IMPROVED SERVICE PERFORMANCE?

The development on an enabling Performance Measurement System for the IT department of a Water Authority to measure and improve customer satisfaction.

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Date: 01-07-2013

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The development and organization of a sustainable performance measurement system for an IT department of a Water Authority that can give insights into their direct contribution to the primary process and continuously improve their performance.

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Acknowledgements

This thesis is the final project for obtaining a Master of Science degree in Business Administration, track Service Management, at the University of Twente. This project is the result of a graduation period of nine months executed in Waterschap Rijn & IJssel located in the municipality of Doetinchem. With the completion of this thesis a three year period at the University of Twente is coming to an end.

I would like to take this opportunity to express my gratitude to the following people. First Ben Veurman, my supervisor at Rijn & IJssel. Your critical view and feedback supported me often to solve problems within a few minutes. Monique Dekker, more than once your expertise has helped me to make complex matters easy to deal with. Judith Janssen, by letting me be your 'carpool companion' you not only saved me a lot of time, but you also triggered me to get better insights about the approach of this research. Thanks for all your advice.

I would like to thank all other people with whom I had very interesting discussions during my stay at Waterschap Rijn & IJssel for their time and effort, especially all other employees of the IT department who were involved.

I would also like to thank Marianne Gravesteijn. You have dedicated a lot of your free time to my work and I appreciate the way could exchange views. Celeste, by correcting my work fast and thorough, you helped me to stay up to speed, thanks! And last but not least, Aukje Snijders, your critical notes certainly brought this thesis to a higher level.

Finally I would like to thank my family and my girlfriend for the time I could spend with them while I was not studying and of course for their patience, support and comforting words during my work when things did not turn out the way I had planned them.

Management Summary

This thesis presents a detailed description of the approach for the successful development of an enabling Performance Management System (PMS) for the IT Department of Waterschap Rijn & IJssel, a Water Authority in the Netherlands. A Performance Management System gives insight into the performance of the IT department by means of critical or key performance indicators (KPIs). These KPIs enable this department to become transparent in their contribution to the primary process of the Water Authority. An enabling PMS in this case, also means that employees are better equipped to execute their tasks and are enabled to continuously improve their service performance.

The research method that has been used is called 'Action Research'. The use of this method in this project derives from the fact that the researcher used a scientific approach to IT department to solve challenges, together with the employees.

The IT department of Waterschap Rijn & IJssel experimented with KPIs to obtain management information of improved quality two years before the start of this project. KPIs were recorded by the use of several systems. Unfortunately these lists were recorded manually, which made the process very time consuming and resulted in unreliable data. Also no one turned out to take responsibility for keeping the records updated. This made the use of KPIs for reflection in team meetings to be forgotten soon.

To be able to improve the PMS it was important to sustainably set up trustworthy KPIs. This led to the following research question:

How could one develop and organize a sustainable performance measurement system for an IT department of a Water Authority that can 1. give insight into their direct contribution to the primary process and 2. continuously improve their service performance?

At the start of this project it was decided that the PMS should give insight into the customer satisfaction and the service quality of the IT Department. For this task I have set up three performance teams that have supported me during the Action Research process. These three teams were responsible for developing the KPIs for the sub-units Documentaire Informatie Voorzieningen (DIV), Geo informatie beheer (Geo) and the Servicedesk.

By means of interview sessions with important internal customers/employees of departments within the organization we have determined several possibilities for service improvement and in the current process. Parallel with the interview sessions an organization-wide questionnaire was used to measure the (internal) customer satisfaction and the service quality. For the development of the KPIs the results of both the interviews and the questionnaires were used as resources.

From this research three conclusions could be drawn:

1) The involvement of an experienced employee at the beginning of this Action Research that experienced the total development cycle and that takes over the role of the researcher, is useful for the continuous development and improvement of the PMS.

2) A periodic questionnaire that measures what the organization thinks of the service performance delivered by the IT department combined with performance teams that are provided with enough time and space by the IT department to actually improve and measure the service performance, ensures that the IT department has accurate insights in their own performance and can improve continuously.
3) The service performance items used in the questionnaire are a good start to measure customer satisfaction. It seems that IT satisfaction can be explained for more than 66% by measuring these items.

The research paper ends with some limitations and recommendations.

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List of abbreviations

PMS:	Performance Measurement System
KPI:	Key Performance Indicator
AR:	Action Research
DIV:	Documentaire informatievoorziening (name of a sub-unit IT department)
Geo:	Geo-informatie beheer (name of a sub-unit IT department)
P:	Page
SERVPERF:	Service Performance
SERVQUAL:	Service Quality

1. Structure of the Thesis

The purpose of chapter 1 is to provide background information of the organization Waterschap Rijn & IJssel, to clarify the chosen research topic and to illustrate the added value of this thesis to operational practices and scientific research. Chapter 2 consist of theory and theoretical concepts. The purpose of this second chapter is to clarify the research question based on theoretical evidence in recent scientific literature. Chapter 3 discusses the action research methodology used in this research. Chapter 4 presents and discusses the results of this study. Chapter 5 is the concluding and recommendation part of this thesis. In this chapter also the link between theory and practise is discussed.

1.1. Problem Definition

In 2010, the IT department developed and implemented Key Performance Indicators (KPIs) for its unit in the form of an 'ICT-index' in order to attain management information to be used throughout the IT department. The KPIs were based on the balanced scorecard (R. Kaplan & Norton, 1992) and were compiled from four different perspectives; Financial; Customer; Organization; and the Learning capabilities of employees. The KPIs were first developed top-down, however when it came to details the employees determined targets for these KPIs.

The KPIs are quantified into measureable indicators. The indicators (mostly numbers) are manually updated in Excel templates. Due to the fact that this manual process was highly time-consuming, there was much risk making mistakes in the measurability. Also there appeared to be no clear responsibilities for the proper updating of these lists. The KPIs were no longer valid and up to date for the IT department and were not used in team meetings anymore. In 2012 the higher hierarchical strategic management asked the IT manager to give accountability on how, and how-well his IT unit is operating within the organization.

1.2. Research Objectives

The IT department requires a set of KPIs that enables them to report how, and how well their unit is performing within the organization. Because of their staff role of this department for the rest of the organization the focus of these KPIs has been on service performance and customer satisfaction. The Performance Measurement System (PMS) should be able to measure the service delivered by the IT department to other internal units. In addition the PMS should be easily organized and maintained by the IT employees, in such a way that a sustainable self-learning organization is created.

The researcher objective is to redesign the existing questionnaire for measuring customer satisfaction of all internal customers of Waterschap Rijn & IJssel. The questionnaire was formally used in 2008. With the newly designed questionnaire the IT department should be able to self-assess the performance once every year.

1.3. Research Question

How could one develop and organize a sustainable performance measurement system for an IT department of a Water Authority that can 1. give insight into their direct contribution to the primary process and 2. continuously improve their service performance?

1.4. Final Product

The vision of IT management is to acquire continuous management information on the various fields the IT is operating in. The measurement of these KPIs should be fully automated to reduce administrative tasks of employees. This will require a software selection, implementation phase, etc.

Through Action Research (AR) this research will contribute to the design and organization of an enabling PMS to contribute to a facilitating self-learning organization. The supervisor of the Waterschap and the researcher agreed that the deliverables of the assignment consist of a practical method that can be used to define KPIs that is supported by the employees of the IT department, and a useful advice on how an enabling performance measurement system can be used to achieve continuous learning through the learning organization theory.

The researcher provides the building blocks for the ICT department by which they can start becoming a learning organization and facilitates the IT employees in creating KPIs in an enabling manner. Since the IT unit is an internal service unit for the rest of the organization, the KPIs will be focused on internal customer satisfaction.

1.5. Context

Waterschap Rijn & IJssel is one of the twenty-five water authorities in the Netherlands. At Waterschap Rijn & IJssel, located in Doetinchem, about 375 employees are employed. The administrative head of any Water authority in the Netherlands is the General Board. The executive Board consists of the so-called 'College of Dijkgraaf and Heemraden'. The chief of the administrative system is the Secretary-director. The organization is subdivided into a number of directorates. Each directorate consists of a number of units which in turn consist of different sub-units.

A water Authority has five primary activities:

- Dike management: protects the region against flooding by the management and maintenance of 140 kilometers of dikes and embankments.
- Water quantity management: the care of the amount of surface water by controlling the water level in ditches, streams and lakes and ensuring a good balance between the supply and drainage of surface water.
- Water quality management: ensuring the quality of surface water by purifying the sewage in treatment plants providing and controlling water permits and discharge decisions and to investigate water quality.

- Waterway management: maintaining the tributary 'Oude IJssel' by taking care of the fairway depth of the channel. To protect the shoreline against swell of ships and the operation of sluices and bascule bridges.
- Muskrat's control: muskrat's and coypus damage dikes and shores. This is detrimental to the stability of the dikes and creates erosion and collapsing of shores. A Water authority is authorized to track and capture these animals.[1]

The IT department consists of 27 employees and its main responsibilities are business support for various processes that assist the primary tasks of water system management and water quality management. The supporting tasks of the IT department are:

- The development and implementation of information systems;
- System and network management;
- The application management (technical and (partially) functional) (Servicedesk);
- The geometric base file (the central geo-information) (Geo);
- The documentary information, mail and archive (DIV) (digitalize and record everything that comes in through analog channels, questions, requests, letters, etc.)

