.5% between 2009 and 2012 despite the fact that respondents estimated in 2009 that the share of IT costs from revenue will not change by 2012. In our opinion, these observations reflect the respondents' impression of the status and significance of IT for their organization at the time of surveying. It is this impression that the respondents use as the basis when assessing their organization's need, willingness, and ability to invest in IT. The IT Barometer results suggest that there is a connection between both of these issues and the current business cycle.

To understand better the nature of the share of IT costs from revenue, we have posed the following question - in the IT Barometer survey: ”*Do the estimated IT costs you mentioned above include IT costs arising from IT components that are part of online business, automated solutions, products, and services*?” Of the 133 respondents who replied to this question, 63% said yes, 14% said no, and 23% were unsure. For more information on the interconnection between the difference in yes and no replies and the magnitude of the cost estimates, please see Chapter 4.

If the first two variables of the index are eliminated (the IT index is considered without the share of IT costs), the indices for 2011 and 2012 are equal. What do the two IT index time series that have been calculated differently tell us? The key idea of the IT index is describing the significance and status of IT in Finnish organizations. We believe that the changes of the IT index reflect the changes occurring in the organizations' attitude towards IT, which in turn reflect the changes of the business cycles. The business cycle changes can be seen especially well in the estimates regarding IT costs.

The data for the IT Barometer 2009 was collected at the turn of the year 2008/2009 when the signs of a downturn were already clear or the recession had already started, and organizations were honing their provisions for the recession. People expected a lot from IT at that time. The people who replied to the IT Barometer questions in late 2008 anticipated that their organizations would postpone IT investments and cut their IT costs, but at the same time use IT to generate new business. This was reflected in the fact that the IT index reached its highest value so far, which was 123. The outcome was quite different, however, due to the short-term extreme recession. IT investments were indeed postponed and IT budgets were cut because of the harsh economic situation, but organizations did not use IT to boost their business or generate new business because of the pressure to cut costs. They did not do so even if they would have been able to do so without any investments or additional costs – which is proven in detail in Chapter 7. The recession was worse than anticipated, and some of the executives felt that IT was a rigid tool that did not respond well to their organization's cost pressures. This is why the IT index experienced a steep decline to 94 in the IT Barometer 2010. The data for that index was collected in early 2010 when the recovery from the recession had already started. The IT index in the IT Barometer 2011 sprang back up to 99 as the national economy was recovering from the recession. The national economy continued to grow until late 2011, and most forecasts anticipate a slight increase in GDP also for this year. As illustrated by the table and bar graph below, the IT index changes delayed by one year have mostly been similar to the changes to the GDP the previous year, although the changes in the IT Barometer results have been more substantial. As a summary, one can state that the changes in attitudes towards IT and IT investments seem to follow the changes to the GDP, with a delay of around 12 months. During a downswing and right after it, people consider IT to be less important for the business of their organization. This is why the estimates on future IT investments also become more conservative. It should be noted, however, that these observations are based on dataset obtained over the course of five years, and an exceptionally severe recession occurred during this period of five years. Generalisation of this result cannot be verified without data from several business cycles.

Change of GDP and IT index -1 year	2007	2008	009	2010	2011
Change of gross domestic product	5.3%	0.3%	.5%	3.3%	2.7%
Change of IT index after a delay of one year	N/A	23.0%	3.6%	5.1%	9.1%
IT index value after a delay of one year	100	123	4	99	108



Development of the IT index and the Finnish GDP. The IT index change delayed by one year is depicted together with the GDP for the previous year (IT index 2008 together with the 2007 GDP). Source of GDP statistics: Statistics Finland.

What does this similar behavior of the delayed IT index and the GDP mean? We believe that it means that IT management is based on the costs and the current business cycle, instead of being about long-term investments in improving profitability. The IT Barometer results below support this view. In each IT Barometer survey so far, the respondents have estimated that IT will increase the revenue of businesses significantly faster than the general GDP growth rate, reduce their organization's costs by several per cent, create innovations that will increase revenue, and offer many other benefits for their organization. Despite these assessments the organizations postpone and cut their IT investments, costs, and development during a recession – to be proven in detail in Chapter 7. We believe that the investments and other R&D efforts in which IT is utilized are scheduled based on how much funds are available instead of thinking about which investments would be wisest or how the impact of previous IT investments and services on the business could be improved. Furthermore, we believe that the delay when compared to the business cycle is caused by the fact that investments and R&D activities that have already been started are completed once an economic downswing hits, and new IT investments and R&D measures are postponed after that. Similarly, the delay in the beginning of an economic upswing is caused by the time required to plan investments and R&D activities.

As noted above, the largest change in single IT index key figures between 2011 and 2012 occurred in the higher share of IT costs from the organizations' revenue. Changes were also observed in the other key figures, but they cancelled each other out during the calculation of the index. People still feel that there is a strong connection between IT and the growth of Finnish organizations. The respondents estimated that new innovations and ways of working generated with the help of IT increased the revenue of their organizations by an average of 4.9% in 2011. Even though this value is higher than the GDP growth of 3.3%, the difference between the index and the GDP growth is smaller than in the previous years. On the other hand, the respondents' estimates on cost savings increased from the IT Barometer 2011. We are of the opinion that

when combined, these two replies prove that people expect IT to improve their cost-effectiveness to a higher extent than in the previous years.

Year by year, the respondents have felt that it is easier to find IT experts in Finland – that is, up until this year's survey. We will not know until next year whether that change was just a coincidence. Most of the respondents were aware of the poorer situation of Nokia and other ICT companies when replying to the survey. If this is an actual change, we believe that it suggests a structural labor problem.

Even though the replies suggest that 62% of all organizations develop IT as a strategic resource, this was the lowest figure during the IT Barometer history. This variable was measured using a seven-point Likert scale where respondents were asked to assess the statement ”Our organization manages and develops IT as a strategic resource” on a scale of -3 (strongly disagree) to +3 (strongly agree). 62% of the respondents at the minimum somewhat agreed with the statement.

3.2 IT utilization index

To offer a more versatile view of the significance and benefits of IT to Finnish organizations, we added a new index on the utilization of IT and the IT management index that is described in more detail in Chapter 3.3. We set the base value of both of these indices as 100 based on the key figures of the 2012 survey. We also calculated the indices retroactively for 2009–2011. One of the key figures on utilization of IT (scope and reliability of management reporting) was included for the first time in the survey in the IT Barometer 2012. Missing figures were left out when calculating the indices retroactively. Thus, the indices for the previous years are not fully comparable with 2012, because the relative weighting coefficients of the key figures are higher for the retroactive years due to the one missing key figure. The key figures for the index on utilization of IT and the index values are included in the table below.

IT utilization index 2012	2009	2010	2011	2012
School grade (on a scale of 4 to 10) for application of IT in organizations	7.7	6.3	7.3	7.7
Impact of IT on improved profitability during the previous year, %	5.8	3.9	5.1	5.0
Management reporting is comprehensive and reliable	N/A	N/A	N/A	70%
Significance of cost savings achieved with IT	88%	80%	74%	75%
Significance of the increase of current business volume enabled by IT	88%	73%	85%	87%
Significance of new operations enabled by IT that improve revenue	83%	66%	79%	77%
Significance of customer satisfaction achieved with IT	91%	92%	90%	95%
Significance of innovative ways of working enabled by IT	82%	83%	82%	85%
Added value created by IT-driven innovations and their impact on business processes are known based on reliable indicators	50%	43%	50%	51%
Impact of IT on achievement of business goals is known based on reliable indicators	55%	40%	62%	58%
Reaching of targets is monitored after IT acquisitions	53%	45%	54%	57%
Organization is familiar with the impact of IT outsourcing in relation to goals based on reliable indicators	54%	42%	45%	48%

IT utilization index 2012	2009	2010	2011	2012
IT projects achieve their business goals	72%	63%	73%	69%
IT projects are implemented within the agreed budget	49%	45%	49%	50%
IT projects are implemented on schedule	43%	42%	43%	43%
IT utilization index	**102**	**89**	**99**	**100**

In the index we used variables of the IT Barometer survey that describe the application and utilization of IT. Four of the key figures are connected with the development of IT and the rest are about how IT is used (production). The reason such a weighting of key figures was used is that the share of IT development in total IT costs is 25% or less in most organizations. It should be noted, however, that division of IT costs between R&D and utilization has not been studied in connection with this survey.

Since each of the key figures is discussed in detail in Chapters 4–12, the IT utilization index is studied here at a more general level. The recession of 2008–2009 decreased the 2010 index value. The IT utilization index has remained almost unchanged except for 2010, i.e. the index has been close to a hundred. This suggests that the ability of Finnish organizations to utilize IT has remained stable. The ability to utilize IT has not improved nor deteriorated.

Is there any need to improve the ability to utilize IT? We believe that there is. The IT utilization index key figures show that there is a clear difference between the perceived significance of IT and the perceived ability to utilize IT. The IT key figure values are fairly high on the Likert scale. The share of replies in which the significance of IT is considered positive varies from 78% to 95% in the 2012 index. The key figures on familiarity with the impact of IT and the success of IT projects that are based on indicators are clearly lower: the share of positive answers varies from 43% to 69%. The key figure on application of it is 7.7, which is still below the key figures describing the significance of IT. This phenomenon can be seen in the index key figures for all the years included. The contradiction between the significance of IT and the ability to utilize it can also be observed in the key figures of the IT index that was discussed above. According to the IT index key figures, IT provides added value through innovations (the share of positive replies was 78% in 2012), innovations increase revenue more than the GDP growth, and IT assists organizations in saving costs amounting to 6.5% of their revenue. However, the respondents still state that only 62% of the organizations develop IT as a strategic resource. This means that the IT Barometer results reflect in many ways the opinion of the respondents that their organizations are not able to utilize IT to the extent it should be utilized, based on its significance.

This phenomenon has also been mentioned in the previous IT Barometer reports but we wish to mention it again, because it is an important development need of the Finnish national economy and IT management. If IT truly is highly significant for the success of organizations, as the replies of our respondents suggest, why is it that organizations fail to invest in the utilization of IT?

3.3 IT management index

We selected 12 key figures that describe IT management among the IT Barometer variables for the IT management index. We did not include the question as to whom the IT manager reports in the IT management index to ensure that it only describes IT management instead of the IT management organization. All the key figures of this index describe the share of positive replies to the statement pertaining to the key figure. Ten of the key figures are measured using a seven-point Likert scale and two (strategy for utilization of online business and strategy for utilization of social media) are measured on the scale of yes-no-unsure.

The IT management index includes two key figures on the management of data (agreements on ownership of data and decision-making regarding data, and familiarity with the data used in business) that were included

for the first time in the IT Barometer in 2012. Another key figure pertaining to overall architecture (business strategy, business models, and ways of working create a functional unity with IT) was also added this year. Missing figures were left out when calculating the indices retroactively. Thus, the indices for the previous years are not comparable with 2012, because the relative weighting coefficients of the key figures are higher for the retroactive years due to the three missing key figures. In our opinion, the growth of the key index figures effectively describes the fact that IT management has continuously expanded. We are of the opinion that the scope of the IT management index will expand further in the years to come.

IT management index 2012	2009	2010	2011	2012
Business strategy, business models, and ways of working create a functional unity with IT	N/A	N/A	N/A	64%
IT is used when reaching the strategic business goals	93%	89%	90%	88%
IT infrastructure, applications, information, and key processes form a functional whole	64%	59%	64%	78%
Top management, unit management, and IT management in our organization participate in IT management based on a clearly agreed division of work	64%	53%	62%	58%
Measurable targets have been set for IT acquisitions in order to consider the business needs	76%	73%	77%	58%
Impact of IT on the business is known based on reliable indicators	63%	50%	59%	58%
There are clear business and/or other goals for outsourcing IT functions	59%	51%	52%	49%
There is a clear strategy and plan of action on the utilization of online business	54%	31%	46%	46%
There is a clear strategy and plan of action on the utilization of social media	16%	16%	34%	34%
Limit values or other IT risk management goals have been defined for core IT risks	56%	50%	46%	56%
Agreements on ownership of data and decision-making regarding data have been made	N/A	N/A	N/A	54%
Employees are familiar with the data (events, master data, etc.) used in the business	N/A	N/A	N/A	70%
Mean value for the share of positive replies	**61%**	**52%**	**59%**	**59%**
IT management index	**101**	**87**	**99**	**100**

Since the IT management key figures are discussed in detail in Chapters 4–12, the IT management index is studied here at a more general level. As in the case of the IT utilization index, the IT management index has remained close to 100, except in 2010. The 2010 index shows the impact of the 2008–2009 recession. To ensure standardized measuring of the key figures, the table shows the mean value of the share of positive figures, which is around 60%, except for 2010. In our opinion, this figure is alarmingly low and shows that IT management is challenging. We believe that the IT management index and the related key figures prove that IT management skills have not experienced any major improvement in Finnish organizations in the past few years.

Single IT management key figures have changed, however. Some of the key figures – such as the key figures depicting architecture, the management of data, and the management of social media – have improved, which increases the 2012 index value. Other key figures have remained at almost the same level, such as the key figures on governance (division of labour in management), measuring the impact on business, the management of online business, and the management of IT risks. Key figures that have decreased include

those pertaining to the setting of goals and those pertaining to cooperation between the business and IT management when implementing the organization's strategy.

What other conclusions can be drawn based on the IT management index and the key figures on management? We believe that the fairly low mean value of positive replies and the fact that IT management has not developed can partly explain the above-mentioned contradiction between the significance of IT and the ability to utilize it. Secondly, the fact that attention is paid in new sectors of IT management – such as the management of architecture, new technologies, and data – improves their management, but the respondents feel that this improvement causes a regression in other IT management sectors. We believe that improving IT management abilities is the key means of increasing the benefits offered by IT to organizations and the society.

3.4 As a conclusion to the public IT Barometer report

In this public IT Barometer report, we summarize the results of the IT Barometer survey as three indices: the IT index, the IT utilization index, and the IT management index. They include a total of thirty-five key figures on the significance, utilization, and management of IT. The purpose of the IT Barometer is to offer more information about the significance of IT for Finnish organizations and to promote well-informed discussion.

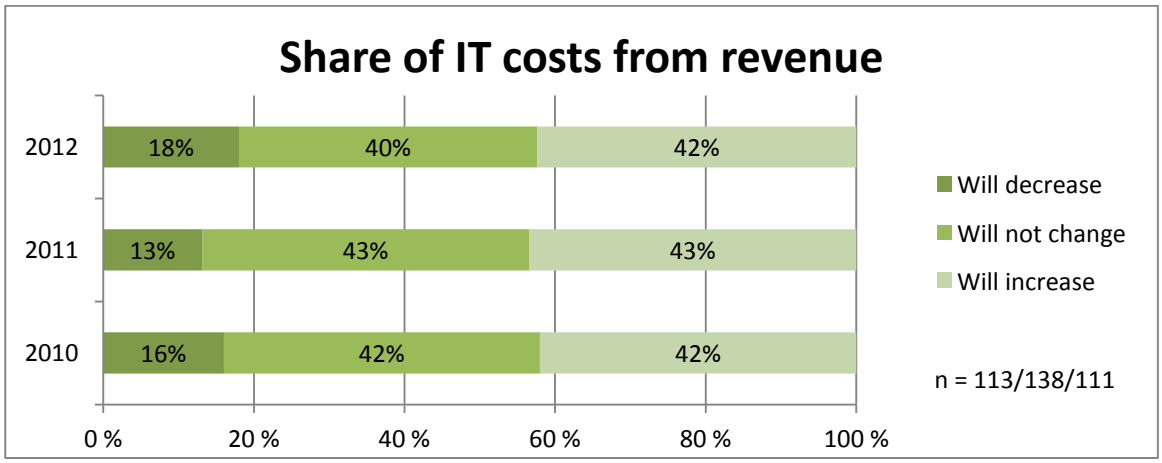
We believe that the key outcome of the IT Barometer is the need to develop IT management that is observed based on the results and thus the need to increase the benefits offered by IT to Finnish organizations and to the society in general. It is also one of the key ways of developing the information society that is based on networks and services. Despite the fact that IT management needs development, the respondents of the IT Barometer are of the opinion that IT already offers them clear benefits. It would be significantly more difficult to obtain more added value from IT with an already fine-tuned IT management and utilization system.

APPENDIX: Summary of IT Barometer's Chapters 4–12

4. Estimated impact of IT on business

4.1 Estimated share of IT costs in revenue

The IT Barometer respondents are asked to assess how large a share IT costs take up from their organization's revenue now and how large the share will be in three years time. Alternatively, they may assess how large a share of the organization's total budget is used to cover IT costs. In the case of respondents who assess both of these, we use the reply on the share of IT costs from revenue. The distribution of replies is shown below.



Respondents' views on how IT costs will develop in the next three years

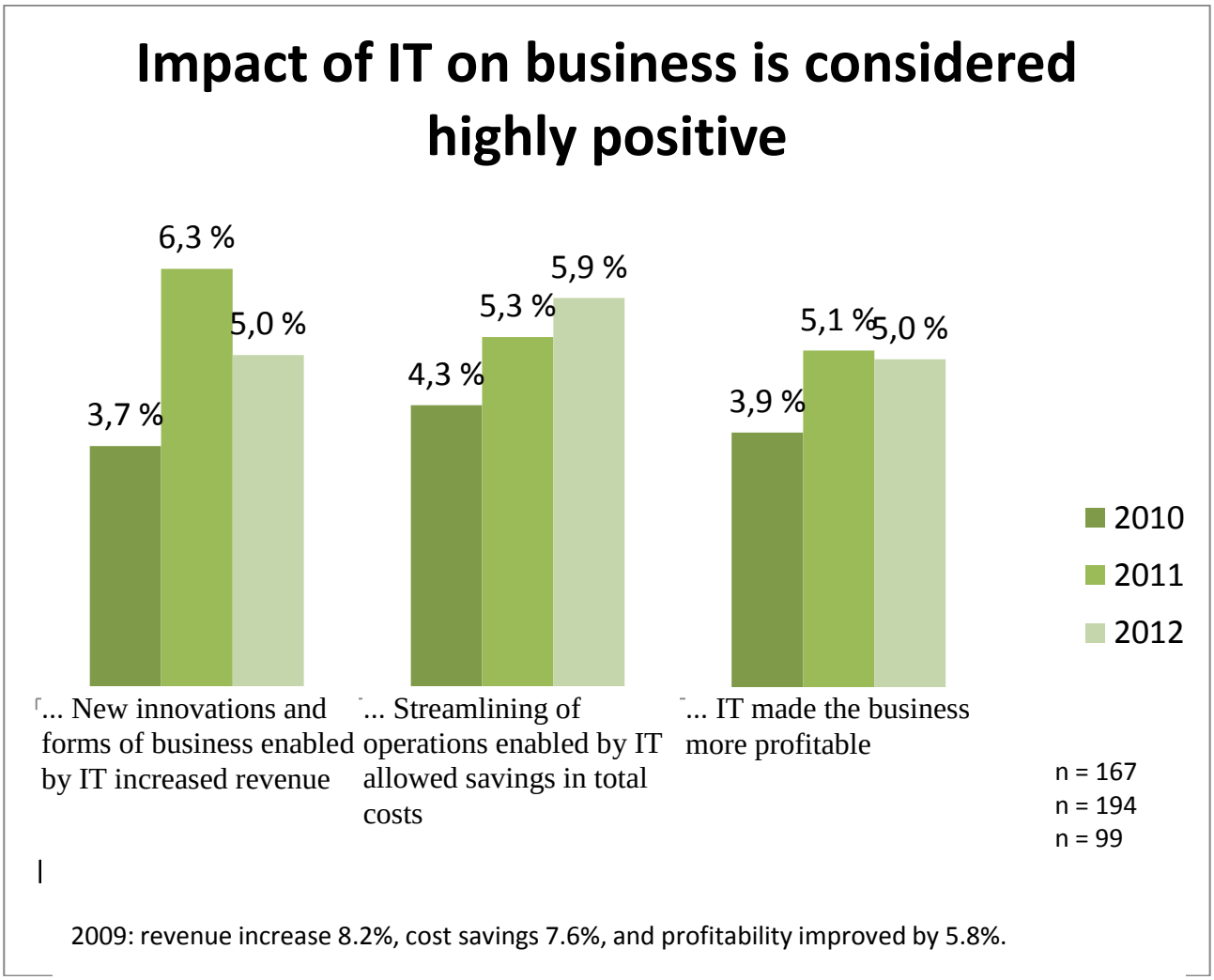
Other IT Barometer results related to the IT costs included in Chapter 4.1:

- There were more respondents who estimated the share of IT costs from revenue and the total budget to increase than respondents who believed that it will decrease.
- The mean value for the share of costs is 7.7% and the median is 2.5% when the replies on the share of IT costs from revenue and the share of IT costs from the total budget are combined.
- Among the respondents who included IT costs arising from IT components that are part of online business, automated solutions, products and services in the IT cost share, the mean value of the share of IT costs from revenue was almost double when compared to the replies by respondents who did not include these in their assessment.
- The share of IT costs from revenue is connected (Pearson Product Moment Correlation > 0.30) to four of the IT Barometer variables. The strongest correlation is between the share of IT costs from revenue and the ability to increase the revenue by means of new innovations enabled by IT.
- Differences in the share of IT from revenue of different organizations are caused by the combined impact of several factors. Below is a fourfold table where the axes are standardized architecture and streamlining of business with IT, and the values are the mean values of the share of IT costs from revenue.

n = 109	Mean value of IT costs from revenue or total budget	Mean value of IT costs from revenue or total budget
Well streamlined business and IT	**8.4% (n = 17, 16%)**	**17.6% (n = 11, 10%)**
Poorly streamlined business and IT (values 1–5)	**5.4% (n = 62, 57%)**	**4.9% (n = 19, 14%)**
	Non-functional overall architecture	Functional overall architecture

4.2 Assessing impact of IT on revenue, cost savings, and profitability

Respondents of the IT Barometer are asked to assess by how many per cent innovations and new ways of working enabled by IT increased the revenue of their organization, how many per cent of total costs they were able to save by streamlining their business with IT, and by how many per cent IT improved the profitability of their business the previous year. The graph below illustrates the mean values of the three most recent IT Barometers. As the graph shows, the respondents' views regarding all the variables were extremely positive.



Respondents' view on impact of IT on the business of their organization.

Other results pertaining to these variables included in Chapter 4.2:

- In all the IT Barometers, the respondents have estimated that new innovations and ways of working enabled by IT will increase the revenue of their organization clearly more than the GDP growth. The difference was the largest, 12%, in the IT Barometer 2010; according to the IT Barometer 2012, the difference was 2.3% in 2011.

- In all the IT Barometers, the respondents have estimated that thestreamlining of business with the help of IT will generate more total cost savings than the profitability of the national economy will increase during the same time. According to the IT Barometer 2012, the difference in 2011 was 5.0%.

- The respondents' assessments on revenue increase enabled by IT-powered innovations, savings in total costs, and increased profitability have exceeded the average share of IT costs from revenue in all the IT Barometers except for 2010.

- The revenue increase enabled by IT-powered innovations and new ways of working is connected (Pearson Product Moment Correlation > 0.30) to five of the IT Barometer variables. The strongest correlation is with the total cost savings enabled by IT.

- The savings in organization's total costs enabled by IT-powered activity is connected (Pearson Product Moment Correlation > 0.30) to four of the IT Barometer variables. The strongest correlation is with improved profitability caused by IT. This correlation is fairly high, 0.75.

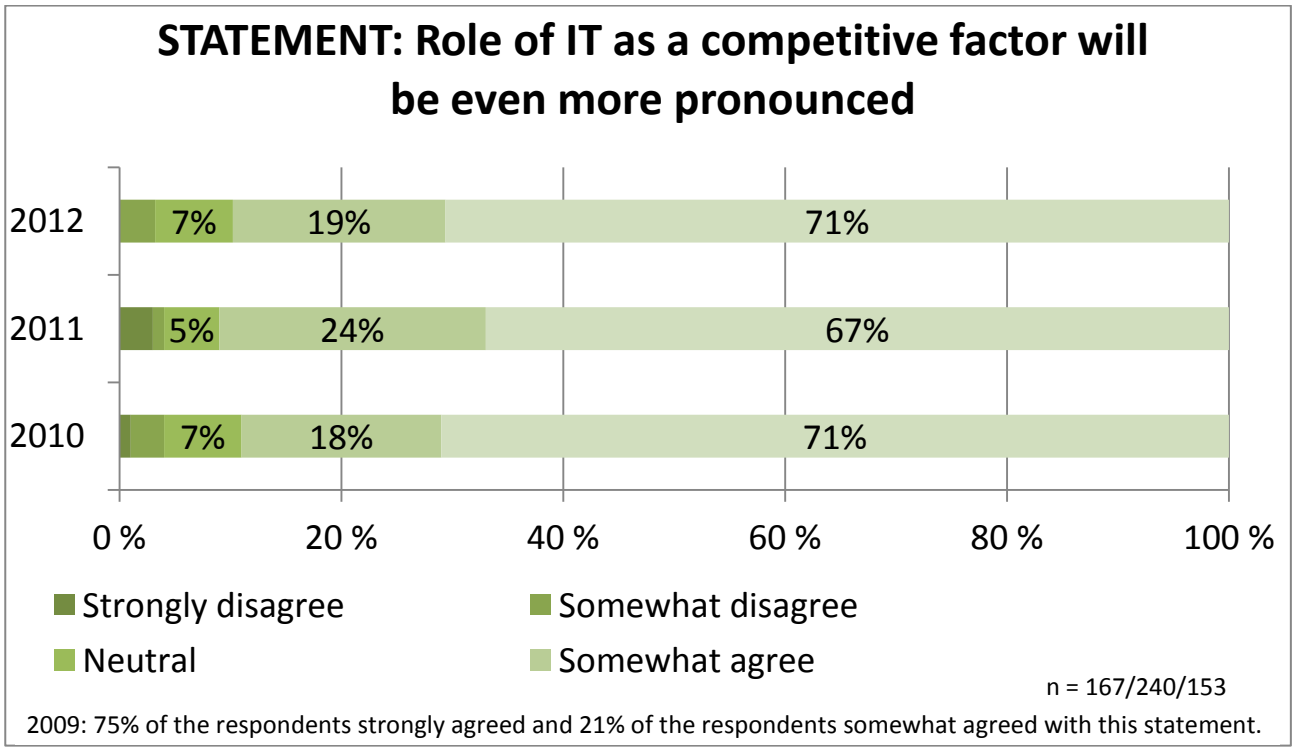
4.3 Assessing impact of IT on organizations' competitiveness

The IT Barometer respondents are asked to assess how IT will influence the competitive ability of their organization in the future. The graph below illustrates the distribution of replies given in the three most recent IT Barometers. Most of the respondents estimated that IT will become an even more important competitive factor.

Other results related to the impact of IT on future competitive ability of organizations included in Chapter 4.3:

- The assessments of respondents working in business management and IT management are very similar: 90% of the respondents estimated that IT will be even more important for the competitive ability of their organization in the future.

- The role of IT in future competitiveness is connected (Pearson Product Moment Correlation > 0.30) to fifteen of the IT Barometer variables. The strongest correlation is with the statement ”*Using IT effectively in innovations and streamlining of business processes is central for the organization's future success”.*



Respondents' view on significance of IT in future competitiveness of their organization

4.4 Assessing IT as a business partner

The IT Barometer respondents are asked to assess how well IT functions as a business partner in the achievement of strategic goals. The graph below illustrates the distribution of replies given in the three most recent IT Barometers. Most of the respondents stated that IT is a functional partner in the achievement of business goals.

Other results on IT as a business partner included in Chapter 4.4:

- Each year, the assessments of respondents working in IT management on the role of IT as a business partner have been slightly more positive than the assessments of respondents working in business management. The difference is slight, however.

Respondents' view on whether IT serves the business in achieving strategic goals.

4.5 Assessing impact of IT on future success factors

In addition to the general significance of IT, the IT Barometer respondents are asked to assess the importance of IT in terms of eight success factors of their organization. Except for the variable on finding IT experts in Finland, the variables to be assessed are key business success factors (even if the word 'IT' is omitted from the beginning of the statement). As in the previous IT Barometers, most of the respondents – 75% or more – stated that IT is highly significant for all the future success factors of their organization, which is illustrated in the graph below.

Other results related to the impact of IT on future success factors of organizations included in Chapter 4.5:

- The views of respondents working in IT management and business management somewhat vary. Business managers considered customer satisfaction and increasing volumes of the current business to be the most important factors.

- We analysed the correlations between the impact of the five IT success factors the respondents considered the most important and the other IT Barometer variables. There were correlations scoring more than 0.30 both in between the success factors and in relation to 5–8 other IT Barometer variables in the case of each statement. For example, customer satisfaction generated by IT most strongly correlated with a fluent IT solution selection process that takes into account future business needs.

Share of respondents (percentage) who considered IT to be important for the future success of their organization

4.6 Organization success factors – replies to open-ended questions

The impact of IT on future success factors of the organizations that were studied in Chapter 4.5 does not include all the impacts of IT on future success of organizations. This is why we included in the survey, as in previous years, an open-ended question to the IT and business managers on the development of which IT competence areas is the most important for the future success of their organization's business. Each respondent was asked to mention a maximum of three such IT competence areas. 99 people replied to this question with a total of 239 answers, i.e. each respondent provided in average almost 2.5 competence areas. Of those mentioned, the most important competence areas were management of data and management with data, management of IT service development and production, management of projects and the project portfolio, ERP, and CRM.

An example of the results of the open-ended questions – management of data and management with data:

In this year's survey, 28 of the respondents suggested development of management with data. Eight people mentioned business intelligence, five talked about developing reporting, and databanks, management of data, master data and document management were each mentioned by two people. The respondents also mentioned management of customer data, sales monitoring, metadata, improving the quality of data, data

architecture, and utilization of data modelling competence. Clearly more respondents than last year mentioned development areas involving management of and with data.