1.6. Organization Chart

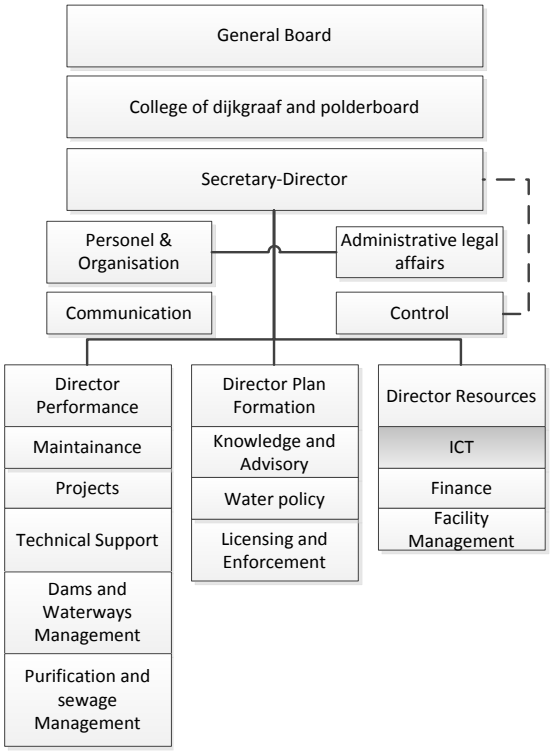

Figure 1 - Organizational chart Waterschap Rijn & IJssel 2013

[1] http://www.wrij.nl/over_wrij/algemene_taken (d.d. 2-11-2012)

1.7. Scientific Relevance

Public organizations often have a top down managerial strategic-change approach (Radnor & Osborne, 2013) and are mostly driven by the manufacturing paradigms. Public management continues to be little viewed from an service managerial perspective (Osborne, 2010). Summarizing Osborne (2010): 'insights from the services management literature have been notable in their absence from the core literature and debates in the field of public management. It is this absence from the theoretical underpinnings of our field which is the focus here. Surely, it is argued, now is the time to rectify this absence' (Osborne, 2010, p. 4). In short, it is important that public services are not managed like a product/manufacturing firm, but as a service organization, in co-production with customers/citizens. In line with this principle this action research focusses on service quality of the IT department by co-producing in this research with the internal customers. With this project the researcher tries to develop a process of how to achieve better service quality by co-producing with employees.

1.8. Practical Relevance

Like all water authorities and many public actors in the Netherlands, Waterschap Rijn & IJssel is operating in a changing environment. In times of massive budget reductions in the public sector due to economic decline, the focus of top management on cost savings and better performance increases (Radnor & Osborne, 2013). In Europe, performance measurement and balanced scorecards are becoming more common (Mol & de Kruijf, 2004), but often in governmental agencies the bottom line is still: sticking within the budget, instead of linking the money with the actual performance (Pollitt, 2006, p. 16). This aligns with large-scale research in the United States, where researchers concluded that 'Many governments have gotten the performance measurement message, in the sense that they have moved aggressively towards identifying outcomes for their programs and measuring progress towards them. 'The next great challenge for them is using that information to make decisions and policy. In particular, the use of performance information in the budget process is the next significant step in the movement towards performance management' (Ingraham, Joyce, & Donahue, 2003, p. 155).

The IT department of Waterschap Rijn & IJssel is lacking the capability to give managerial insights to top management about their operational day-to-day activities. The development of key performance indicators (KPIs) as performance measurement tools are therefore useful for the organization to increase its own organizational effectiveness. Too often large IT projects fail to stay within budgets or to do what they are supposed to do. With recent Dutch newspaper headlines as 'Rotterdam 15 miljoen armer door ICT-flop' (nrc.nl, 2013), 'Miljoenen euro's weggegooid met ICT-project door Justitie' (Eigenraam, 2013), 'ICT-project waterschappen debacle: 25 miljoen euro schade' (van den Dool, 2011), 'ICT plan overheid levert te weinig geld op' (Hijink, 2010), one can conclude that there is an urgency for more efficient and effective use of scarce IT budgets.

2. Theoretical Framework

This chapter will give an in-depth analysis of the key concepts used in this research. First the concept of performance measurement is defined. Then by using the concepts of enabling and coercive formalization it will be shown how these concepts can be used to create a performance measurement system. After this, the building blocks of the learning organization theory are analyzed to determine what conditions are required for an organization in order to become a learning organization. Both the concepts of an enabling PMS and the learning organization are used to create an enabling performance measurement system for the organization. Finally the service performance theory is analyzed in order to use it for the measurement of service performance scores within the organization and the development of KPIs.

2.1. Performance Measurement

Performance measurement is used by management and employees as an indicator to measure, report, and improve performance. Performance measures are also referred to as Key Result Indicators, Result Indicators, Performance Indicators or Key Performance Indicators (Parmenter, 2010).

Performance measures are defined as metrics used to quantify the efficiency and/or effectiveness of action (Neely, Gregory, & Platts, 1995). 'A performance measure is a translation of a notion of performance into a number that can be calculated with available data' (Wouters, 2009, p. 71).

Performance measurement can be used to give insights and to measure individual, group, financial and non-financial performance (like customer, organizational and learning performance), to evaluate and reward employees, align operational activities with strategy and facilitate decision making (Demski & Feltham, 1976; Garvin, 1993; Gravesteijn, Evers, Wilderom, & Molenveld, 2011; Ittner, Larcker, & Randall, 2003; Jenkins Jr, Mitra, Gupta, & Shaw, 1998; R. S. Kaplan & Norton, 1996; Sprinkle, 2003; Stajkovic & Luthans, 1997, 2003).

In sum a performance measure has as characteristics; metrics or numbers, quantifiable, derived from available operational data; indicating efficiency and/or effectiveness of operational actions or behaviours. In this thesis the focus lays on non-financial performance indicators, such as employee satisfaction, (internal) customer satisfaction, loyalty e.d. The rationale for this is that, in balancing the four 'scorecards' the customer focus is still given less weight. This is also pointed out by research of Bommeljé & Peter-August (2013) within the Dutch government. In their article, an overview is presented of the policy developments of the past fifteen years. According to these researchers, while the government's original plan was to develop a service concept consisting of co-production between the government and its citizens they claim 'it seemed that the citizen perspective gets out of sight even more' (Bommeljé & Peter-August, 2013, p. 41).

According to Ittner & Larcker (2003) a lot of organizations fail to 'identify, analyse, and act on the right nonfinancial measures' and 'adopted boilerplate versions of nonfinancial measurement frameworks as Kaplan and Norton's Balanced Scorecard, Accenture's Performance Prism, or Skandia's intellectual Capital Navigator.' (Ittner & Larcker, 2003, p. 2). These incomplete performance measurement systems

can cause negative perceptions with employees about a PMS. The employees might see that their performance, as measured, does not truthfully reflect what they see as their 'real' contribution to the organization (Wouters & Wilderom, 2008). In effect, several studies found evidence that employees showed defensive behaviour like, negotiating targets to more achievable levels, obtaining surplus resources for completing tasks, concealing windfalls that have made tasks easier than anticipated. (e.g. Carmona & Grönlund, 2003; Chow, Kato, & Merchant, 1996; Jaworski & Young, 1992; Ramaswami, 1996, 2002; Van der Stede, 2000).

2.2. Enabling Formalization

The negative perceptions of employees about an incomplete PMS 'motivates why designing and implementing PMS in operations is difficult and requires a deliberate and careful approach.' (Wouters & Wilderom, 2008, p. 491). The framework of Adler & Borys (1978) can help to develop a complete performance measurement system. Formal standardization of work procedures can take place following a coercive approach or an enabling approach. Walton (1985) suggests that a coercive type of formalization is a substitute for, rather than an addition to, employee commitment. Instead of providing committed employees, 'Coercive procedures are designed to force reluctant compliance and to extract recalcitrant effort.' (Adler & Borys, 1978, p. 69). This means that coercive formalization refers to the stereotypical top-down control, with detailed organisational rules that leave workers only limited space for action (Ahrens & Chapman, 2004, p. 271).

In the coercive approach, deviations from the standard procedures and performance standards are controlled as a control-like management. Simons (1995) calls this approach a diagnostic control system. A diagnostic control system assumes that KPIs can be created by a clear formulated organization strategy (Gravesteijn et al., 2011). The operationalization of KPIs to the work floor is often done by middle management. This translation of strategic to operational goals could lead to difficulties. This top-down development of a balanced scorecard with performance indicators often leads to negative, sometimes contrary behavioral effects because employees do not feel acquainted with what is considered by the top-management (Gravesteijn et al., 2011; Ittner & Larcker, 2003; Wouters & Wilderom, 2008).

Enabling formalization on the other hand puts the emphasis on the employees, and provides them with the opportunity 'to deal more effectively with the inevitable contingencies in their work' (Agostino & Arnaboldi, 2012; Ahrens & Chapman, 2004, p. 271). Enabling procedures can be designed to enable employees to deal more effectively with its inevitable contingencies. If a performance management system is enabling, it creates greater understanding among employees about how their daily tasks fit into the greater project-scope and about how their performance is measured. An enabling PMS allows employees to modify the system and to equip them to adjust or repair the system when circumstances change (Ahrens & Chapman, 2004; Groen, Belt, & Wilderom, 2012). Besides, employees are more trustworthy towards KPIs that they have developed themselves and therefore accept them faster than when higher level management develops these KPIs for them (Luckett & Eggleton, 1991). A bottom-up development of KPIs leads to a continuous improvement of the operational work, due to the continuous KPI feedback facilitation. Through this process the knowledge of their operational work is increasing (van Veen-Dirks, 2010). This increase of operational knowledge could result in employees being more empowered in their jobs. Employees do want to achieve goals

they have personal control over (Webb, 2004). Control in this case, should be defined as the way that employees are personally capable to take initiative in influencing KPIs (Quinn & Spreitzer, 1997).

In order to develop an enabling performance management system Wouters & Wilderom (2008) developed a framework based on five leading principals, based on the research of Adler & Borys (1978); These five leading principals are: Experience Based, Experimentation, Professionalism, Transparency and Employee Ownership and External Facilitation.