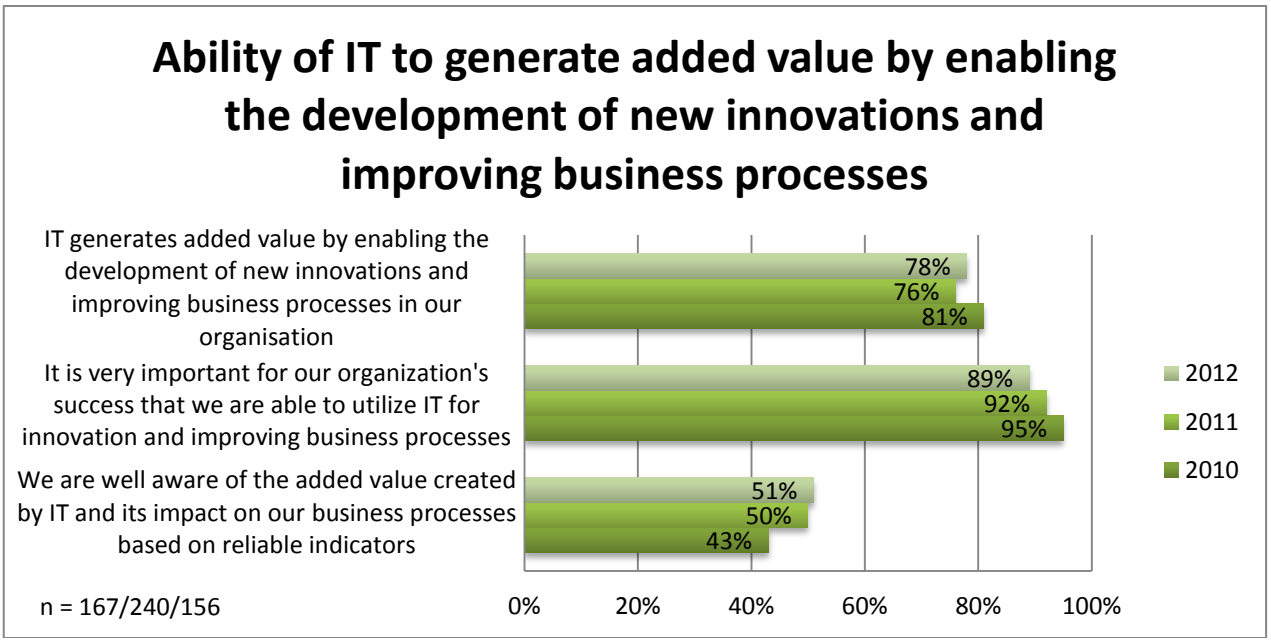
5. Ability of organizations to utilize IT

5.1 Assessing difficulty of finding IT experts in Finland

The respondents consider IT experts, particularly experts who have the competencies needed in the organization's business, to be integral in terms of the utilization of IT. This is why we ask the respondents to assess how difficult finding IT experts in Finland is. 67 respondents (44%) stated that it is difficult to find IT experts, while 54 respondents (45%) were of the opinion that it is easy.

5.2 Assessing ability of IT to generate added value by enabling the development of new innovations and improving business processes

We ask the respondents to assess from three different perspectives the ability of IT to generate added value for their organization by enabling the development of new innovations and improving business processes. The respondents are asked to assess the significance of IT in the generation of such added value for their organization, whether IT generates such added value, and whether there are reliable indicators available to measure the generation of such added value. The graph below illustrates the results.



Respondents' views on added value generated by IT for the organization's business by enabling the development of new innovations and improving business processes. Share of respondents agreeing with the statements

Other results related to the added value generated by IT for the organization's business by enabling the development of new innovations and improving business processes included in Chapter 5.2:

- Each year, nine respondents out of ten state that using IT in innovation and when improving business processes is important to the success of their organization. Similarly, around 75% of the respondents

– i.e. around 15% less – state that IT generates added value for their organization by enabling the development of new innovations and improving business processes. However, only around half of the organizations – i.e. around 40% less than the estimated future significance – have access to reliable indicators on the actual impact of IT in the development of new innovations and the improvement of business processes.

- This phenomenon is repeated in the case of all the series of statements that study the utilization of IT and its management. The significance is assessed as the best, the current status is assessed as the second best, and the information based on reliable indicators is assessed as the poorest. Secondly, the differences between the respondents' assessments between these three types of statements are fairly clear. Thirdly, the difference between the respondents' assessments has remained quite stable year after year.

- The views of people working in IT management and people working in business management differ slightly. Those working in IT management are more likely to state that IT generates added value with new innovations and improved business processes.

- Twenty-two correlations scoring higher than 0.30 were found between IT generating added value by enabling the development of new innovations and improving business processes and the other IT Barometer variables.

- All of the twenty-two correlations were expected and desired from the viewpoint of the utilization of IT and IT management. Among single correlations, the one between *IT generating added value by enabling the development of new innovations and improving business processes* and *the role of IT in future competitiveness* is the strongest.

5.3 Assessments on management and development of IT as a strategic resource

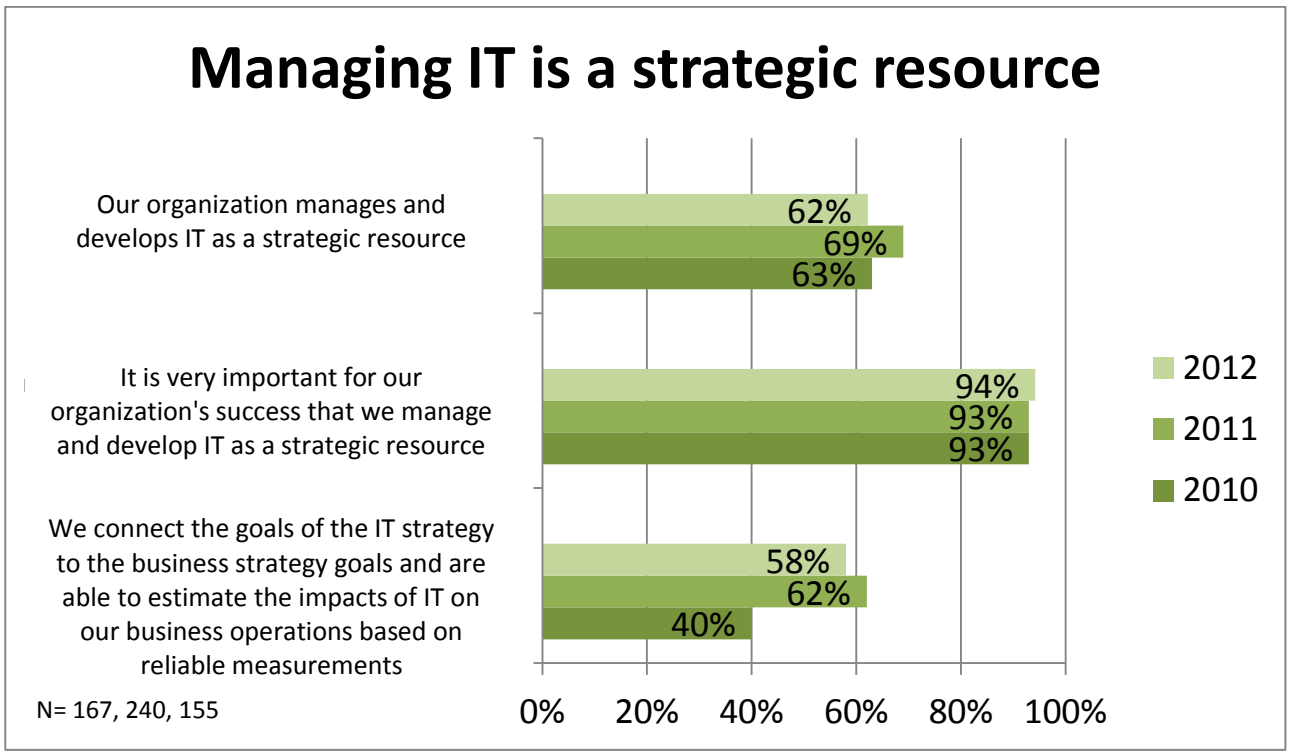
Another series of statements the respondents are asked to assess from three different viewpoints – the present, significance, and measuring impact – is managing and developing IT as a strategic resource. The respondents are asked to assess whether IT is being managed and developed in their organization as a strategic resource, whether the management and development as a strategic resource is important, and whether the impact of IT on the business is known based on reliable indicators. It should be noted that the wording of the third statement does not include any mention of managing and developing IT as a strategic resource; instead, it more broadly measures the awareness of the impact of IT on the business. The graph below illustrates the results.

Other results related to managing IT as a strategic resource of the organization included in Chapter 5.3:

- As in the previous years, almost all of the respondents (94%) stated that managing and developing IT as a strategic resource is very important in terms of the future success of their organization. Since the share of positive assessments on the future status of IT management also decreased this year, the difference between the importance of management and development of IT and the current management status increased to a whopping 32%. In our opinion, this result is an alarming sign of the huge gap between the perceived significance of the management and development of IT and the actual IT management and development capacity.

- Sixteen correlations scoring higher than 0.30 were found between managing and developing IT as a strategic resource and the other IT Barometer variables.

- All of the sixteen correlations were expected and desired from the viewpoint of the utilization of IT and IT management. Among single correlations, the one between *managing IT as a strategic resource* and *systematic development of IT competencies and IT management competencies required in business operations* is the strongest (correlation coefficient 0.66).



Share of respondents who agree with the statements on management of IT as the organization's strategic resource

5.4 Assessments on selecting IT solutions

The IT Barometer respondents are asked to assess the selection of IT solutions from several viewpoints: functionality of the current solutions, significance of successful choices, setting of goals, and measuring achievement of the goals. The graph below illustrates the results of the three most recent IT Barometers on the three statements regarding the selection of IT solutions.

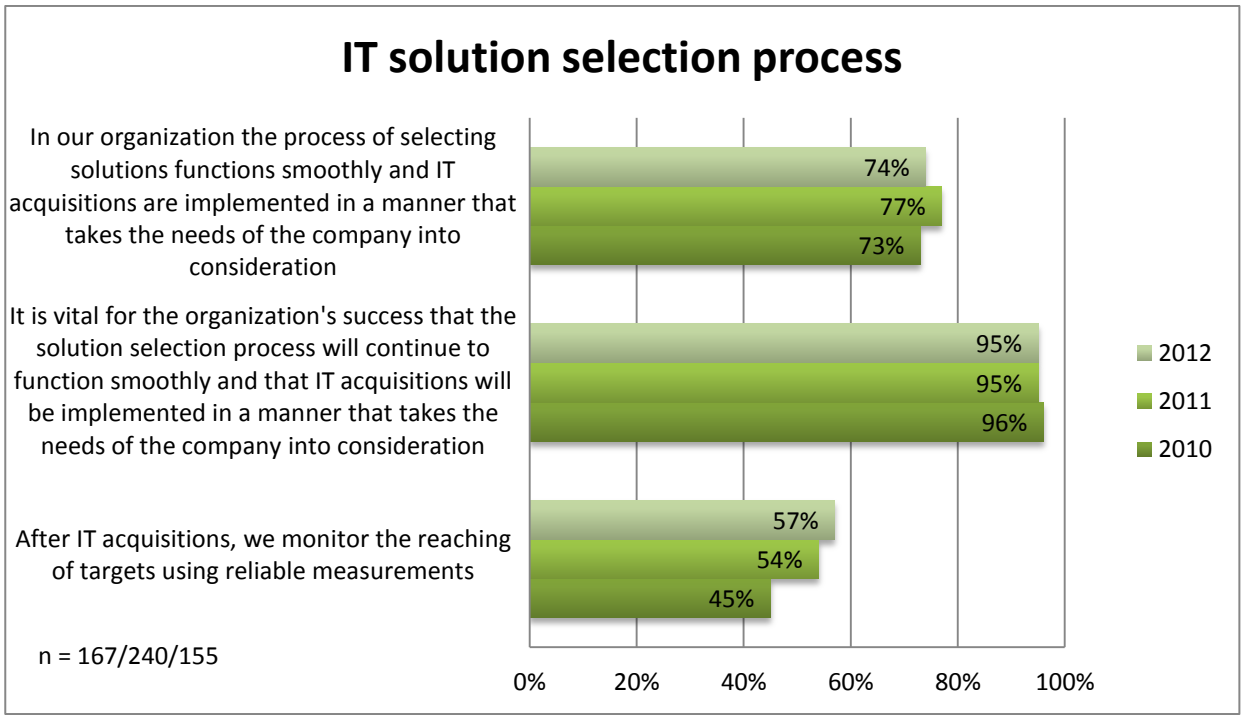
Other results pertaining to selecting IT solutions included in Chapter 5.4:

- The familiar phenomenon is repeated here. People are of the opinion that a functional IT solution selection process that takes into account the business needs is important. 95% of the respondents agree with this statement. Most of the respondents, but clearly a smaller share than in the case of the statement mentioned above, are of the opinion that IT solutions are fluently selected in their organization. 74% of the respondents agree with this statement. Only a little over half of the respondents are of the opinion that their organization monitors the achievement of the goals set for IT solutions. Only 57% of the respondents agree with this statement.

- The views of people working in IT management on functionality of the IT solution selection process are more positive than the views of people working in business management. Most of the business managers still consider the process to be functional, however.

- The IT Barometer respondents are asked to also separately assess a statement on setting measurable goals for IT acquisitions. 58% of the respondents agree with this statement. This means that some of the respondents feel that IT solutions are fluently selected even though the functionality of the process is not measured with any clearly defined goals. We created a fourfold table on the measurable goals set for IT acquisitions and the functionality of the IT solution selection process. 7% of the answers (11 in total) fell in the fourfold table sector where no measurable goals are set for IT projects but the IT solution selection process is considered functional.

- Twenty-eight correlations scoring higher than 0.30 were found between functionality of the IT solution selection process and the other IT Barometer variables. The strongest correlations are between the functionality of the IT solution selection process and the school grade given for application of IT and the business goals of IT projects. All of the twenty-eight correlations were expected and desired from the viewpoint of the utilization of IT and IT management.



Respondents' view on selecting IT solutions; share of respondents who agree with the statements.

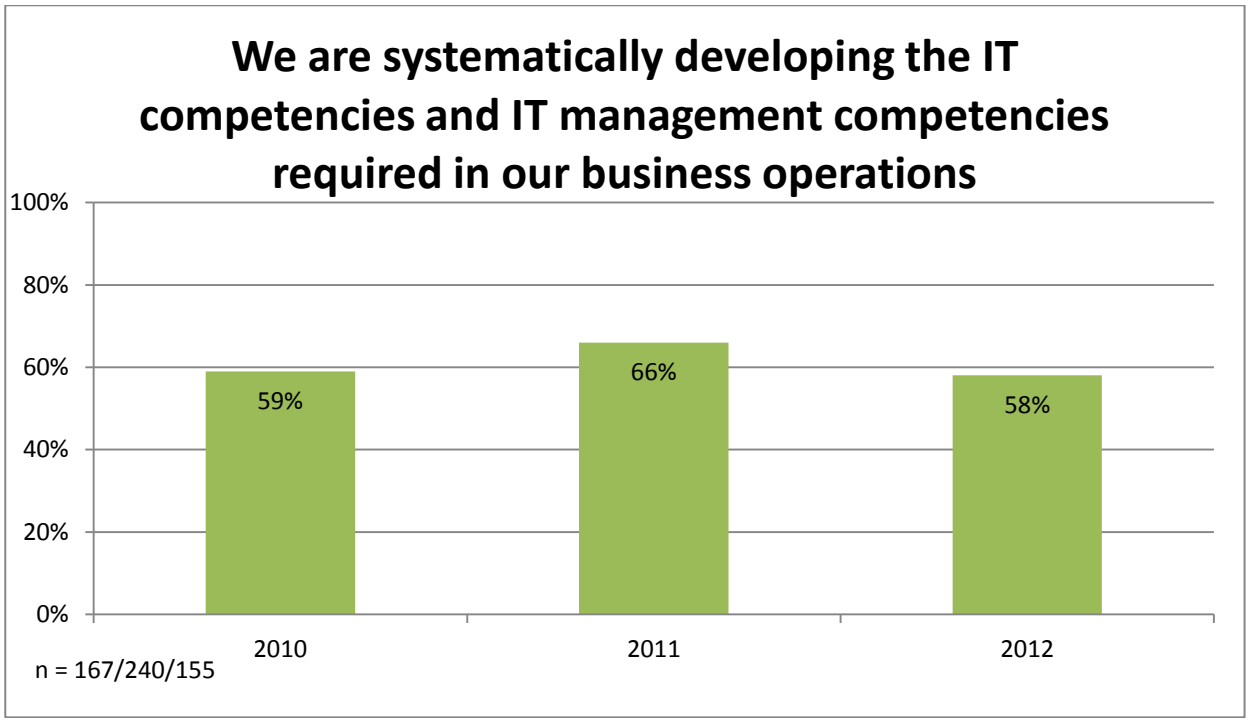
5.5 Assessing development of IT competencies

In the IT Barometer 2012, we reformed the section on IT competencies by deleting some questions. We asked the respondents to assess the development of IT competencies and IT management competencies in their organizations with the following statement: *"We are systematically developing the IT competencies and IT management competencies required in our business operations"*. The graph below illustrates the results.

Other results related to development of IT competencies and IT management competencies included in Chapter 5.5:

- Clearly fewer respondents (58%) agreed with this statement than with the other statements on the significance and status of IT utilization. We believe that this is one of the key reasons behind the gap between the perceived significance of IT and the actual ability to utilize and manage IT.

- Twenty-four correlations scoring higher than 0.30 were found between the development of IT competencies and IT management competencies and the other IT Barometer variables. Respondents who stated that IT competencies are systematically developed in their organization were also of the opinion that IT is managed and developed as a strategic resource, the organization's overall architecture is functional, the organization has a clear IT management model, level of IT application is high, and IT is a business partner in the achievement of strategic goals. All of the twenty-four correlations were expected and desired from the viewpoint of the utilization of IT and IT management.



Respondents' views on systematic development of IT competencies. Share of respondents agreeing with the statement.

5.6 Assessing functionality of IT management and overall architecture

IT governance or the division of responsibility and work in managing and utilizing IT and the overall architecture are considered the cornerstones of IT management. Respondents to the IT Barometer are asked to assess the functionality of IT management (IT governance), the IT architecture, and the overall architecture with three statements. The graph below illustrates the replies to the statement on governance.

Other results pertaining to the management of IT and functionality of the overall architecture included in Chapter 5.6:

- A little over half (58%) of the respondents stated that business management and IT management participate in IT management based on a clear division of labor. We believe that the lack of a clear division of labor in IT management is – in addition to poor development of IT competencies –

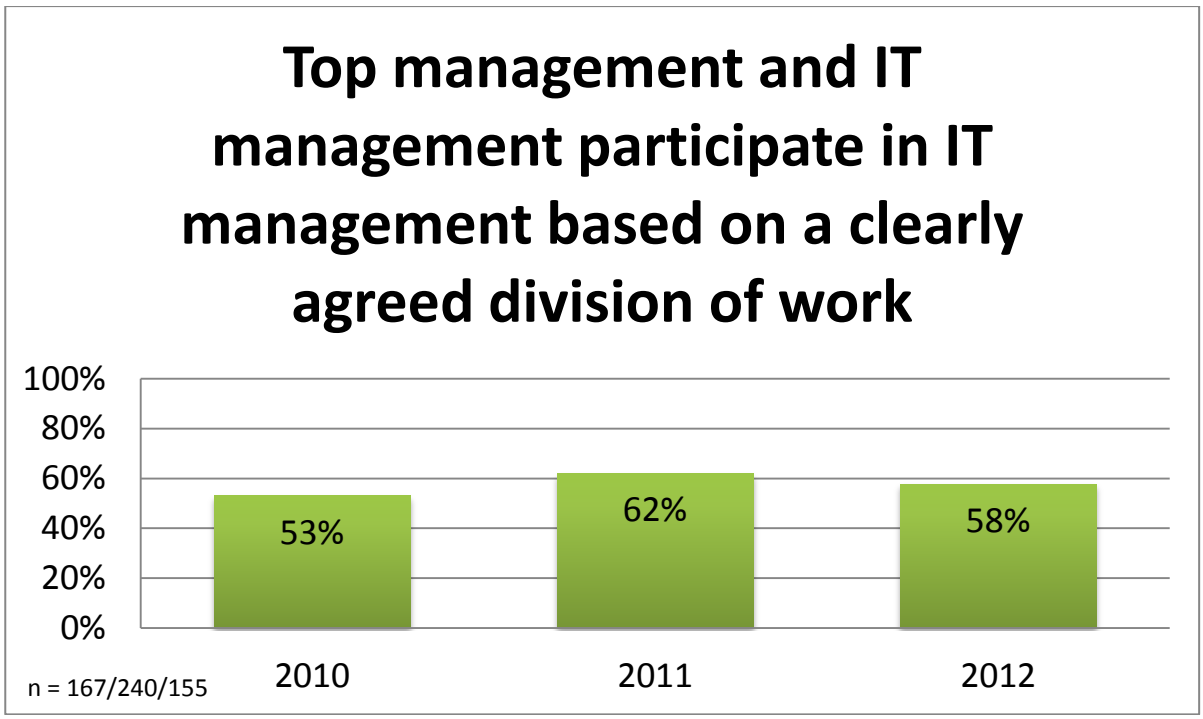
another key reason behind the gap between the perceived significance of IT and the actual ability to utilize and manage IT.

- People working in IT management stated more often than people working business management that the division of labor is unclear.

- Almost three out of four respondents stated that the overall IT architecture is functional from the IT architecture viewpoint. People working in IT management were more likely than people working in business management to state that the IT architecture is functional.

- Around two out of three respondents stated that the overall IT architecture is functional from the viewpoint of business architecture. Assessments of people working in IT management and business management did not differ here.

- Twenty-five correlations scoring higher than 0.30 were found between IT governance and functionality of the IT architecture and the other IT Barometer variables. The strongest correlation was found between IT governance and managing IT as a strategic resource. Similarly, the strongest correlation was found between the functionality of the IT architecture and the school grade on application of IT. All of the twenty-five correlations were expected and desired from the viewpoint of the utilization of IT and IT management.



Respondents' views on division of labour in IT management (IT governance). Share of respondents agreeing with the statement.

5.7 Assessing the measuring of IT impact

One issue that is continuously discussed is how the results and impact of IT should be measured. Measuring of IT usually focuses on measuring its impact on performance, such as IT service level or response times.

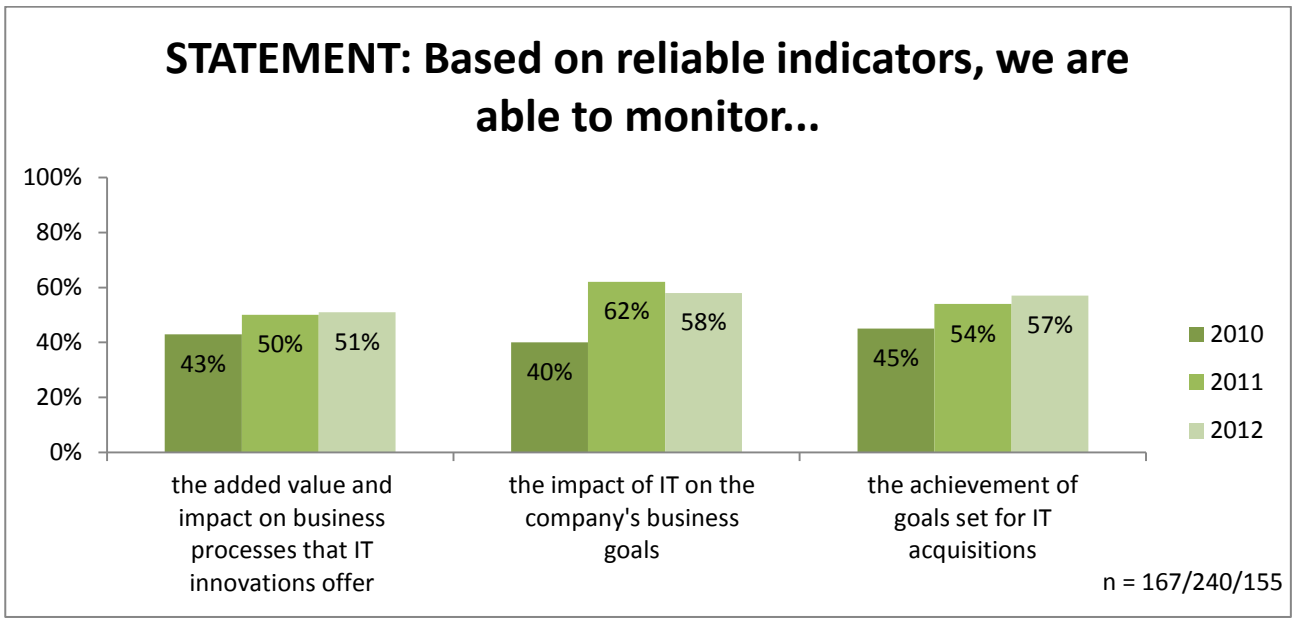
Measuring the actual impact of IT on business is considered very difficult, and people believe that only organizations that are very good in utilizing and managing IT do it. The need to measure the impact of IT and data continuously increases as IT is more widely utilized. It was noted in Chapter 4 that the share of IT costs from an organization's revenue or total budget is around double the costs of traditional data administration. This is why the IT Barometer studies how well organizations are able to measure the impact of IT on their business and how the measuring is being developed. The graph below illustrates the situation.

Other results pertaining to measuring the impact of IT included in Chapter 5.7:

- A little less than 60% of the respondents stated that their organization is aware of the impact of IT on its business based on reliable indicators. This result has not changed in the past three years.

- One characteristic of this variable has been the fact that people working in business administration have assessed their knowledge of the impact of IT in their business as being slightly better than people working in IT administration. The share of people agreeing with this statement is as high among both groups, and fairly high when compared to the past years. Less than half of experts agree with the statement.

- Fourteen correlations scoring higher than 0.30 were found between measuring impact of IT and the other IT Barometer variables. The results of statements on measuring correlate with each other: respondents who state that their organization is familiar with the impact of IT on their business based on reliable indicators also state that IT is a business partner in the achievement of strategic goals, IT is developed as a strategic resource, the overall business architecture is functional, and IT generates added value by enabling the development of new innovations and improving business processes. All of the fourteen correlations were expected and desired from the viewpoint of the utilization of IT and IT management.



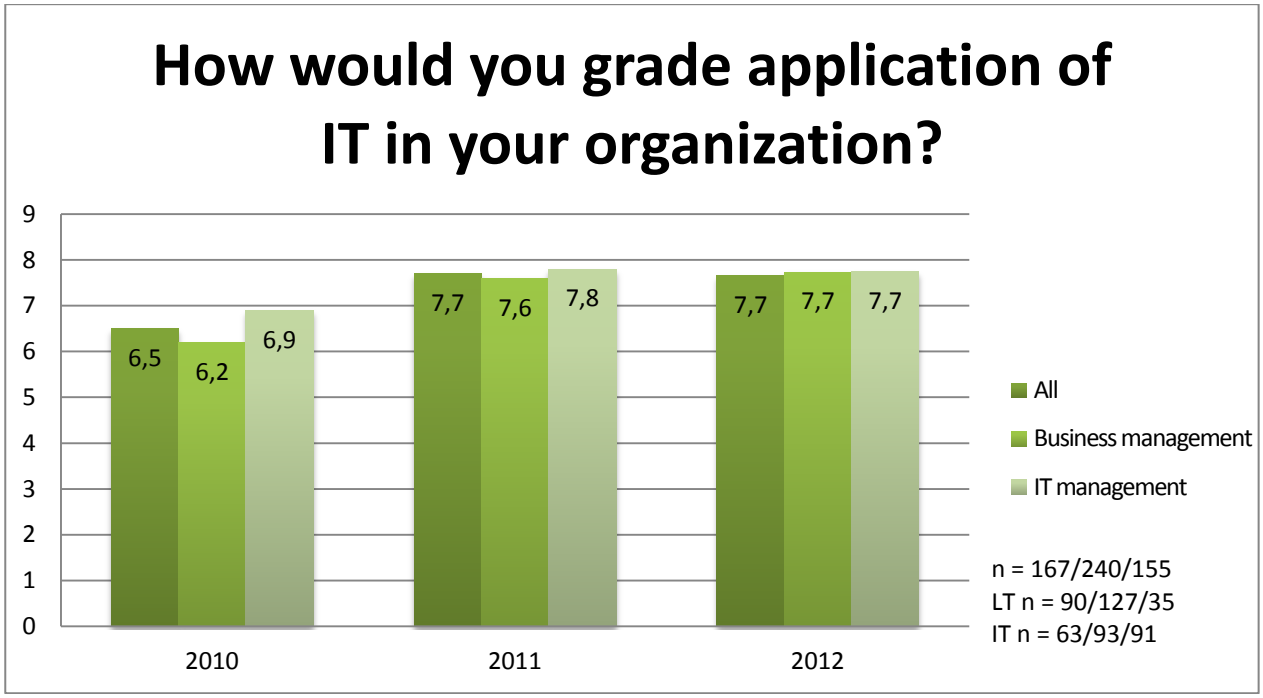
Respondents' view on the use of reliable indicators describing the impact of IT. Share of respondents agreeing with the statements.

5.8 School grade given to application of IT in organizations

The school grade given for the application of IT is an indicator of how well IT is applied and utilized as a whole. The respondents are asked to give a school grade (on the scale of four to ten) for application of IT in their organization. The graph below illustrates the results of the three most recent IT Barometers.

Other results on the school grade given to application of IT in Chapter 5.7:

- Twenty-four correlations scoring higher than 0.30 were found between the school grade given to application of IT and the other IT Barometer variables. The strongest correlation was found between the school grade for application of IT and the development of IT competencies and IT management competencies. All of the twenty-four correlations were expected and desired from the viewpoint of the utilization of IT and IT management.



Mean value of the school grades given by the respondents to the application of IT.