Experienced Based	'Involves the identification, appreciation, documentation, evaluation, and consolidation of existing local knowledge and experience with respect to quantitatively capturing and reporting relevant aspects of performance' (Wouters, 2009, p. 70). Organizational change processes that utilize and build on existing, local knowledge are more likely to lead to sustainable changes and improvements (Abrahamson, 2000; Zollo and Winter, 2002). The development process is based upon the knowledge and experience of employees (Gravesteijn et al., 2011).
Experimentation	'Development of a new performance measure and subsequently allowing time to test and refine (in several rounds) its conceptualization, definition, required data and IT tools, and presentation, together with employees (whose performance is going to be measured) to arrive at a measure that is a valid, useful, and understandable indicator of performance in a specific local context' (Wouters, 2009, p. 70). This second phase is all about trial and error cycles. There is no such way to develop the right KPI in the first shot. Prototype versions of new developed KPIs are the basis for discussing and evaluating from different perspectives. Wouters (2009) states that one should separate targets for each specific measure so that local managers have fewer opportunities to make trade-offs.
Professionalism	The employees are treaded as professionals, they seem to be creative with the different insights of other colleagues. (Gravesteijn et al., 2011; Wouters, 2009)
Transparency and Employee Ownership	Transparency means that users have a good understanding of the logic of a system's internal function and of the underlying rational for why certain control mechanisms are in place. (Adler & Borys, 1978; Wouters, 2009). So called employee ownership is the most effective manner to create transparency of a PMS. Here, employee produce the measures used to measure their performance, themselves (Wouters, 2009). In other words, there is a culture of team trust among employees (Gravesteijn et al., 2011).
External Facilitation	An outsider should be appointed to lead the PMS design. The facilitator should be an expert on PMS design, able to bring in ideas and bring ideas of others to a next level. The facilitator will use its expertise to ask questions, clarify, to

	compare and challenge ideas, make suggestions, to build things, and ask for feedback. According to Wouters (2009) a consultant is not able to achieve this facilitator role. 'Simply because its fees are too high '(Wouters, 2009, p. 70).

Table 1 - Enabling PMS (Wouters & Wilderom, 2008)

2.3. Organizational Learning Paradigm

'Learning organisation' is not a term that originates from the past couple of years. The literature on the learning organisation goes back to 1975. In this year March and Olson made a first attempt towards the interpretation of the Learning Organization in their book 'The uncertainty of the past: Organizational ambiguous learning' (March & Olsen, 1975). When it came to the organizational process, Argyris & Schön (1978) wrote the foundation for the learning organizations in their publication 'Organizational Learning: A theory of action perspective' in 1978. After this, until the 1990's organizational learning theory and concepts were quite neglected in academic literature.

In his book 'The fifth Discipline' Peter Senge (1994) states that an organization should fulfill five disciplines before it can become a learning organization. According to Senge (1994, p. 23) a learning organization is 'where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.' The five disciplines mentioned by Senge (1994) are:

1. Personal mastery: learn how to improve the capacities to achieve what you really wish and to create an organization where everyone is stimulated to reach his or her own defined goals.

2. Mental models: look over the internal view of the world, constantly clarify, improve and understand how this affects our actions and decisions. To become a learning organization to challenge the assumptions held by individuals and organizations.

3. Shared visions: cultivate commitment in a group by developing a shared vision of the future, and how to achieve that in order to create a common identity that provides focus and energy for learning.

4. Team learning: Create results by aligning and developing capacities members or employees truly desire. (Senge, 1994, p. 236). The benefits of team learning is that members of a team can learn more with techniques as boundary crossing and openness.

5. Systems thinking: Conceptual framework that allow people to study businesses as bounded objects. A learning organization use this method of thinking when assessing their company and have information systems that measure the performance of the organization as a whole and of its various comportment's. All the characteristics must be apparent at once in an organization for it to be a learning organization.

Garvin, Edmondson, & Gino (2008) published an article called: 'Is yours a learning organization'. This is a more practical approach because of their managerial implications, especially when compared to

the fifth discipline. This article is not focused on CEOs and senior executives, but rather on managers of operational departments and units where critical organizational work is done. They propose that three building blocks are required for becoming a learning organization. Each of these blocks are essential and can be measured independently.

The three building blocks of (Garvin et al., 2008, p. 1) are:

1. A supportive learning environment
2. Concrete learning processes, and
3. Leadership that reinforces learning.

Each building block has several characteristics that now will be explained:

Building block 1: A supportive learning environment

An environment should support learning. Employees should feel free and motivated to share information and improve themselves. A supportive learning environment has four characteristics:

- 1. Appreciation of differences. Learning occurs when people become aware of opposing ideas. Recognizing the value of competing views and thoughts helps to develop new ways of thinking and prevents lethargy and temper. One way to facilitate professional diversity in an organization is to set up functional transcending teams (Gravesteijn et al., 2011). A functional transcending team can ensure that one considers to look beyond individual beliefs and interests. Tacit knowledge can be transformed into new knowledge by having constructive dialogues (Evers, Overkamp, & Wilderom, 2009).

- 2. The second characteristic is the use of a conceptual model. Conceptual models are tangible products of thinking and reasoning and are created by collaboration through research. (Gravesteijn et al., 2011; Tillema, 2004). A conceptual model can be a causal diagram or mind map, but also a prototype KPI. A prototype KPI acts as a collective form of visible memory.

- 3. The third characteristic is collective learning. It is important that employees keep their knowledge up-to-date in case of organizational renewals ‘knowledge must be shared in systematic and clearly defined ways. Knowledge of employees can move laterally or vertically within a firm’ (Garvin et al., 2008, p. 5). This, to maintain flexible employees during changing circumstances. Organizations can start with collective team learning. (Gravesteijn et al., 2011).

- 4. The fourth characteristic is the systematic gathering of performance information in order to judge if the expected performance is achieved. In this study, the internal customers will provide information about customer satisfaction and service performance (Cronin & Taylor, 1994). Chapter 2.3.1 will provide more in depth information about measuring service performance.

Building block 2: Distinct learning processes
A distinct learning process has three characteristics:

- 1. Time for reflection. Too many managers are judged by the numerous work and tasks they perform. When employees are too busy with deadlines and have fully occupied schedules, they are rarely able to solve problems and learn from their experiences. Supportive learning environments encourage thoughtful review of the organization's processes.

- 2. Team trust. Team trust manifests itself in mutual trust and mutual respect in a team where people can be themselves. This results into openness of new ideas. Learning is not just correcting mistakes. It's also about crafting of new approaches. Employees should be encouraged to take risks in exploring the unknown. Team trust increases the effective learning behavior of employees, even if it's of high risk, such as seeking help, experimenting and discussing errors (Gravesteijn et al., 2011).

- 3. Handle conflicts constructively, is a conflict the cause of a problem or a collision of different thoughts were new possibilities arrive? That question is important for managers to answer. Redefining conflicts help employees to see it differently.

Building block 3: Leadership that reinforces learning.
Transformational leadership has one characteristics:

- 1. Transformational leadership. Managers and leaders have a strong influence on if, and how an organization learns. Transformational leaders affect the facilitation or encourage the learning behavior of a team by being arguably interested in the ideas of employees, discussing it on higher levels and setting resources available to implement these ideas (Detert & Burris, 2007; Gravesteijn et al., 2011, p. 66). In this type of leadership employees are more likely to learn (Garvin et al., 2008, p. 5). Transformational leaders generate awareness and acceptance of stated goals among employees. They motivate employees to go beyond self-interest and focus on the higher organizational goals. For creating a stimulating learning environment, it is important that all management levels in an organization are focused towards that goal (Hartog & Verburg, 2002).

Leading principles enabling PMS	Characteristics
1. The development process is based on the knowledge of employees (Wouters & Sportel, 2005).	Periodic gathering of information of the delivered performance (Characteristic 4). Schedule time for reflection to learn from day-to-day activities (Characteristic 5).
2. For operational employees there should be room to experimentation (Wouters & Roijmans, 2011).	The use of concepts and prototypes to improve processes (Characteristic 2).
3. The employees are treated as professionals. They turn out to deal with differences of opinion (Kerr, Von Glinow, & Schriesheim, 1977).	Create internal diversity by facilitating function transcending improvement teams separately from the operational everyday work to focus on the front offices of the organization (Characteristic 1). Keep professional knowledge and skills of team members up-to-date by collective learning processes (Characteristic 3). Deal constructively with conflicts and differences within teams (Characteristic 7).
4. There is a culture of team trust and openness (de Haas & Kleingeld, 1999).	Optimization of team trust (Characteristic 6).
5. Transformational leadership (Den Hartog, Van Muijen, & Koopman, 1997).	Leadership that reinforce learning (Characteristic 8).

Table 2 - Leading principles for the development of an enabling PMS: parallel to the characteristics of the building blocks (Garvin et al, 2008)

2.4. Measuring Service Quality

In this section an overview of various concepts and a model for measuring service quality are provided. First, the two contradicting paradigms that form the basis for measuring service quality are discussed. These contradicting paradigms are the disconfirmation paradigm (SERVQUAL) and the performance-based paradigm (SERVPERF). Second, the differences between service quality and customer satisfaction are highlighted because of the lack of reliability of the SERVQUAL model.

The concept of service quality measurement was first used in 1991 when Parasuraman, Zeithaml, & Berry (1994) stated that service expectations of customers exist at two different levels.

1 The first level is the desired service level. This level represents what customers believe 'can be' and 'should be' provided. This all has to do with the perception level of the customer.