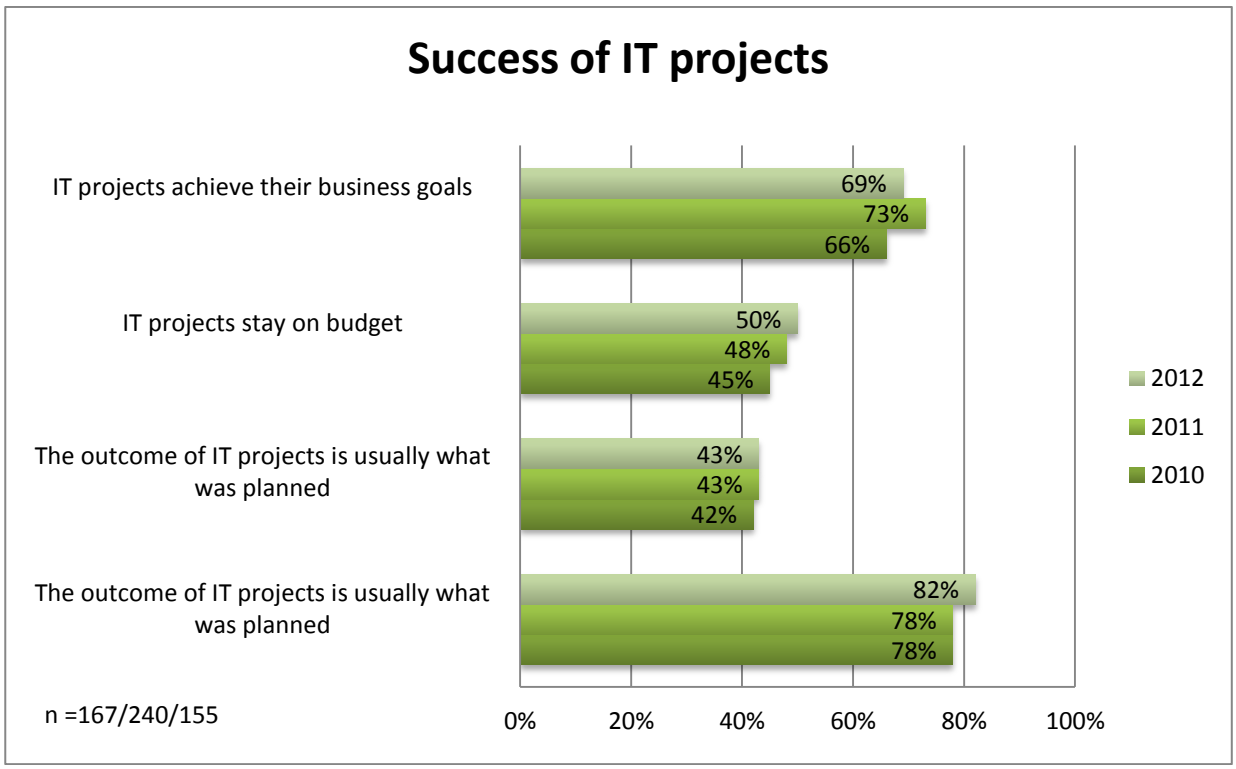
As a summary of several recurring observations we have already discussed, we would like to note the following based on Chapters 4 and 5 of the IT Barometer:

1. A clear division of labor between IT management and business management and their participation in the management of IT, the setting of goals, measuring the results, and managing IT as a whole will positively influence the benefits offered by IT. When the executives take care of their tasks, i.e. when they actively participate in IT management, the organization will be more successful in utilizing IT.

2. Similarly, the benefits from IT will be less if the division of labor is non-functional, goals are not set, and the impact of IT is not measured.

6. Success of IT projects

IT projects – or more accurately business development projects based on IT – are often accused of running over budget and schedule. Based on the IT Barometer results from over the years, such accusations seem justified. This year's results also suggest that most IT projects run over the budget and/or schedule. Furthermore, only a little over two out of three projects (69%) reach their business goals. The graph below illustrates the results.



Share of respondents agreeing with the statements on success of IT projects

Other results pertaining to success of IT projects in Chapter 6:

- Less than one out of every three respondents stated that projects are completed on schedule and in budget, and the business goals set are achieved. The share of successful IT projects has not changed during the five years of IT Barometers.

- Despite the problems with IT projects, almost 80% of the respondents stated that the final outcome of an IT project usually complies with the plans. An assessment of the underlying reasons of this phenomenon is included in the full report.

- We studied the connection between adherence to the schedule and budget and the reaching of the business goals and the fact that the IT project outcome usually complies with the plan. We compared two variables by assessing the interconnection between adherence to the schedule/budget and achievement of the project goals and IT projects being completed as planned. When the comparison was completed, we selected two variables pertaining to the schedule, budget and achievement of business goals, and compared the interconnection between their failure and the assessments stating that IT projects were completed as planned. Finally, we assessed the simultaneous connection

between the three success factors and the assessments stating that IT projects were completed as planned.

- The observations included, among others, that 37% of the respondents who stated that IT projects ran over the schedule and budget and did not meet the business goals also stated that the final outcome of IT projects usually complies with the plans. This means that these people consider the failure to reach the goals or keep to the schedule and budget a normal feature of IT projects.

- There were some differences between how people working in business management and IT management assessed this issue.

- There were only a few correlations scoring higher than 0.30 between the assessments on IT projects' adherence to schedule and budget and the other IT Barometer variables. Their mutual correlation was high, however (0.72). Both adherence to schedule and adherence to budget most strongly correlated with the fluency of IT acquisitions.

- Thirteen correlations scoring higher than 0.30 were found between achievement of IT project goals and the other IT Barometer variables. The respondents who stated that IT projects achieve the set business goals also stated that IT solutions are fluently implemented in a manner that takes the needs of the business into consideration, and that the IT architecture is functional from both the business and IT perspectives. All of the thirteen correlations were expected and desired from the viewpoint of the utilization of IT and IT management.

7. Impact of business cycles on utilization of IT

When the IT Barometer 2009 that was implemented in fall 2008 was being planned in the spring and summer of 2008, the economy was in a rapid decline. Companies had already started preparations for the anticipated recession that occurred largely in 2009. As noted above, the data for the IT Barometer 2009 was mostly collected at the end of 2008. The economic situation at the time offered us a unique opportunity to study the impact of the anticipated recession on attitudes towards IT, and thus we decided to create a separate series of statements to study this issue. The series, consisting of three statements, was at initially called *'the impact of slow economic growth'*. The number of statements was increased to seven in 2010, at which time the series was renamed *'impact of business cycle on your organization'*.

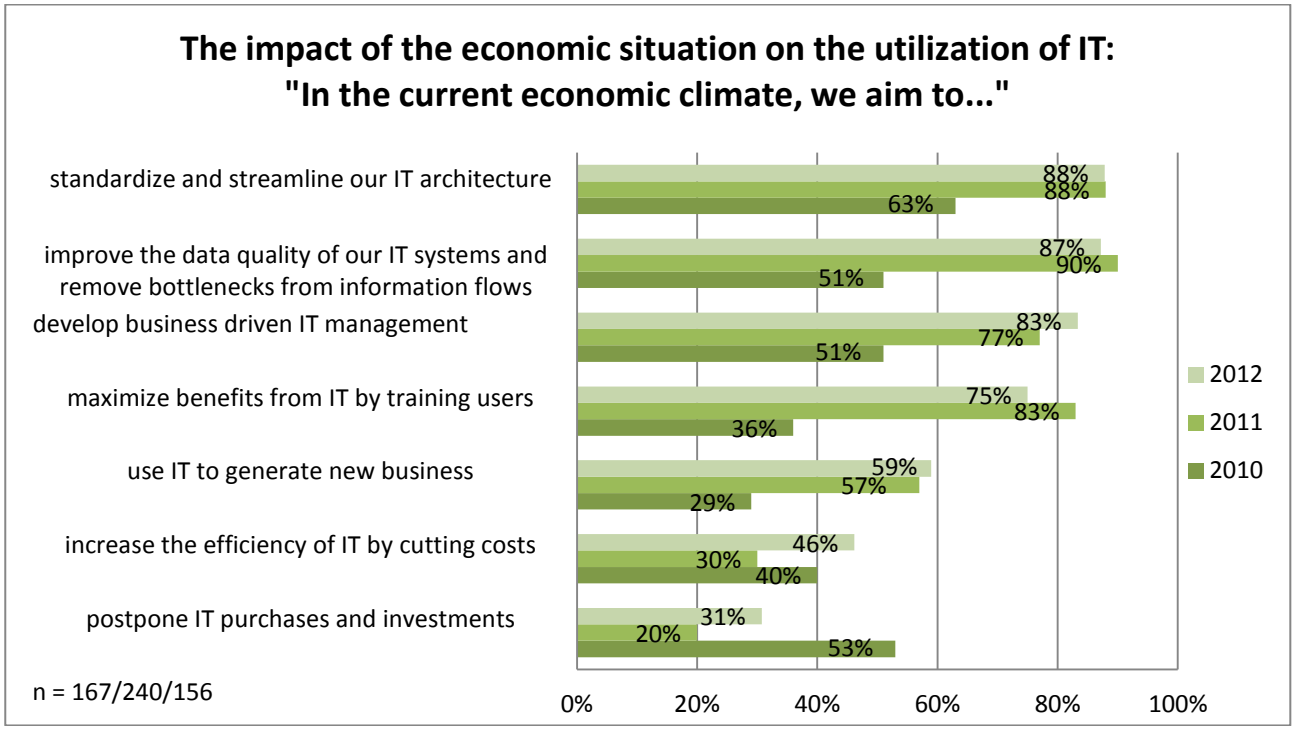
The recession in 2008–2009 was clearly worse than anticipated: it was the steepest decline of GDP recorded during the history of independent Finland. The depression also clearly influenced the attitudes and assessments on utilization of IT, IT investments, and development of IT. This impact could be seen in the IT Barometer 2010 for which the data was collected in early 2010. In addition to the decline of the IT Barometer as a whole (see Chapter 3), the values of almost all the IT Barometer variables experienced a clear decrease. We used the series of questions on the impact of business cycle also in the 2010 and 2011 IT Barometers. Furthermore, in 2010 we added a series of questions studying the respondents' views on the actual vs. anticipated behavior of organizations. We reported in the previous IT Barometers the respondents stating just before the recession of 2008–2009 that their organizations will both cut IT costs and postpone IT investments and use IT to generate new business and improve business processes. Of these anticipated actions, only the IT cost cuts and postponing of IT investments were actually realized. The replies also show that organizations failed to implement during the recession of 2008–2009 even measures they could have implemented without additional costs and/or investments. These observations played a key role when we summed up the view we expressed above, namely that organizations react to IT needs with a delay that depends on the business cycle and implement IT investments when they feel they can afford it. The results also seem to suggest that organizations stop almost all IT development measures during a deep recession. This may be caused by the need to focus on basic IT services, the fact that R&D personnel cuts are made, the

fact that people are afraid to propose development measures for fear of losing their jobs, the general bleak atmosphere, or something else.

We considered deleting the series of statements on business cycle from this year's survey. However, the economic situation in spring 2012 was becoming more and more reminiscent of fall 2008, which offered us another opportunity to study the impact of an anticipated recession on attitudes on IT and IT plans. The business cycle statements also request the respondents to assess what kind of IT measures their organization plans to implement in the near future. These variables have become an integral part of the IT Barometer.

7.1 Assessing future utilization of IT

As illustrated by the graph below, the anticipated recession was not visible in the assessments regarding utilization of IT in the summer of 2012. This can be clearly seen when comparing the figures from 2010 and 2012.



The impact of the economic situation on the utilization of IT; share of respondents who agree with the statements.

The full IT Barometer includes a more detailed comparison of the figures from over the years.

7.2 Assessing impact of business cycle on IT investments

The full IT Barometer includes a detailed study of the changes in distribution of replies over the years. The assessments on implementing IT investments instead of postponing them only somewhat weakened from 2011.

7.3 Assessing impact of business cycle on user training

The full IT Barometer includes a detailed study of the changes in distribution of replies over the years. The assessments on user training did not significantly change from 2011.

7.4 Assessing impact of business cycle on quality of data

The full IT Barometer includes a detailed study of the changes in distribution of replies over the years. The assessments on plans to improve the quality of data provided by IT solutions and eliminate data flow losses were slightly more positive than in 2011 and clearly more positive than in 2010.

7.5 Assessing impact of business cycle on development of architecture

The full IT Barometer includes a detailed study of the changes in distribution of replies over the years. The assessments on standardizing and streamlining the IT architecture were at around the same level as in 2011 and clearly more positive than in 2010.

7.6 Assessing impact of business cycle on development of business-driven IT management

The full IT Barometer includes a detailed study of the changes in distribution of replies over the years. The assessments on plans to develop business-driven management of IT are slightly more positive than in 2011 and clearly more positive than in 2010. The views of respondents working in IT management and business management somewhat vary.

7.7 Comparison of IT Barometers 2009 and 2012

The full IT Barometer includes a note that the assessments during the early stages of a recession were similar in 2009 and 2012.

8. IT outsourcing and cloud services

The respondents' views on outsourcing IT have been studied since the very first IT Barometer Cloud services as a new form of IT outsourcing were included for the first time in the IT Barometer 2011.

8.1 Assessing degree of outsourcing

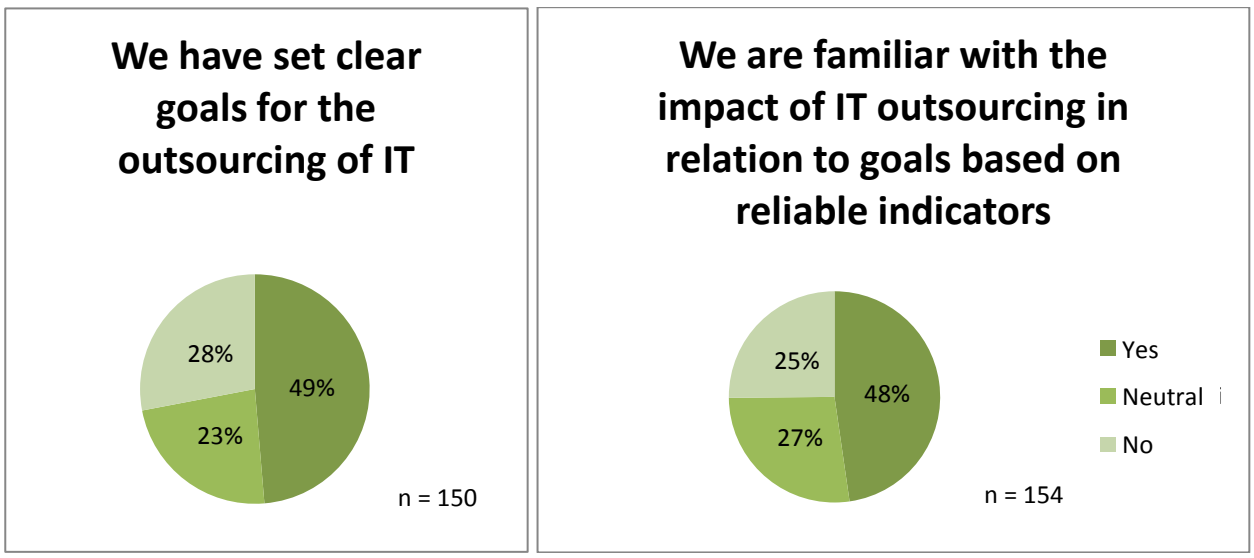
As a result of the change of dataset, the results of the IT Barometer 2011 differed dramatically from the previous years. When the dataset was restored to the level of 2008 and 2010, the replies returned to the level of these years. Clearly more respondents from smaller organizations and less IT-intensive organizations were used in 2011. This can be clearly seen in the graph below which illustrates the degree of IT outsourcing and the changes of the outsourcing degree. When compared to the years with comparable datasets, the degree of outsourcing is slightly higher than in 2008 and 2010. The change may have been caused by cloud services.