2 The second is a the adequate service level, 'representing the minimum level of service customers are willing to accept' (Parasuraman et al., 1994, p. 202). This is also called the expectation level. The difference between these different levels is considered as satisfactory

(perception-minus-expectations). In short, the SERVQUAL model evaluates service quality by comparing expectations and experiences of the delivered service (Grönroos, 1984).

Parasuraman, Zeithaml, & Berry (1988) defined 'service quality as the degree of discrepancy between customers' normative expectation for the service and their perception of the service performance.' The researchers uncovered a comprehensive set of service attributes that customers might use as criteria in assessing service performance. Empirical research based on this set of service attributes produced the SERVQUAL instrument.

Additional examination and testing of the SERVQUAL scale, however, has not always been supportive of its author's claim, for instance, in terms of its reliability and validity (Cronin & Taylor, 1992; Teas, 1993). Also based on their theoretical concerns, Cronin and Taylor assessed three alternatives to the original SERVQUAL scale. An importance weight SERVQUAL scale, a performance based approach 'SERVPERF' and an importance-weighted version of the SERVPERF scale. Stepwise regression analysis affirmed that the unweighted performance based approach 'SERVPERF' is the most appropriate basis for measuring service quality (Cronin & Taylor, 1994).

The SERVPERF scale consists of five dimensions; tangibles, reliability, responsiveness, assurance and empathy and was earlier successfully used for a study where internal service quality was measured within one of the larger municipalities in the Netherlands but was also used successfully in healthcare studies to measure customer (patient) satisfaction (Andaleeb, 2001; Meade, Kennedy, & Kaplan, 2010; Mill, 2011; Qin & Prybutok, 2013), Investigate the major determinants of customer satisfaction for banks (Levesque & McDougall, 1996; Roses, Hoppen, & Henrique, 2009) and measure service quality in high school education, (Aldridge & Rowley, 1998), and Tourism (Mill, 2011).

- With the dimension 'Tangibles' the appearance of physical components or service are meant. Here the attractiveness of an organization, department, or appearance of the employees are intended.

- The dimension 'Reliability' measures how reliable an organization or department is. The reliability is divided into the fulfilment of promises, the attitude towards problem solving for the customers, delivering service right the first time and insisting error free records.

- The 'Responsiveness' dimension covers the speed and attitude of employees to help customers. Fast troubleshooting of complaints and giving customers a prompt service, like telling the customers exactly when services will be performed or never being too busy to respond to customer requests.

- The dimension 'Assurance' means the sense of security that a customer has to an organization. The feeling of security in an organization is divided into the courtesy of employees, trustworthiness of employees, and the ability of employees to give proper advice.

- The dimension 'Empathy' means the empathy of the employees in the internal or external customer. Like giving personal attention and knowing the specific customer demands.

Tangibles - Appearance of physical facilities and personnel
1. Up-to-date appearing equipment
2. Visually appealing physical facilities
3. Well dressed and neat-appearing personnel
4. Visually appealing materials associated with the service

Reliability - Ability to perform service dependably and accurately
5. Doing something by certain times promised
6. Showing sincere interest in solving problems
7. Performing the service right the first time
8. Providing service at the time promised
9. Insisting on error-free records

Responsiveness - Willingness to help and provide prompt service
10. Telling you exactly when services will be performed
11. Giving you a prompt service
12. Willingness to help you
13. Never being too busy to respond to requests

Assurance - Knowledge and courtesy of employees towards the customers
14. Confidence instilling behavior
15. Feeling safe in your transactions
16. Being consistently courteous
17. Having the knowledge to answer questions

Empathy – Degree of caring attention the firm provides to its customers
18. Giving you individualized attention
19. Having convenient operating hours
20. Giving you personal attention
21. Having your best interests at heart
22. Understanding your specific need

Table 3 - Five determinants of service quality (Zeithaml, Parasuraman, & Berry, 1990)

3. Research Methodology

This part of the thesis describes the methodology used in this research. In the first paragraph the used research design, Action Research (AR), is explained. Action research will be used throughout the entire project. All parties involved in this thesis are approached by the same manner. In the second paragraph of this chapter the project started up is described. In the 3.3 paragraph the methodologies of data gathering will be further clarified. In paragraph 3.4 the data analysis will be further explained.

3.1. Research Design

Action research has been defined as 'the application of the scientific method of fact finding and experimentation to practical problems requiring action solutions and involving the collaboration and cooperation of scientists and practitioners' (French & Bell, 1973) (as cited in Rosmulder, 2011, p. 53). In short, action research is a cyclical process that takes shape as knowledge emerges. The term 'Action Research' was devised in 1946 by (Lewin, 1946). The premise here is that the researcher, and the organization, will learn, will do, will reflect, will learn how to do better, will do it better, and will learn from that, and so on.

Action research is a type of research where the researcher cooperates with the unit of analysis, to solve a practical problem and contribute to social science, simultaneously. According to Babbie (2012), the difference between researcher and the ones who are being studied is supposed to disappear. In the case of this thesis, the unit of analysis will be the staff of the IT department. The action researcher will be a participant and an observer at the same time (Schein, 1987).

For this thesis action research is an appropriate research method. The research question is a practical question and next to that an important pre condition for this research is that the organization can continue the research and experimentation after the researcher has left. People are more likely to provide valid information about their own intentions and reasons for action when they share control of the process of generating, interpreting, testing and using information (Argyris & Schön, 1996). The researcher can, by collaborating with the employees of the IT department, work on support and approval of those involved in the project (Savin-Baden & Wimpenny, 2007). This also implies that action researchers cannot be neutral, independent observers (Coughlan & Coghlan, 2002). The researcher can use existing knowledge that is already available in the organization (Wouters & Wilderom, 2008). The support and involvement is created by the effect that the researcher is collaborating with employees. This collaboration creates synergy because the experiences and knowledge of employees could be merged. Moreover, it may also lead to a wide variety and large number of solutions that contribute to the goal of the project and provides the opportunity to learn from other employees. This could increase the professionalism of the staff within the unit ICT. In addition, action research realizes change in a practical way (Savin-Baden & Wimpenny, 2007). This is in line with the wishes of the organization since a practical solution is what they searched for.

Action research has been acknowledged as a valid methodology (Coughlan & Coghlan, 2002) that overcomes deficiencies in traditional research methods (Westbrook, 1995). For example, in contrast to traditional methods, AR does produce results that are of practical value to managers in

organizations, and it is better suited for unstructured real-world problems (Westbrook, 1995). Action Research works through a cyclical four-step process: planning, taking action and evaluating the action, leading to further planning (Coughlan & Coghlan, 2002). The following figure shows this action research cycle.

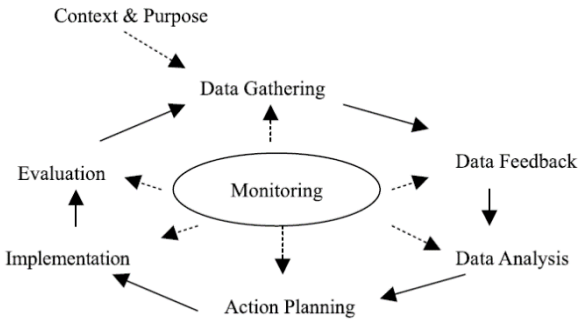

Figure 2 - Action Research cycle (Coughlan & Coghlan, 2002, p. 230)

The figure below combines the methodological considerations of the action research cycle according to (Coughlan & Coghlan, 2002) with the practical approach that has been used for this research. In the left column of this table all the steps of the action research cycle are listed. Each step being a paragraph in this methodology chapter. This way one can see how this research systematically follows the steps according to the action research method. The last two steps (5. Experiment with KPIs and 6. Evaluation), discussed in paragraph 3.6, are greyed out. Due time restrictions these steps are not incorporated in the scope of this research. Figure 4 represents a schematic representation of the project planning for this research and provides a timeline for this study.

3.1 Action research cycle	Team DIV	Team Geo	Team Servicedesk
3.2 Project Startup	Project Startup	Project Startup	Project Startup
3.3 Data gathering	1. Analyse existing KPI's unit ICT	1. Analyse existing KPI's unit ICT	1. Analyse existing KPI's unit ICT
3.3 Data gathering	2. Research the current service quality by qualitative and quantitative research	2. Research the current service quality by qualitative and quantitative research	2. Research the current service quality by qualitative and quantitative research
3.4 Data feedback & analysis	3. Analyse data and determine the bottlenecks	3. Analyse data and determine the bottlenecks	3. Analyse data and determine the bottlenecks
3.5 Action planning	4. Define KPI's	4. Define KPI's	4. Define KPI's
3.6 Implementation	5. Experiment with KPI's	5. Experiment with KPI's	5. Experiment with KPI's
3.6 Evaluation	6. Evaluation	6. Evaluation	6. Evaluation

Figure 3 - Research approach: Action Research cycle translated into practical approach

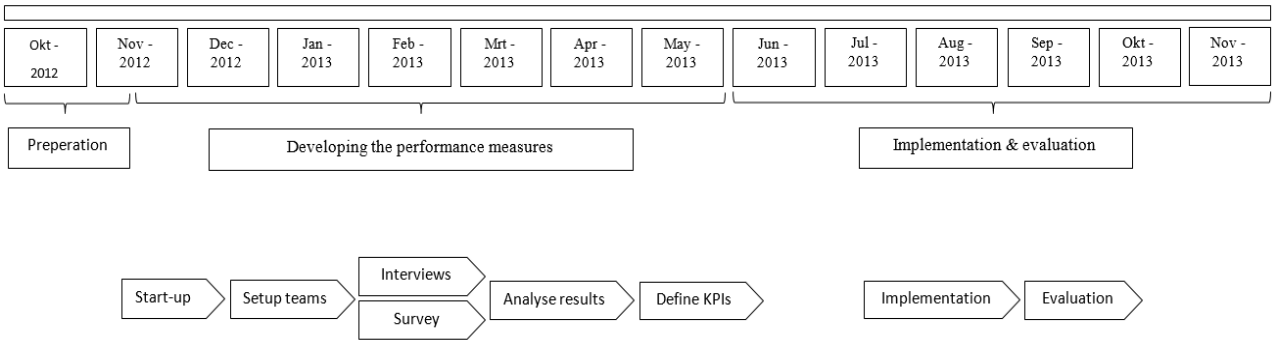

Figure 4 - Timeline of the study

3.2. Project Start-up

The project started with discussions with the IT department about the development process of the current KPIs. Also we discussed the possibilities for redesigning these KPIs. These meetings were held with the researcher, the IT manager and the IT Policy Advisor, who initiated and facilitated the first balanced scorecard. Together with the manager of the unit ICT and the researcher the decision was made to create three performance teams. The teams are supervised by both the researcher and the Policy Advisor. Each of these teams cover one or more core activities of the business unit ICT. The first performance team 'Servicedesk' was responsible for improving the satisfaction on the digital reporting system. The second team, 'Geo-informatiebeheer', was responsible for creating KPIs that had effect on geometric base files and maps that are used within the organization. The third team 'DIV' was responsible for creating KPIs that could measure their performance on the internal mail processing capabilities.