Other results pertaining to the degree of IT outsourcing in Chapter 8.1:

- The declining trend of outsourcing plans was reversed in the IT Barometer 2012.
- The assessments of people working in business management and IT management on the attractiveness of IT outsourcing are very similar. For the first time, the people working in business management were less likely to state that outsourcing is their goal than the people working in IT management.
- So-called 'total outsourcers' (outsourcing more than 50%) and 'low outsourcers' (outsourcing less than 15%) were equally successful in the implementation of IT projects and increased their revenue by around as much with new innovations and forms of business enabled by IT.

8.2 Outsourcing goals and measuring outsourcing

The respondents were asked to assess how clear business and/or other goals for outsourcing IT functions have been determined in their organization. Furthermore, they were asked to assess how familiar their organization is with the impact of IT outsourcing in relation to the goals based on reliable indicators. The pie charts below illustrate the distribution of replies (percentage).



Respondents' view on clarity of IT outsourcing goals and measuring their achievement with reliable indicators.

Other results pertaining to the setting of IT outsourcing goals and monitoring their achievement in Chapter 8.2:

- 63% of respondents employed by a total outsourcer stated that their organization sets clear goals for outsourcing. A little over 50% of these people stated that the achievement of goals is being monitored with indicators. The value of both of these key figures is clearly lower than in 2011.
- We compared the assessments of people working in IT management and people working in business management. There seems to be a correlation between the 2008–2009 recession and the business managers' ability or willingness to monitor the achievement of IT outsourcing goals; up until this

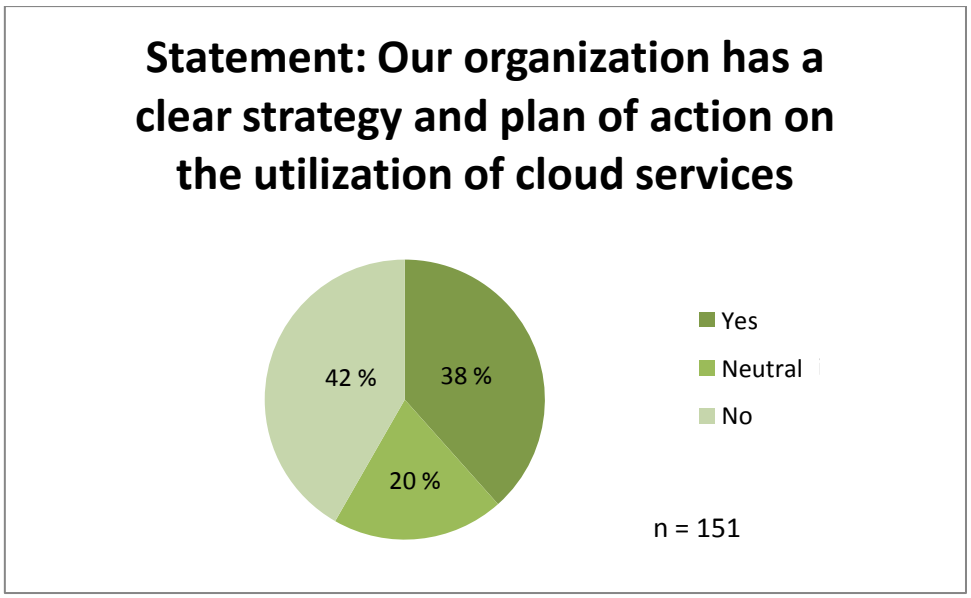
year, people working in business management were more likely than people working in IT management to state that they monitor the achievement of the goals.

8.3 Assessing reliability of IT outsourcing service providers

The IT Barometer 2012 requested the respondents to state their views on reliable IT outsourcing service providers. In an open-ended question, the respondents were able to name the two most important IT outsourcing service providers for their organization. A total of 101 people replied to this question, giving a total of 189 answers. They named 47 service providers. The detailed results are available in the full version of the IT Barometer.

8.4 Assessing management and utilization of cloud services

The respondents were asked to assess whether their organization has a clear strategy and plan of action on utilization of cloud services. With this statement, we did not mean that the organization should have a separate strategy and plan of action for cloud services or even a separate IT strategy in addition to the business strategy. We believe that organizations should think about what cloud services mean for their business and what, when, and how they plan to do in terms of cloud services. The pie chart below illustrates the respondents' replies regarding the statement on existence of a cloud service strategy and plan of action.



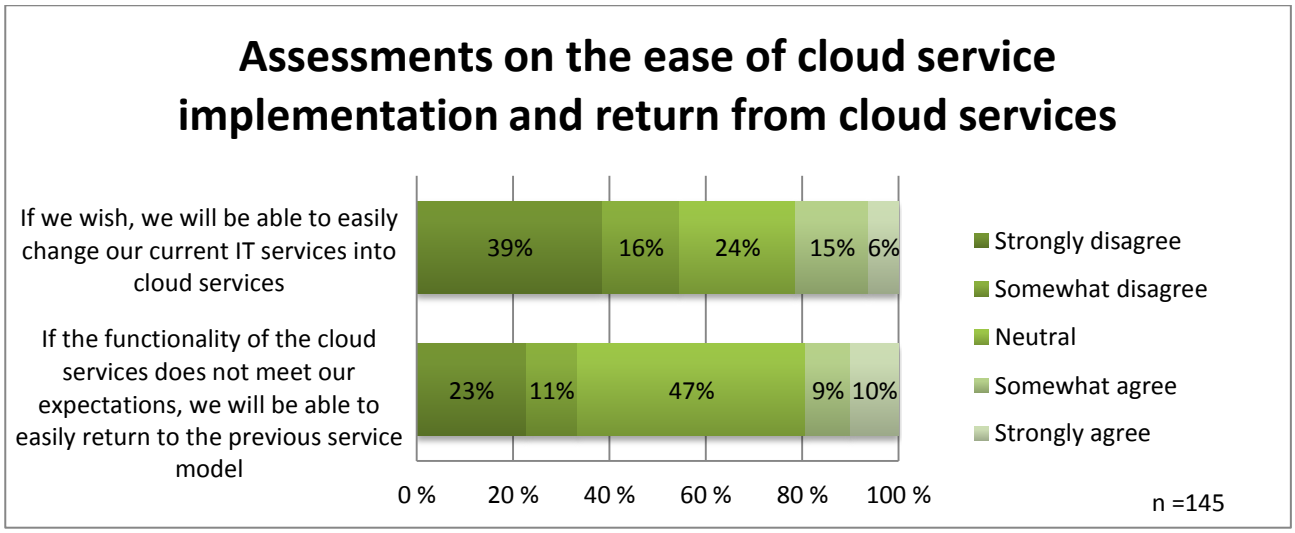
Respondents' assessment (percentage) on their organization's clear strategy on utilization of cloud services.

Other results pertaining to the utilization and management of cloud services in Chapter 8.4:

- Around one in every three respondents stated that their goal is to use as much cloud services as possible, at least to some extent. Their share was reduced from 2011. The replies of people working in business management were only slightly more positive than the replies of people working in IT management.

8.5 Assessing ease of cloud service implementation and return from cloud services

The respondents were asked to assess how easy cloud services are to take into use and how easy it is to return to the old service model from the use of cloud services. To study the easy/difficulty of the implementation of cloud services, we used the statement *"If we wish, we will be able to easily change our current IT services into cloud services".* When the market of IT outsourcing services has matured, transferring outsourced services to another service provider and/or transferring them back to the client organization (insourcing) have become established parts of the markets. The respondents were able to assess the ease of returning from cloud services to their own IT services and/or a previous IT outsourcing service provider by replying to the statement "If the functionality of the cloud services does not meet our expectations, we will be able to easily return to the previous service model". The graph below illustrates the replies to these two statements.



Respondents' view on their ability to transfer their current IT services into cloud services and the ease of returning to the previous service model.

Other results pertaining to the transfer to and return from cloud services in Chapter 8.5:

- Compared to 2011, the respondents were more conservative when assessing the ease of transferring to cloud services. In this year's survey, only around one in every five respondents agreed with this statement; almost one in every three agreed last year.

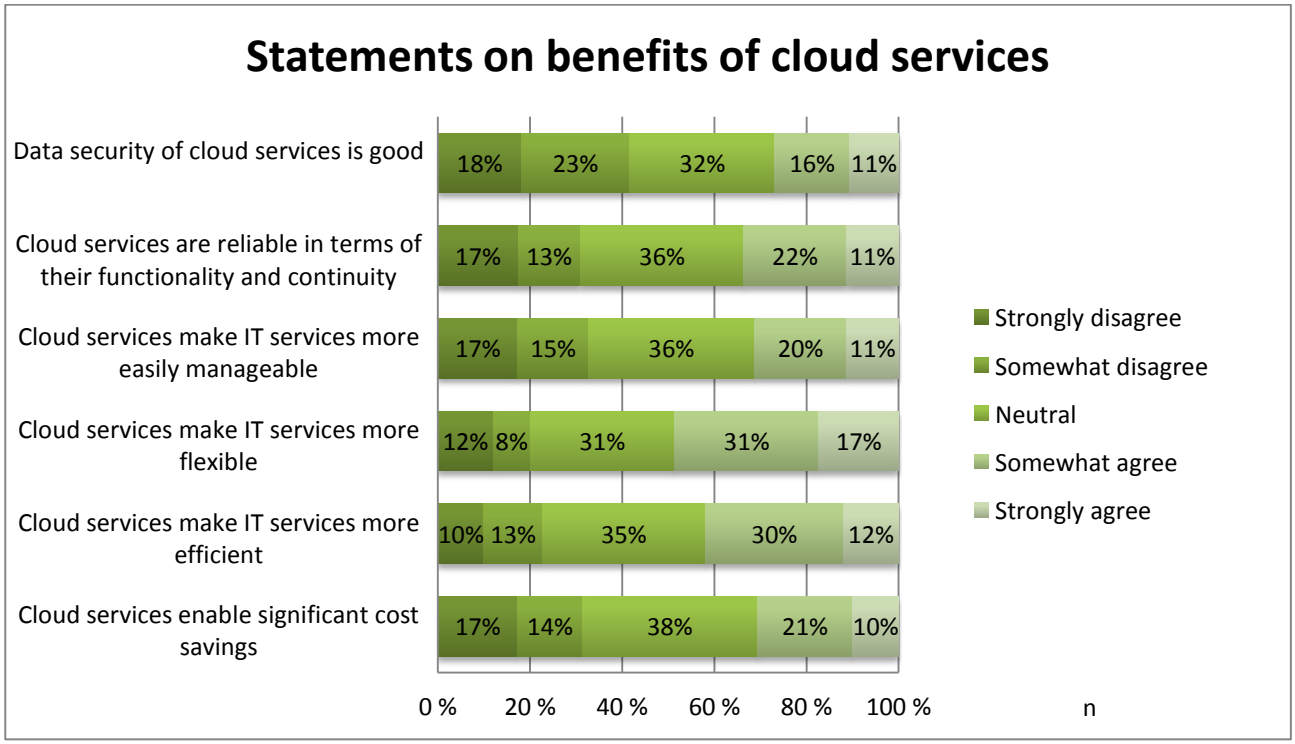
- The respondents were of the opinion that returning to the old service model from cloud services would be somewhat more difficult. These assessments were also more conservative than in 2011.

- Respondents working in an organization employing more than 500 people thought that the transfer to and from cloud services would be more difficult than respondents working in an organization employing less than 500 people.

- The assessments of people working in business management and IT management on transfer to and from cloud services did not differ much. The distributions of respondent group assessments were slightly different, however. People working in IT management were more likely to state that the transfer would be difficult.

8.6 Assessing benefits of cloud services

The respondents were asked to assess the benefits and disadvantages of cloud services with the six statements listed in the graph below. The graph comparing the benefits and disadvantages of cloud services illustrates that people are of the opinion that cloud services will make IT services more flexible but they are clearly skeptical when assessing the data security of cloud services. A large number of neutral replies were given: around one third of the respondents replied neutrally to all these statements.



Respondents' view on benefits and disadvantages of cloud services.

Other results pertaining to estimated benefits of cloud services in Chapter 8.5:

- The results are similar to those of the IT Barometer 2011. In a comparison of the share of respondents agreeing and disagreeing with the statements on the benefits of cloud services, it was noted that flexibility was most often considered a positive trait and lack of data security most often a negative trait.

- In a comparison of the share of respondents who strongly agreed and strongly disagreed with the statements on benefits of cloud services, the negative assessments on cloud services were clearly more pronounced.

8.7 Assessing reliability of cloud service providers

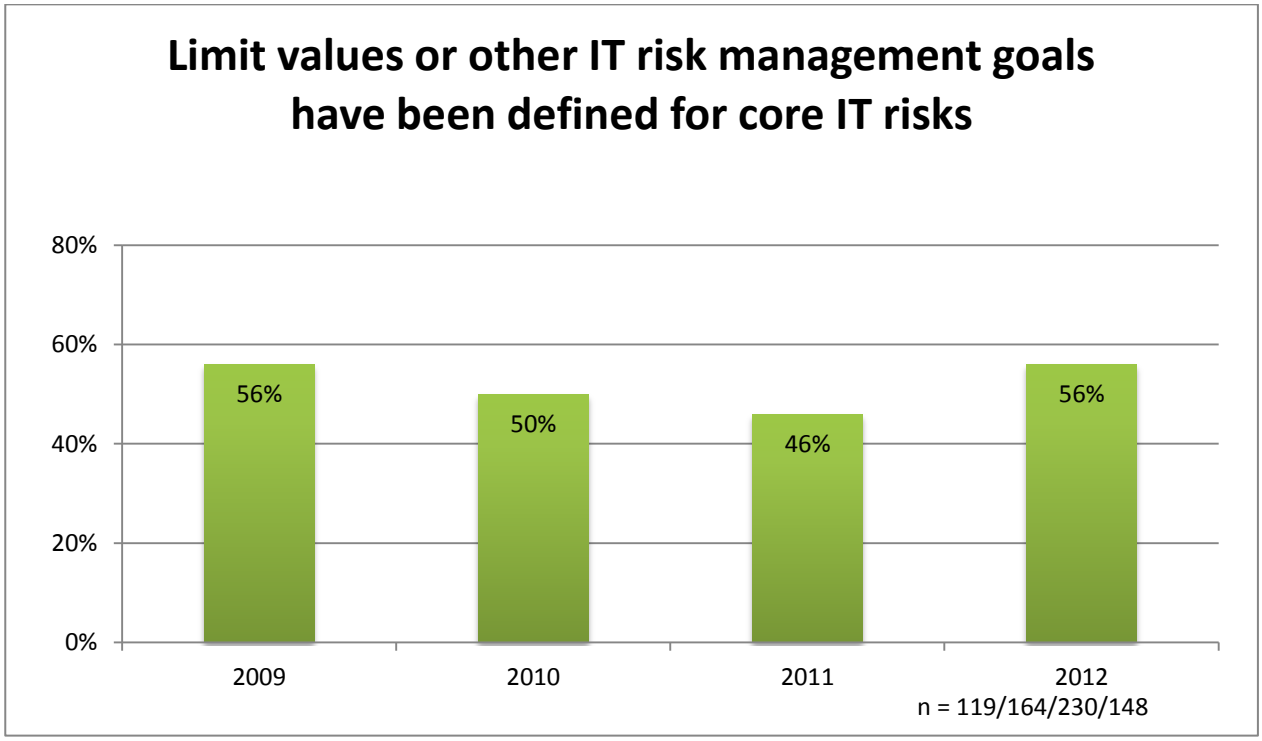
The IT Barometer 2012 requested that respondents state their views on reliable cloud service providers. In an open-ended question, the respondents were able to name the two most important cloud service providers for their organization. A total of 49 people replied to this question, giving a total of 81 answers. We believe that the small number of replies given – less than one in every three respondents replied to the question – suggests that the cloud service market is still taking shape. The respondents named 23 service providers. The

names of the service providers were not the same as those named when the respondents were asked to name IT outsourcing service providers. The detailed results are available in the full version of the IT Barometer.