A presentation was scheduled in which the goals of the project were further explained. All the 27 employees of the IT department attended this presentation that was held by the researcher. The presentation was split-up in two parts. For DIV, a team resorting under the IT department since two years, the KPI project was new. Therefore, their presentation contained more in depth information on the utilization and the benefits of working with KPIs for the management, the IT department and the costumer. During the presentation the researcher discussed the following subjects; what are KPIs, how they are used, what is the benefit to the organization, the management but more importantly, how KPIs can be used to allow employees to learn continuously and how the researcher needed the employees to end his project successful. Before the end of that presentation, the researcher asked the employees for two volunteers of each of the three sub-units, desiring to participate in this project as performance team members.

After the presentation action teams were formed, consisting of representatives of the sub-units. These representatives were selected from different disciplines as much as possible, by discussing the representatives with the IT manager and the Policy Advisor. A total of three teams were formed, all of which had no experience in action research. The Servicedesk team consisted of two members, an IT system manager, and an incident manager. Team Geo consisted of three members, two applications managers and a Geo coordinator. DIV consisted of two members, one quality assurance employee and a DIV coordinator. An experienced Policy Advisor participated in all the three teams. The researcher's role was that of chairman and observer, facilitating thinking about KPIs, directing analysis and

providing feedback to the team. Weekly meetings with the IT manager and the Policy Advisor were used to make decisions about problem situations. When this project is over, the Policy Advisor will take over the role as chairman.

3.3. Data Gathering

After a second introduction by the researcher the goals of each performance team were discussed. The three performance teams were assigned to select at least two customer departments which should be interviewed. A prerequisite was that the chosen internal customer departments had to be departments with a lot professional interaction with that particular sub-unit of the IT department. The researcher supervised which departments were nominated. All the performance teams chose departments of which the professional relation between them and that department could be improved.

The Servicedesk team chose the department of Purification and Sewage management and the department of Technical Support. Technical Support is a large department in the organization. A lot of their employees work in the outer regions and are not present at headquarters. This is also the case for Purification and Sewage Management. Many water treatment plants are build outside urban areas. Here, no broadband internet is available. Therefor they still have slow ISDN connections. This causes a lot of frustration with these employees working outside. The IT department regularly implements new services, such as remote desktop. However, this requires fast connections. Therefor employees have to wait a lot while doing their work, and have troubles making reports caused by malfunctioning IT equipment.

The DIV team chose the department P&O and the department Licensing and Enforcement. P&O because of the ongoing discussions on how employee records are being archived. P&O wants to see employee records without the intervention of DIV, because of privacy concerns. DIV disagrees because DIV is responsible for these records and has experienced incidents with documents being lost occasionally. Licensing and Enforcements has been chosen because this department uses ‘Corsa’ a lot, which is the system for all digitalized documents. That system is the primary source for the employees to work with.

Team Geo chose the ‘Drawing office’ which is a part of the unit Projects and the unit ‘Knowledge and Advice’. Both of the units have a lot of contact with Geo because they use a lot of geometric files to do their work.

For each of these departments that were chosen by the performance teams two employees of that particular department were selected for the interview. Most of time, these employees had a managerial or coordinating role within the department. However, it also occurred that an employee with a lot of expertise was chosen. In case of doubt, a selection was made by IT management, the Policy Advisor and the researcher.

Meetings with [a]	Number of meetings	Duration (h)
PMS team DIV	6	12
PMS team Geo	5	8
PMS team Servicedesk	5	12
Numbers of different company employees interacted with [a]		
Questionnaire administratrion	Respondents	
1) Jan-Feb 2013 IT department	27	
2) Jan-Feb 2013 All departments	177	
KPI Documents	Number	
DIV	4	
Geo	4	
Servicedesk	4	

3.3.1. Interview Sessions

'A qualitative interview is an interaction between an interviewer and a respondent in which the interviewer has a general plan of inquiry, including the topics to be covered, but not a set of questions that must be asked with particular words and in a particular order' (Babbie, 2012, p. 318). During the interviews the researcher acted as chairman and was present during all the interviews. The Policy Advisor acted as secretary and was present during all interviews. The SERVPERF scale by Cronin & Taylor (1992) was the main input for the interview questions. The researcher and the participants of the performance teams translated the SERVPERF items into usable interview questions together. This resulted in the following interview questions.[2]

For DIV – Documentary information services

- What does your unit think of the services that DIV offers?
- What does your unit think of the overall appearance of DIV? (Employees, responsiveness, phone/e-mail/oral, creating notifications, handling of (internal) mail, etc.)
- What does your unit thinks of the communication between the employees of DIV and your unit (oral, mail, phone)
- What does your unit think of the friendliness of the staff?
- Do the employees of DIV keep you well informed when they perform services for your unit?
- Is DIV aware of the needs of your unit as a customer? Why?
- Is DIV well acquainted with the daily work of your unit? Why?
- What does your unit think of current manner how DIV is organized?
- What does your unit think, relating to this manner, be the most ideal situation for your unit?

[2] This is a translation of the original Dutch interview questions. The original Dutch versions can be found in

Appendix A – Structural interview questions

For Servicedesk

- What does your unit think about the overall appearance of the Servicedesk? (employees/ accessibility phone / email / oral / communication / Creating notifications/ friendliness / keeping your unit informed of…/ etc.
- What does your unit think of the support from the IT department on your day-to-day activities?
- Do the employees of the IT department keep you well informed when they perform services or tasks for your unit?
- Is the Servicedesk aware of the needs of your unit as a customer? Why?
- What does your unit think of the current way of working by the Servicedesk (the handling of incoming reports)
- What should, in relation to this method, be the most ideal situation for you unit?

For Geo-information services

- What does your unit think about the overall appearance of Geo-information services? (employees/ accessibility phone / email / oral / communication / Creating notifications/ friendliness / keeping your unit informed of…/ etc.
- What does your unit think of the support from Geo information services on your day-to-day activities?
- Do the employees of Geo-information services keep you well informed when they perform services or tasks for your unit?
- Is Geo-information services aware of the needs of your unit as a customer? Why?
- What does your unit think of the current way of working by Geo-information services?
- What should, in relation to this method, be the most ideal situation for you unit?

3.3.2. Questionnaire

Two electronic questionnaires were conducted for two different groups. The first group consisted out of 27 employees of the unit ICT. The second group consisted out of 363 internal customers of the unit ICT. Together they formed the two sub-groups. All items were formulated as statements and measured with a 10-point Likert scale (1= 'strongly disagree' to 10 = 'strongly agree'). The questionnaire was pre-tested within the unit ICT. Twenty-three employees tested the questionnaire. The researcher received 45 comments and improvements for the questionnaire. These comments varied from grammar, simplifications in the language, to ambiguity in the questionnaire items. Together with the IT employees and IT manager a decision was made that some items from the SERVPERF construct should be deleted because the items were not applicable in this context. For Servicedesk & DIV the following items were deleted: Visually appealing physical facilities, visually appealing materials associated with the service, giving you individualized attention, having convenient operating hours. In addition for Geo 'Giving a prompt service' was deleted. The Likert scale was changed from a 7-item Likert scale to a 10-item Likert scale.

From the ICT employee group 23 members completely filled in the questionnaire. This gave a response rate of 85%. From the customer group 177 filled out the questionnaire completely. This gave a response rate of 49%. The distribution of the population can be found in Table 4. For the questionnaire software from 'Parantion' was used. This is a web-based tool to create and analyze questionnaires. The questionnaire design and questions can be found in *Appendix H – Questionnaire*.