9. Managing IT risks, IT governance and using other best practices

9.1 Assessing IT risk management

The respondents' views on IT risk management were studied with two statements. The graph below illustrates their replies to the statement *"Limit values or other IT risk management goals have been defined for core IT risks".*



Limit values/risk management goals defined for IT risks; share of respondents agreeing with the statement

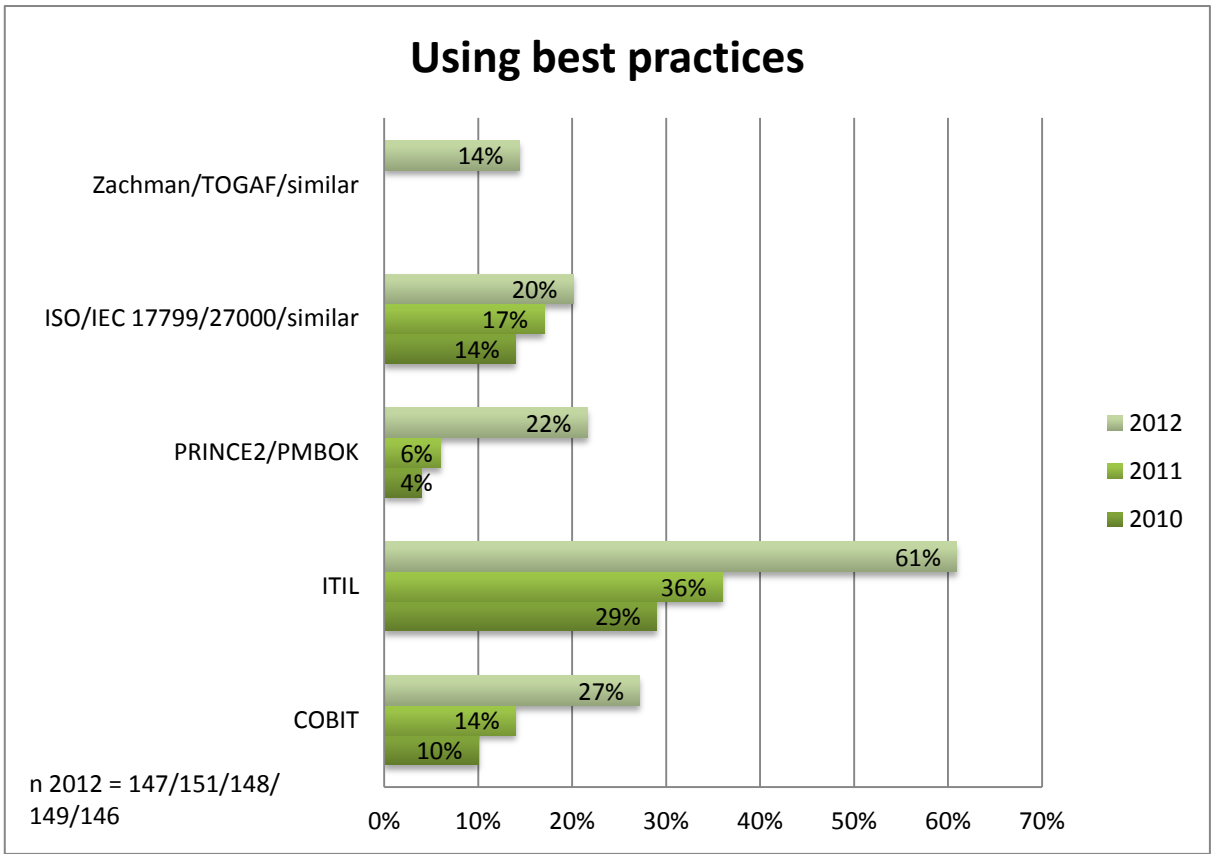
Other results pertaining to IT risk management in Chapter 9.1:

- More than half of the respondents stated that their organization is well aware of the key IT risk management measures and uses these measures when working. This view has not changed over the years.

9.2 Assessing the use of IT governance and other best practices

The IT Barometer respondents have been asked to assess the use of best practices since 2010. The use of best practices continued to increase this year. This year, we added TOGAF/Zachman (total architecture) to the list of methods including COBIT (IT governance), ITIL/ISO/IEC 20000 (IT service production management),

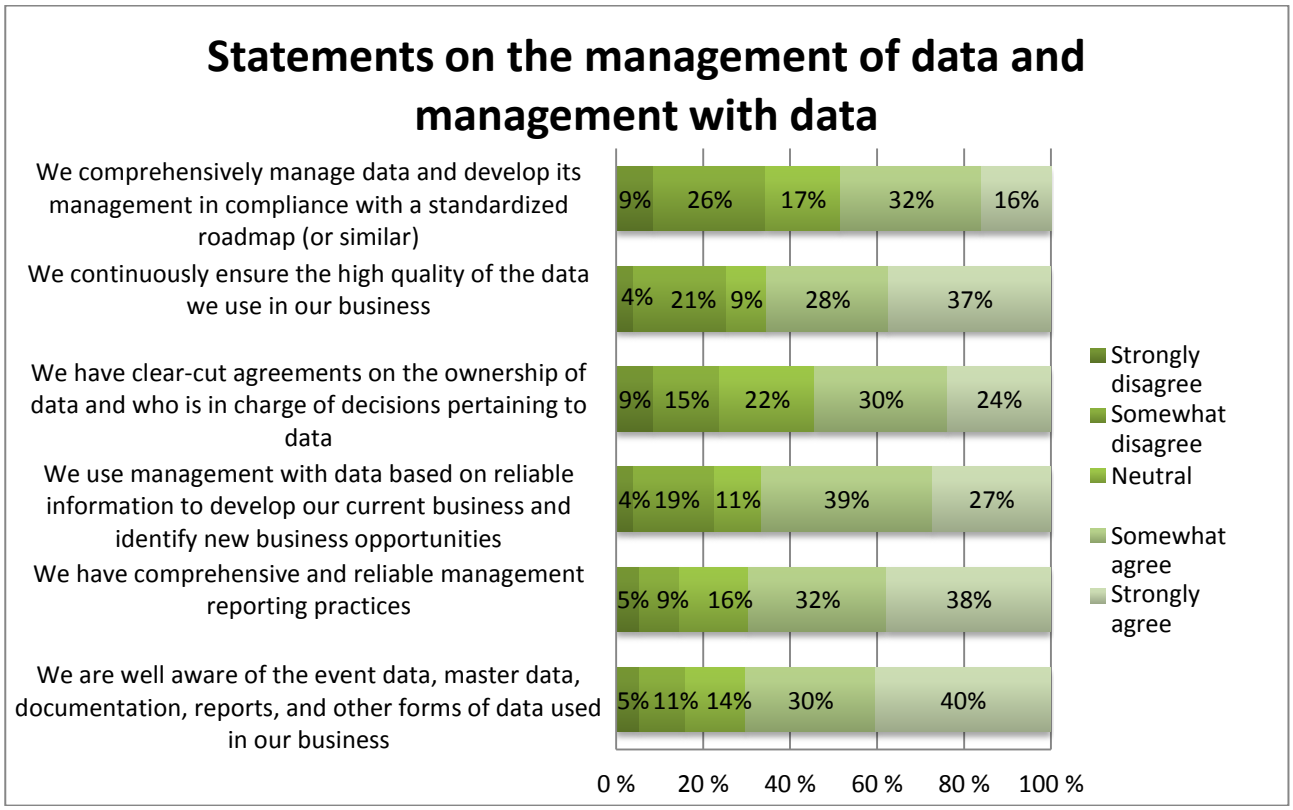
ISO/IEC 27000 (data security risk management) and Prince 2/PMBOK (IT project management). The respondents were asked to reply Yes, No, or Unsure to a statement as to whether or not each of these methods is used in their organization. The goal with the IT Barometer is not to assess the utilization scope of these methods. The graph below illustrates the replies on the use of these five best practices.



Respondents' view of the best IT management practices used by their organization.

10. Management of data and management with data

A new series of statements was added in the IT Barometer 2012 to study the status of management of data and management with data in Finnish organizations. The respondents were asked to assess how well the six statements on management of data and management with data describe their organization. The graph below illustrates the replies to these six statements.

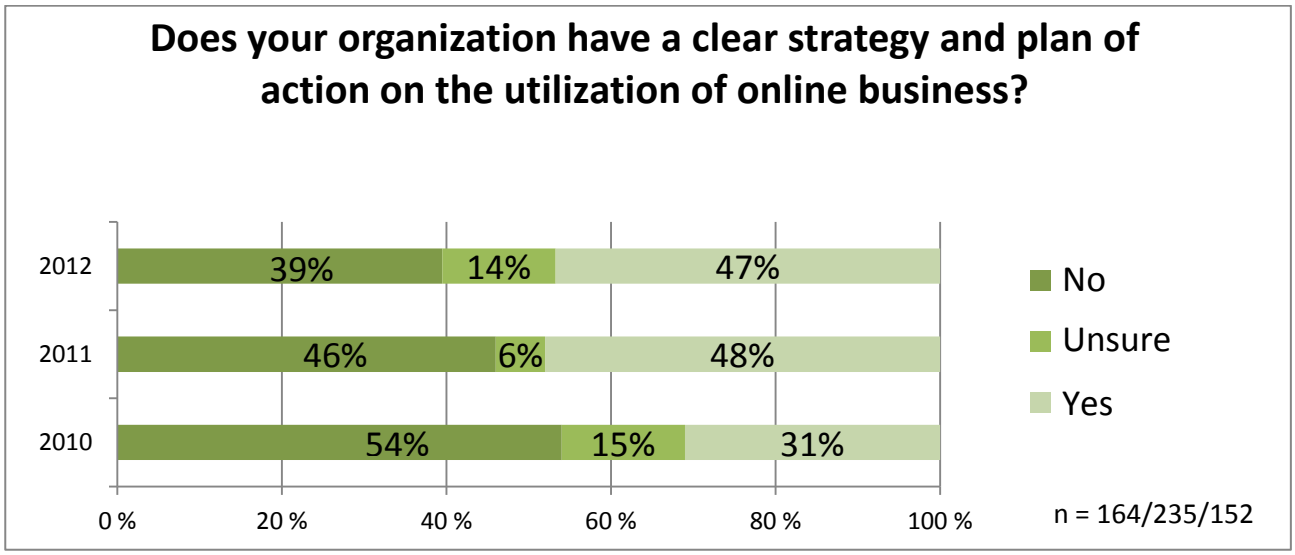


Respondents' views on management of data and management with data.

11. Online business and social media

11.1 Assessing online business

The respondents were asked to assess whether their organization has a clear strategy and plan of action on the utilization of online business. The graph below illustrates the results.



Existence of an online business strategy, share of respondents replying Yes

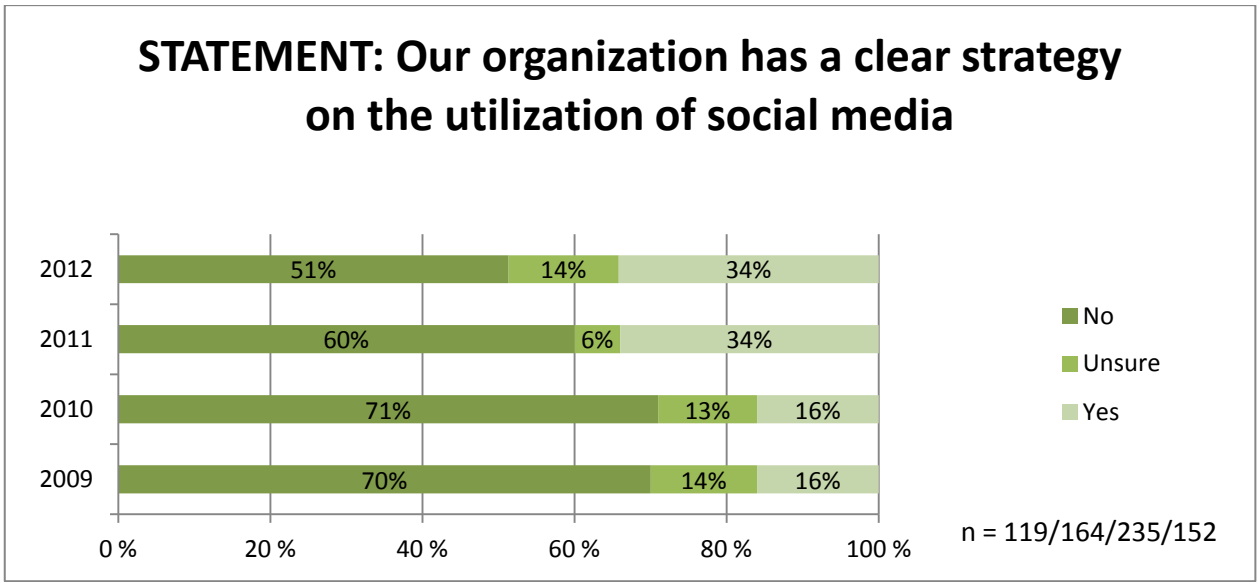
Other results pertaining to online business in Chapter 11.1:

- We observed, based on the results of the IT Barometer 2011, that the growth of online business has reached its peak. For the first time, less than half (48%) of the respondents stated that their organization will clearly increase the share of online business. This share decreased slightly more in 2012.

- For the first time, less than 50% of the people working in business management replied Yes to the question regarding a clear increase of the share of online business.

11.2 Assessing utilization of social media

The utilization of social media has been surveyed since the IT Barometer 2009. At that time, the term 'peer network' was used instead of social media, because the concept of social media was not established yet. According to the 2009 and 2010 results, one in every six organizations had a clear strategy on utilization of social media. In the IT Barometer 2009, one in every three organizations had a clear strategy and plan of action on utilization of social media. As illustrated by the graph below, the situation has not changed. The respondents stated that only one in every three organizations has a strategy for utilization of social media.



Respondents' view on whether their organization has a clear strategy on the utilization of social media.