	Participated	Percent	Employees per unit	Participation %
Bestuurlijk Juridische Zaken	3	1,7	9	33,3
Communicatie	1	,6	7	14,3
Directie	3	1,7	3	100,0
Facilitaire Zaken	16	9,0	27	59,3
Financiën	12	6,7	15	80,0
Kennis en Advies	13	7,6	30	43,3
Onderhoud	20	11,3	68	29,4
P&O	5	2,8	10	50,0
Projecten	20	11,5	30	66,7
Technische Ondersteuning	19	10,7	40	47,5
Vergunning en Handhaving	14	7,9	25	56,0
Waterbeheer	14	7,9	30	46,7
Waterbeleid	5	2,8	10	50,0
Waterkering en Vaarwegbeheer	9	5,2	15	60,0
Zuiveringsbeheer en Rioleringen	21	11,8	44	47,7
Total	177	100	363	48,8

Table 4 - Internal customer respondent distribution

3.3.3. Evaluation KPI Development

Nearly at the end of the project, when the interviews and questionnaires were analyzed by the researcher, participants of performance teams and the Policy Advisor, the development of the first prototype KPIs had finished, the researcher gave a presentation to the entire IT department to present the results. After this presentation the researcher asked the participants of the performance teams what they thought about the developed performance indicators and if they felt this project could continue on its own when the researcher left. The researcher had this conversation with four performance team participants. One from DIV, two from Geo and one from Servicedesk. The results can be found in chapter 5.2

3.4. Data Feedback & Analysis

3.4.1. Interviews

A critical part of the data analysis is that it should be executed collaborative (Coughlan & Coghlan, 2002). The researcher and the performance team participants will have to work together. It is based on the assumption that the participants know their organization best, know what problems exist and know what works best in solving these problems. Besides, they are the ones to implement the solutions found (Coughlan & Coghlan, 2002). Interview data was recorded by the researcher and a transcript of the highlights of each interview was written (see *Appendix B – Interviews Servicedesk*, *Appendix C – Interviews Geo* and

Appendix D – Interviews DIV). The transcripts were sent to the participants who by doing so were given the opportunity to give feedback. Feedback sessions were held with the performance teams. During these sessions the interviews were evaluated and the highlights were structured and categorized. Most of the categories concerned retrievability of documents, files or news all documents can be found in *Appendix E – Results Servicedesk interviews*, *Appendix F – Results Geo interviews* and *Appendix G – Results DIV interviews*. Also problems with communication occur like poorly informed employees or the use of communication channels that are unknown or not efficiently utilized by the organization.

3.4.2. Questionnaire

The questionnaire was analyzed in SPSS. The measurement of service quality is determined by the dimensions tangibles, reliability, responsiveness, assurance and empathy. An exploratory factor analysis has been conducted to extract the factors from the observed variables. Exploratory factor analyses is often used to analyze if multiple items can be formed into one factor; from the results we can conclude that there are three factors. This does not correspond with the theory of (Cronin & Taylor, 1992; Parasuraman et al., 1994) which states that there are five factors. This probably if not certainly happened because some scale items were deleted before the questionnaire was used first. The SERVPERF is still shown to be valid in most other researches around the world. Therefore the researcher decided to continue with the original five factors. The Cronbach's Alpha in table 5 indicates how reliable the dimensions are.

	Mean	Standard deviation (SD)	Cronbach's Alpha (α)	N
Tangibles	*7.39*	*1.309*	*.646*	*228*
Reliability	*7.59*	*1.208*	*.846*	*228*
Responsiveness	*7.42*	*1.386*	*.841*	*228*
Assurance	*7.78*	*1.183*	*.857*	*228*
Empathy	*7.23*	*1.515*	*.888*	*228*

Table 5 - Reliability analysis of the service performance dimensions

From the results the dimension tangibles has the lowest Cronbach's alpha (α = .646). This could be the result of the fact that there were only two items measuring this dimension. From the theory of (Parasuraman et al., 1988) the dimension tangibles originally consists of four items. A Cronbach's Alpha of .646 is still ok (Field, 2007). The value of Cronbach's Alpha can be between 0 (low) and 1 (high) and is ideally higher than .65.

3.5. Action Planning

Action planning is a joint activity. As (Beckhard & Harris, 1987) advise, key questions like; what needs to change?, in what parts of the organization?, what types of change?, and whose support is needed?, how is commitment build?, how should resistance be managed? arise. For the development of a PMS the question for the research team was 'Which KPIs can be developed from the interview and questionnaire data?' The researcher facilitated a KPI form (Table 6) that was based on research of (Neely et al., 1995; Neely, Richards, Mills, Platts, & Bourne, 1997). This form was the basis for the KPI development process. The researcher assigned each performance team member to develop performance indicators themselves based on the results of the interviews and the questionnaire (Wouters & Wilderom, 2008). To inspire some team members, the researcher thought of some performance indicators himself.

Title	
Purpose	
Relates to	
Target	
Formula	
Frequency	
Who measures	
Source of data	
Who acts on the data?	
What do they do?	
Notes and comments	

Table 6 - KPI template (Neely et al., 1995, 1997)

3.6. Implementation & Evaluation

As mentioned in the introduction of this chapter the last two steps of the Action Research cycle are not handled in this research due to time restrictions. However, the researcher would like to point out the importance of these final steps to secure sustainability of the achievements obtained so far. After this project the performance teams are supervised by the Policy Advisor. The evaluation step is important because it is the key to learning. 'Without evaluation actions can go on and on regardless of success or failure; errors are proliferated and ineffectiveness and frustration increased' (Coughlan & Coghlan, 2002, p. 233). This matter will be further discussed in chapter 5.

4. Results

In this chapter the analyzed results of the interviews and the questionnaire are reported. In chapter 4.1 the results of the qualitative research is presented. In chapter 4.2 the questionnaire results of the internal customers is further analyzed. In chapter 4.3 feedback of the participants about the KPI project is presented.

4.1. Interviews

Below the results and their classification into categories are listed and described for the three performance teams DIV, Geo and Servicedesk. The teams have made these classifications themselves. The original documents can be found in *Appendix E – Results Servicedesk interviews*, *Appendix F – Results Geo interviews* and *Appendix G – Results DIV interviews*

The interviews with internal customers were structured into a list according to the following items (presented in rows in the original document, for an example: *Appendix E – Results Servicedesk interviews*:

- The problem category,
- Problem/ field of attention, and
- Possible solution

At the same time the results from the interview sessions were divided into different categories (presented in columns in the original document, for an example: *Appendix E – Results Servicedesk interviews*;

- Communication,
- Organization,
- Find ability,
- Training,
- Collaboration,
- Servicedesk

When analyzing the data gathered from the interviews many problems and bottlenecks in the process came to light. When dividing the results into categories some of those problems had to be put into more than one category, because multiple factors were responsible for those particular problems. Note: Not all performance teams have used all these categories to classify their results. DIV has used four, Geo has used five and Servicedesk has used two categories.

DIV

The performance team of DIV divided their problems and fields of attention into only four categories; Communication, Organization, Find ability, and Training.

Communication category: One of the results that is put into this category is ‘how DIV communicates to other departments’. For example, DIV uses a digital notification system where customers of other departments should write down their problem. This notification system is bureaucratic and a lot of

internal customers have troubles to describe exactly what kind of documents they need to find. Previously, the internal customer could get help by personally asking, or calling DIV employees. Then the DIV employee would ask more detailed questions and the needed document was found much faster. The internal costumers liked these short communication lines between DIV and themselves, therefore they prefer to work accordingly. Another example is that the awareness of the organization on why it is important to record all documents is low. Also there is limited awareness on the consequences of not routing document properly within Corsa. If not, the dividers will not be able to indicate and divide the document to the right employee (see find ability).

Organizational category: Problems in this category mainly have to do with organizational policy. For example, certain governing documents cannot be found, because they are not digitized by DIV. The decision not to do so was made by the board years ago. Another example is that the employees working on an operational level in the organization have problems finding the right documents. DIV employees do not have direct influence in solving these problems, therefore this category is not used for the development of KPIs.

Find ability category: Results in this contain problems like: documents do not arrive to the right person, DIV is not aware where documents that were lent out to employees actually are, documents that are returned after lending still have the status 'lent', analog post arrives at DIV to be digitized, but employees do not use the same registration criteria. Not using the same criteria gives room for own interpretation, which leads to problems when employees in the organization try to find documents.

Training category: This category contains problems that occur due to lack of knowledge. The organization has troubles in finding documents because of the complexity and their lack of knowledge of Corsa and post dividers whose main task is to divide post to the employees of their unit neglect their tasks by indiscriminately putting post through, sometimes because they do not know to act if the post is not addressed correctly.

Geo

The performance team of Geo divided their problems and fields of attention into five categories; Communication, Organization, Find ability, Collaboration and Training.

Communication category: one of the problems in this category is that the organization is ill-informed about the current situation within Geo. Some employees who have informal contact with the employees of Geo are more aware of the latest news than employees who have less informal contact.

Organizational category: An example of such a problem for Geo is that it is not clear who bears responsibility. Who is responsible for the geometric data in the organization is a grey area. Geo thinks that the users of the geometric base file are responsible for their own data and that Geo only has a facilitating role. The organization thinks that Geo should have a coordinating role so that data can shared more easily between departments.

Find ability category: This category contains problems concerning the difficulty to find which information and data is available within the organization. For new employees it is a steep learning

curve. To search data and information employees search for metadata. Metadata is data over the data. For example, if you make a photo, the resolution and location are metadata. For Geo the metadata can be location, date, ditches or channels, coordinates.

Collaboration category: This category contains subjects that improve the collaboration between the organization and Geo. How can a department make use of the Geo expertise during projects? How can Geo help with new projects?

Training category: This category focuses on the expertise of the organization. According to Geo the organization is responsible for their own expertise and Geo can facilitate the expertise. By focusing on more knowledge in the organization the departments can do a lot of work themselves.

Servicedesk

The members of the Servicedesk team divided their problems and attention fields into two categories. Communication and the second category is 'Servicedesk', an umbrella name for the digital reporting system.

Communication category: This category contains problems like, the Servicedesk is unreachable by phone, the used phone number to reach the Servicedesk is not clear, the digital reporting system is not clear, the used tool 'SharePoint' for the communication to the organization is not sufficient, existing problems that have been handled by the Servicedesk before are easily solved, however unknown situations will cause delay in solving the problems. Internal customers also complain that the ICT has too often a leading role, while more decisions should be made in consultation with the client.