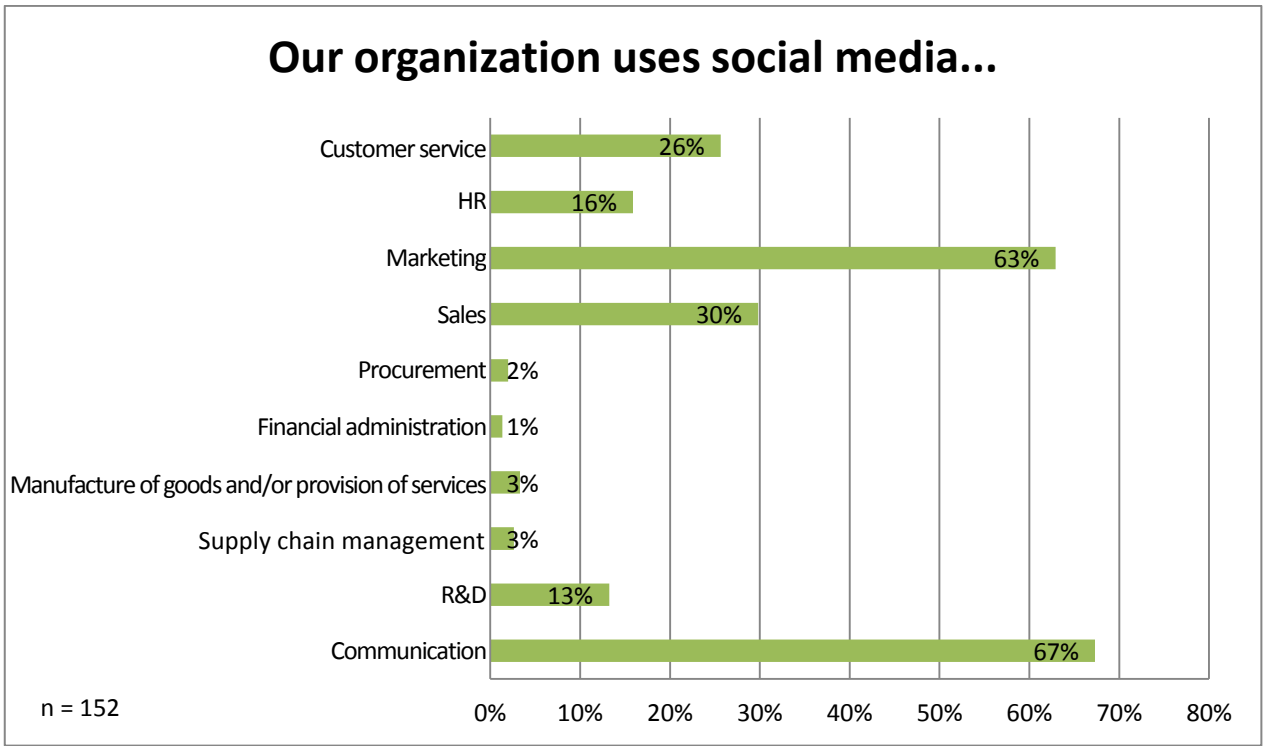
Other results pertaining to social media in Chapter 11.2:

- Around one in every three respondents stated that their organization aims at clearly increasing the utilization of social media in their business.

- *We believe that the large share of* unsure replies on the question on the utilization of social media is an indication of the fact that utilization of social media has been and still remains a hard nut for Finnish organizations to crack.

11.3 Assessing utilization of social media as an organizational tool

The IT Barometer survey studied for which purposes organizations use social media. The graph below illustrates the results. According to the replies given, social media is clearly most often utilized in communication and marketing. Almost two in every three respondents stated that their organization uses social media for these purposes.



Respondents' view on for which purposes their organization uses social media.

Other results pertaining to the use of social media in Chapter 11.3:

- In addition to marketing communications, social media is used more often than before in sales and also in customer service to some extent.
- The utilization of social media has not spread outside marketing communications and sales, however.

11.4 Assessing the use of idea and innovation management systems

The IT Barometer studied for the third time whether the respondents' organizations systematically collect and process ideas with the help of innovation management systems. The replies suggest that the use of IT systems in the management of both ideas and innovation processes decreased to the level of 2010.

12. Consumerization of IT – BYOD, Bring Your Own Device

The term 'consumerization of IT' refers to two highly different but interconnected issues. Firstly, most new IT services and hardware are now first launched in consumer markets prior to corporate markets. This is a change that took place a couple of years ago. As a phenomenon, it is closely connected to social media and cloud services because most of the new services utilize one or both of these. Because of this trend, the employees of organizations often use more advanced devices/hardware and services at home and leisure than at work. Secondly, consumerization of IT refers to the employees being willing to use the same hardware and services at home and at work, such as working with their own computer, tablet and/or smartphone. Furthermore, they want to use services like Skype, Dropbox, Google, and social media, because they consider them better suited for them and/or more advanced than the expensive IT services offered at work, which they deem inflexible. This is why the consumerization of IT is also called BYOD, i.e. Bring Your Own Device or Bring Your Own Data. The latter combination of words makes the hair of many IT experts stand on end. The consumerization of IT has spread very rapidly, clearly more rapidly than PCs in the 1980s, mobile phones in the 1990s, or the internet in the 21st century.

12.1 Assessing consumerization of IT

The respondents of the IT Barometer 2012 were asked to assess management of the consumerization of IT with five statements. They were asked to reply statements on whether their organization has a clear strategy and plan of action on management of the consumerization of IT and whether the consumerization of IT has been taken into account in their IT strategy or any other similar strategy. The graph below illustrates the results. The IT Barometer results suggest that Finnish organizations are fairly poorly prepared for this phenomenon. This is evident in all the key figures of this chapter.

Respondents' views on existence of IT consumerization strategy.

Other results on the management of consumerization of IT in Chapter 12.1:

- The replies on consumerization of IT were compared with the 2011 figures, but almost no progress was observed. In our opinion, Finnish organizations must study as soon as possible what BYOD means for their business and then manage their business based on the results obtained.

- More than a half of the respondents stated that the pressure to allow the use of employees' own devices and/or services is high in their organization, and almost 40% agreed with the statement that the organization plans to allow employees to use their own devices and/or services.

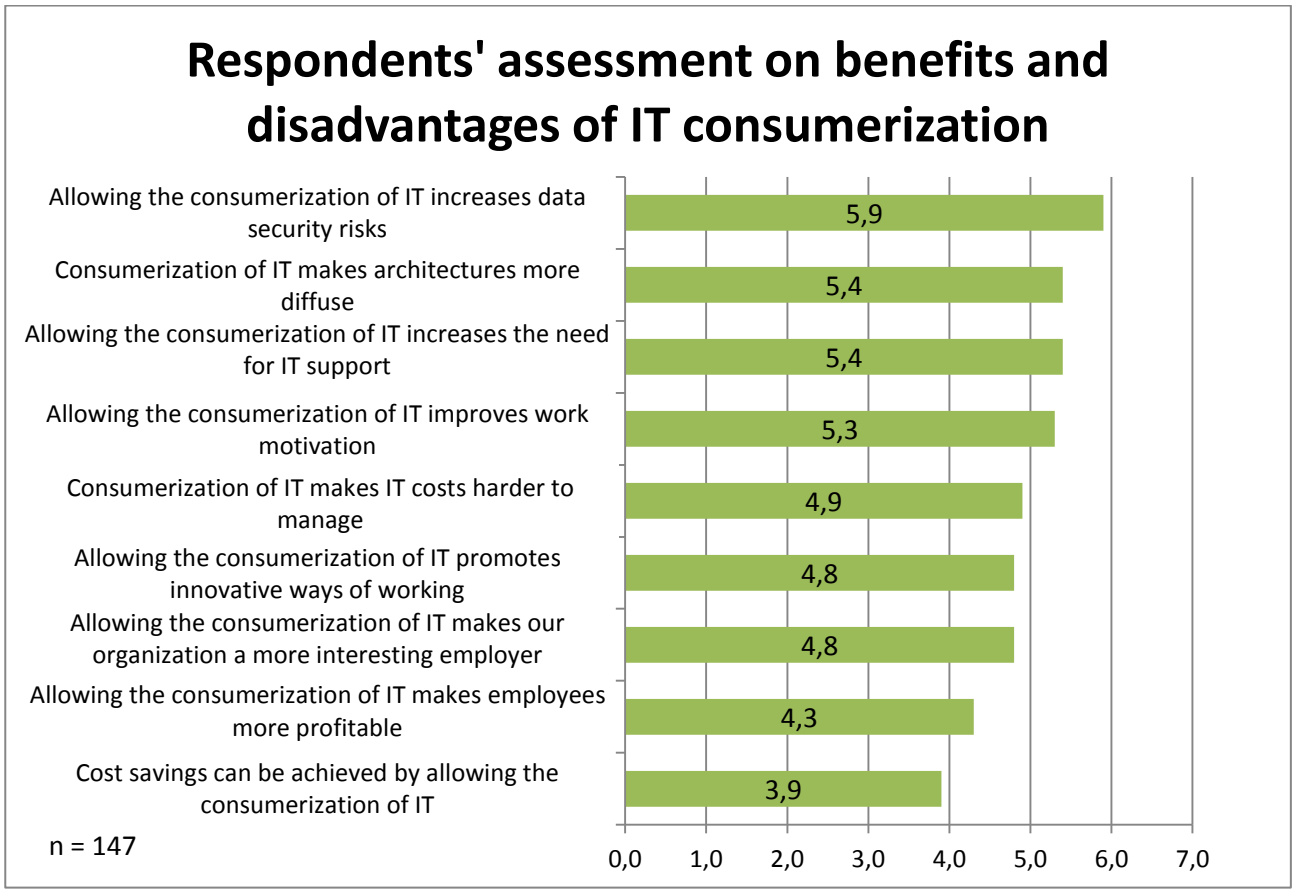
- A little less than one in every three respondents stated that their organization's architecture would allow the use of own devices and/or services, whereas more than a half stated that the current architecture could not accommodate such use.

- People working in business management were clearly more favorable towards BYOD than people working in IT management.

12.2 Assessing benefits and disadvantages of the consumerization of IT

A series of five statements on the benefits of the consumerization of IT and a series of four statements on the disadvantages of the consumerization of IT were included in the IT Barometer 2012. The respondents were asked to assess these statements. The graph below illustrates and summarizes the results of these statements on the benefits and disadvantages of the consumerization of IT.

There were clearly more replies on the disadvantages of the consumerization of IT than on its benefits, as illustrated by the graph below. All the statements were combined in the graph and mean values for the assessments were calculated. A Likert scale from -3 to +3 was used on the questionnaire. For the graph, we changed the coding to 1–7, where one means that the respondent strongly agrees with the statement and seven means that the respondent strongly disagrees with the statement. The first positive statement on the benefits of the consumerization of IT is the statement on increased working motivation that received the fourth highest mean value.

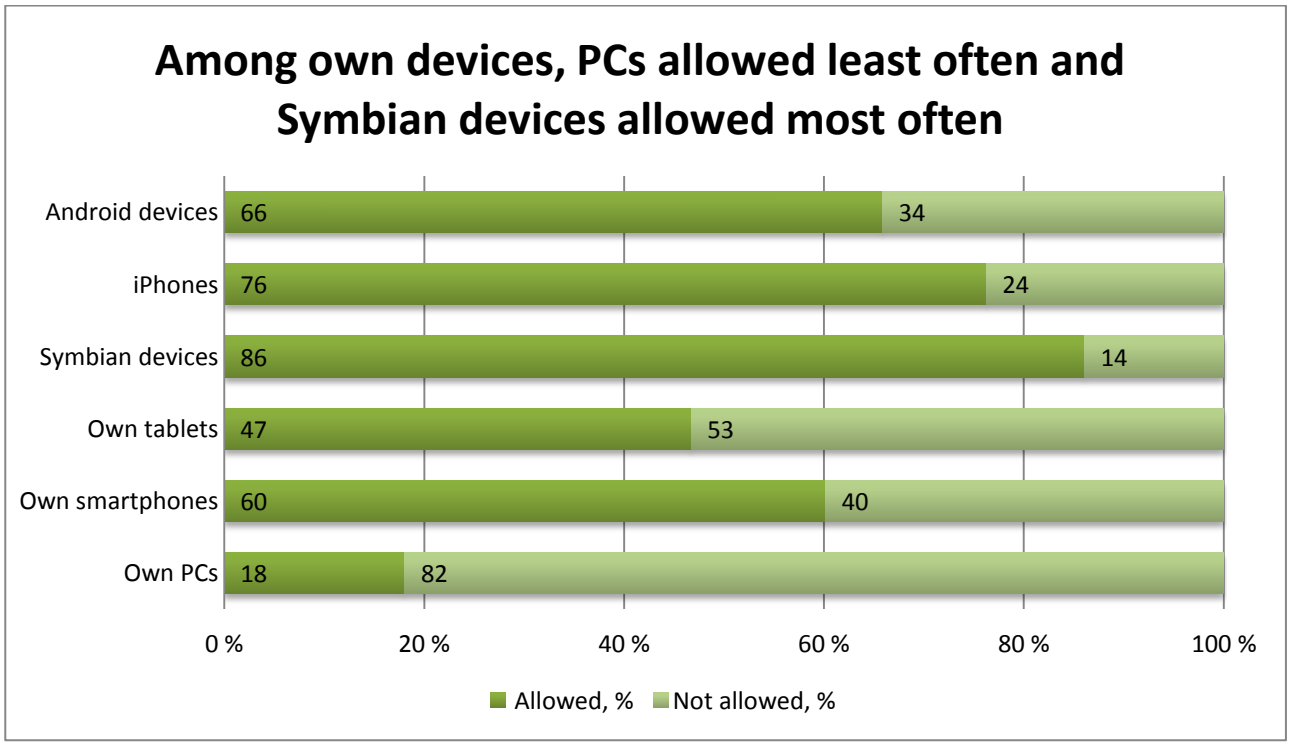


Mean values of the respondents' replies to the statements on the benefits and disadvantages of the consumerization of IT.

12.3 Assessing whether the use of own devices and services is allowed and supported at work

The respondents were asked to assess what kind of own devices and services could be used at work, and what kind of hardware and software would be supported. For assessment purposes, own devices/hardware were divided into seven groups: own PC, own tablet, own smartphone, own Android device, own iPhone, own Symbian device, and own mobile Windows device. Mobile Windows devices were not available at the time of the survey, and thus the results regarding such devices are not reported. Own services were also divided into groups, four of them: Dropbox and similar, Google Docs and similar, instant messaging services, and Skype and similar. We asked in the case of all the ten (eleven) groups whether their use is allowed and whether their use is supported.

The graph below illustrates the replies of the respondents on allowing the use of own devices. Despite the current problems Nokia is experiencing, Symbian smartphones were listed among the allowed devices clearly most often. Similarly, own PC was the device that was most often not allowed.



Respondents' view on which own devices are allowed and which are not.

Other results pertaining to the use of own devices and/or software included in Chapter 12.3:

- Of employees' own devices, the use of smartphones – Symbian devices in particular – is supported more often than the use of other devices. Support for devices other than smartphones is rare.

- Most organizations allow the use of tried and tested own software, but without any support.