Servicedesk category: For the digital reporting system issues like; complaints about the time it takes before a report is picked up, lack of clear processes e.g: the invoice of purchased equipment goes through mail and through the internal invoice system, and that the customer doesn't have the feeling that it has been helped.

4.2. Questionnaire

The questionnaire was set out parallel with the interviews and was designed to help the IT department get insights in customer satisfaction. This questionnaire will also be the first input for the measurement of the developed KPIs. The last questionnaire was released in 2005 and contained (according to the IT manager and the Policy Advisor) far too less information to measure the actual IT department satisfaction of the organization. In the following paragraphs the questionnaire results based on the SERVPERF items, are presented. The questions that the IT department wanted to answer were:

- Does the factor age have a significant difference in service performance ratings?
- Are there departments within Rijn & IJssel that have significant differences in scoring the IT department?
- Do employees who have more professional contact with the IT department have a significant better or worse opinion about service performance and satisfaction?
- Which SERVPERF dimensions explain the majority of IT satisfaction among the internal customers? (figure 4)

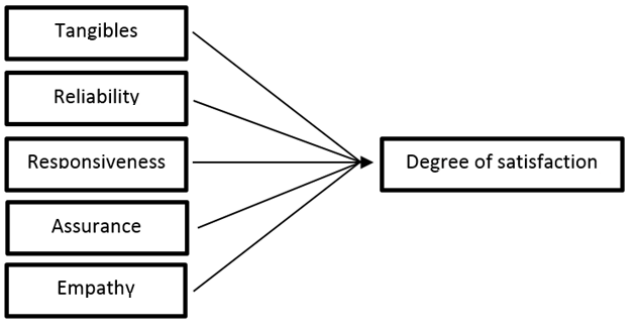

Figure 5 - SERVPERF dimensions and satisfaction

4.2.1. Descriptives – Service Performance

In this part descriptive statistics are presented. First, the overall scores will be presented. Here no selection has been made and it represents the scoring distribution of Servicedesk, Geo and DIV combined. After the overall scores, the three units of analysis will be analyzed separately. After the descriptive statistics more in depth statistical tests will be conducted to answer the questions as stated in paragraph 4.2.

Each figure is set-up the same. First starting with five columns representing the five dimensions of the SERVPERF construct as a 100% stacked bar chart. The sixth column represents the overall mean of all these five dimensions. The columns are categorized into five colors, from dark red (very low) to dark green (very high), indicating how well was scored. Next to the bar chart additional information used can be found. The n represents the number of respondents who scored the particular dimension. M stands for the mean and SD for the standard deviation. If any results are used for more in-depth statistical analysis the Cronbach's-Alpha (α) is presented as well.

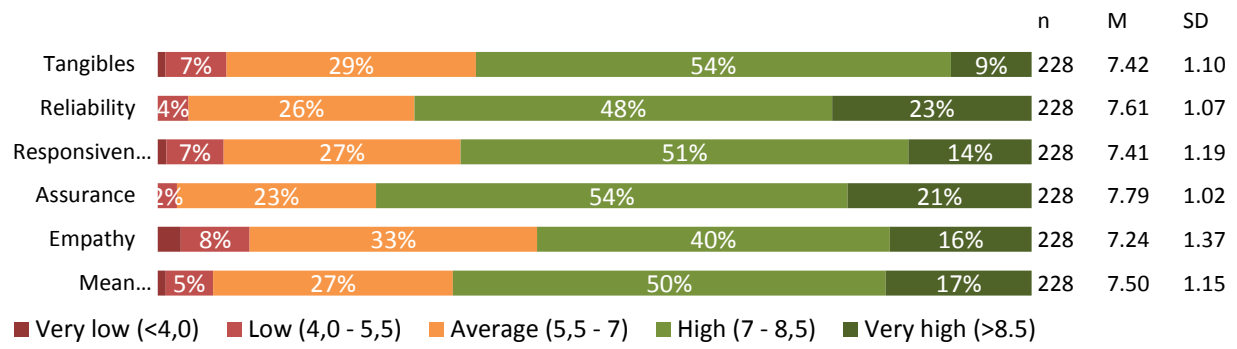

Figure 6 - Overall score service performance as rated by the internal customers

The overall scores of the five SERVPERF dimensions are presented in Figure 6. Most respondents rated the unit ICT with a 7 or higher (77%). Only 10% rated the service provided by the IT department between 4,0 and 5,5, less than a percent scored lower than 4,0. Assurance (the ability to give proper advice and give customers a feeling of trust) is rated highest with 75% given a 7 or higher. Empathy (giving personal attention and having high priority on the customer's interest) is rated lowest with 41% giving a 7 or lower. The overall average lies between 7.42 and 7.79.

DIV

The 42 respondents who give their opinion about the sub-unit DIV gave an average score of 7.26. 55% of the respondents who judged DIV gave a score of a 7 or higher. DIV scored low on Empathy (Caring attention to its customers, 53% scored average or less) and Tangibles (up-to-date equipment & neat appearing personnel, 41% scored average or less). Assurance and Reliability were the best scoring dimensions with respectively 65% and 62% scoring a 7 or higher.

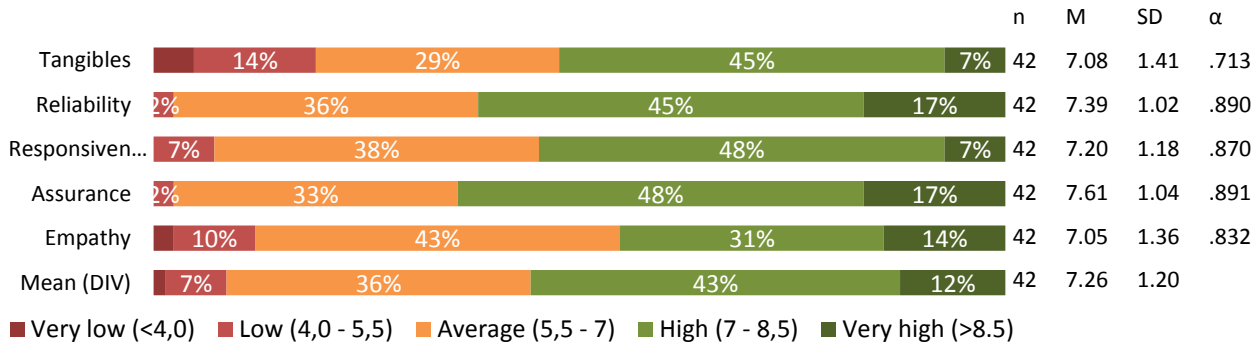

Figure 7 - Scores service performance DIV

Geo

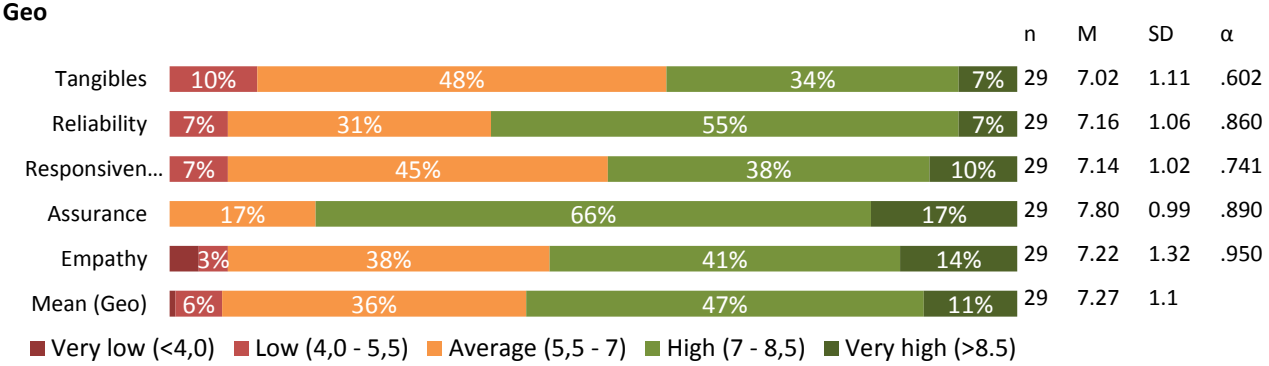

Figure 8 - Scores service performance Geo

The 29 respondents who gave their opinion about the sub-unit Geo (Figure 8) gave an average score of 7.27. The overall scores for Geo are with a mean 7.27 a bit lower than the three scores combined as can be seen in Figure 8, 58% of the respondents scored Geo high or very high. Tangibles (up-to-date equipment & neat appearing personnel) scored low, compared with the other dimensions, 58% of the respondents scored an average or less. Assurance (Knowledge and courtesy of IT personnel) scored high compared with DIV and Servicedesk with 83% of the respondents giving a score of 7 or higher.

Servicedesk

The 157 respondents who gave their opinion about the sub-unit Servicedesk gave an average score of 7.56. 70% of the respondents rated the Servicedesk with high or very high. The dimension empathy had the lowest score, but still 60% of the respondents scored that with high or very high. Assurance (is Servicedesk trustworthy?) and reliability (fulfilment of promises, attitude towards problem solving) gave the highest scores with a mean of 7.82.

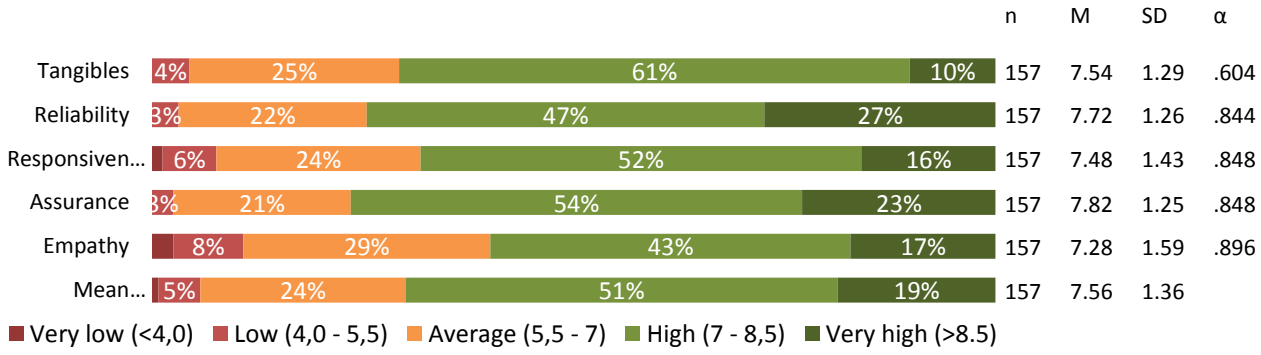

Figure 9 - Scores service performance Servicedesk

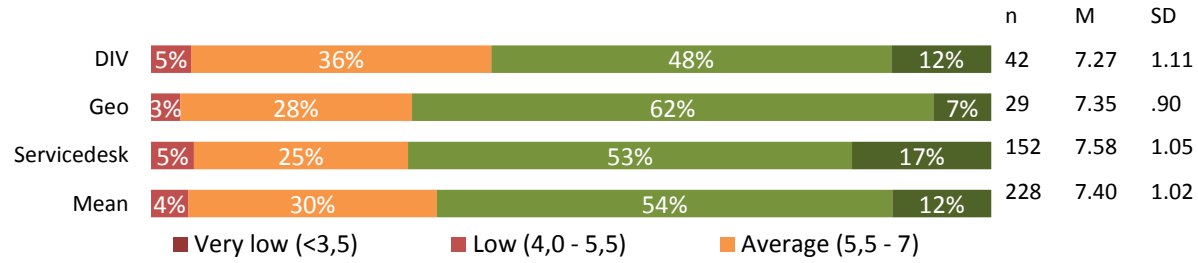

Figure 10 – Overview of the mean scores of the sub-units of the IT department rated by the internal customers

4.2.2. Service Performance IT department Employees

The 23 IT department employees gave their opinion on how they thought the organization would rate their unit. A comparison between the scores given by internal customers as can be seen in Figure 10 and the scores given by the IT department employees can be found in Figure 11. A comparison of the results gives an impression that the IT department employees actually give a higher score to themselves compared with the scores of the internal customers. An independent samples t-test was conducted to compare the organizational mean on SERVPERF (m=7.51, SD=1.07) and the IT department employees mean (m=7.69, SD= .793) on SERVPERF. However, there was no significant difference in the outcomes between the IT department and the internal customers; t(220)= -.801, p=.424).

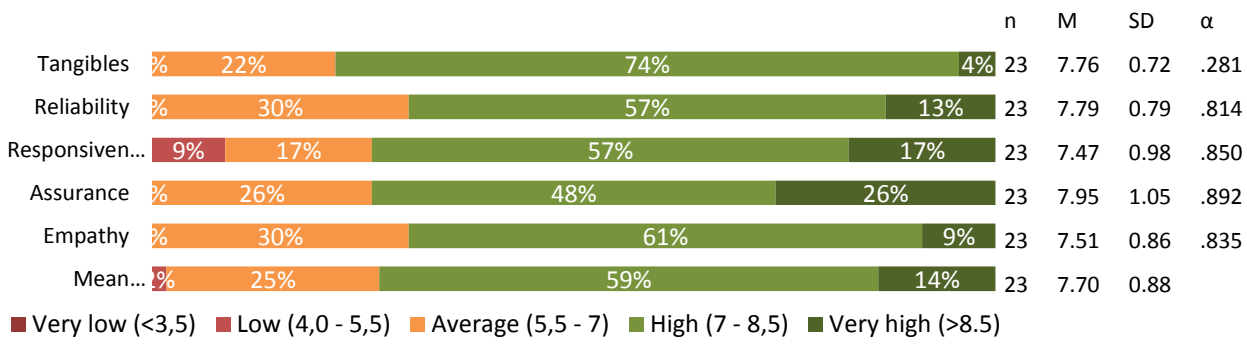

Figure 11 - Scores service performance rated by employees of the IT department

4.2.3. Effect of Age on Service Performance

To determine if age might affect the service performance scores of the IT department a Kruskal-Wallis test has been conducted. This non-parametric test has been conducted because of the positive results the Kolmogorov-Smirnov and the Shaprio-Wilk test showed during analysis. If the test is non-significant (p >.05) then the distribution is probably normal. If, however, it is significant (p <.05) then the distribution is significantly different from a normal distribution. According to a Kolmogorov-Smirnov test, none of the variables are normally distributed. (Tangibles D(228) = 0.18 p <,001) (Reliability D(228) = 0.09 p =,005) (Responsiveness D(228) = 0.10 p =,011) (Assurance D(228) = 0.10 p =,006) (Empathy D(228) = 0.10 p <,001). These results are significant, indicating that all distributions are not normal. Therefore a nonparametric test had been conducted in order to show if there is any relationship between age and service quality. The results of the Kruskal-Wallis test to determine whether there is a significant difference between age and the scores on the service performance dimension, gives evidence that for the internal customers, a higher age represents a higher score for IT service performance.

Kruskal-Wallis	Mean Ranks (Group 1,2,3)	Chi-Square	Sig
Tangibles	103,88 112,79 119,75	2.200	.333
Reliability	98,71 109,67 125,19	6.267	.044*
Responsiveness	81,98 96,80 110,78	8.177	.017*
Assurance	97,79 111,72 124,18	5.987	.050*
Empathy	96,95 112,92 123,77	6.085	.048*
* significant at p <.05			

Table 7 - Kruskal-Wallis test statistics for the overall IT department: Age versus SERVPERF dimensions

Data presented in Table 7, shows that all variables, with the exception on tangibles, are significant and thus that there is a difference between age and reliability, responsiveness, assurance and empathy.

However, it doesn't tell exactly where the differences lie. To exactly know where these differences are an additional Mann-Whitney test should be conducted.

Type 1 error

The variable age is divided into five groups. To see in which group there is an actual difference a post-hoc Kruskal-Wallis test was conducted. The problem is that if one wants to carry out a test of every pair of groups we need 10 tests[3]. When each test needs a confidence interval of 95%, the probability of a type 1 error (Thinking it is significant while in fact it is not) is more than 40%[4]. Therefore it is important to be selective about the comparisons. The researcher decided to recode the variable age from five into three groups. This because the group age = < 31 and age = 31 -40 have both a low N (N=18 and N=27) compared to the groups age = 51-60 and age = > 60. (N=74 and N=25). This is also called the 'Bonferroni correction' (Field, 2007, p. 550). The new groups are: 1: age= <40, 2: age = 41 – 50 and 3: age = >51. (See Table 8)

Group	Frequency	Percent
Age= <40	57	25%
Age= 41 – 50	73	32%
Age= >51	98	43%
Total	228	100%

Table 8 - Frequency distribution: Age

[3] These comparisons are group 1 vs. 2, 1 vs.3, 1 vs. 4, 1 vs. 5, 2 vs. 3, 2 vs. 4, 2 vs. 5, 3 vs. 4, 3 vs. 5 and 4 vs. 5

[4] $1 - (.95)^{10} = .40$

Age groups	SERVPERF dimensions	Mean Rank	Z	Sig (2-tailed)
Group 1 (Age = <40) vs. Group 3 (Age = >51)	Reliability	66.24 83.39	-2.322	.020
	Responsiveness	55.22 74.81	-2.833	.005*
	Assurance	65.40 83.89	-2.511	.012*
	Empathy	65.47 83.84	-2.491	.013*
Group 1 (Age = <40) vs. Group 2 (Age = 41-50).	Reliability	61.47 68.64	-1.079	.281
	Responsiveness	52.26 60.76	-1.373	.170
	Assurance	61.39 68.71	-1.106	.269
	Empathy	60.47 69.42	-1.350	.177
Group 2 (Age = 41-50) vs. Group 3 (Age = >51)	Reliability	78.03 90.30	-1.620	.105
	Responsiveness	68.04 78.47	-1.474	.140
	Assurance	80.01 88.80	-1.167	.243
	Empathy	80.50 88.42	-1.049	.294

* significant at p <.0167

Table 9 - Mann-Whitney test statistics for the IT department overall: Age versus SERVPERF dimensions

A Mann Whitney test (Table 9) was conducted to evaluate differences among three age conditions (Group 1. Age = < 40, Group 2. Age = 41-50 and, Group 3. Age = > 51) on the service performance scores.

The Mann Whitney U test was conducted to evaluate whether there is a difference between older (>51) and younger (<40) internal customers on the SERVPERF dimensions. The results of the test were that older employees score significantly higher on the Responsiveness, Assurance and Empathy dimensions, z = -2.833, p< .05 for Responsiveness, z = -2.511, p = .012 for Assurance, and z = -2,491, p< .013 for Empathy. Older employees had an average rank of 74.81, 83.89, and 83.84 and younger employees had an average rank of 55.22, 65.40, and 65.47.

Therefore we can conclude that there is a significance difference between the groups 1 and 3 (Age = < 40 and Age = > 50). Internal customers with an age above 51, rated the IT department significantly higher than the internal customers with an age below 40 years.

Servicedesk

In the previous pages the IT department was described as a whole, while in fact there are several sub-units. Splitting up the IT department into the sub-units leads to the following results: in Table 10 results from a Kruskal-Wallis are presented. Reliability, Responsiveness, Assurance and Empathy are significant. A Mann-Whitney test was conducted to evaluate the differences among the three age conditions Age = < 40, Age = 41-50 and, Age = > 51) on the service performance scores. Group 1 vs. group 3 (Age = <40 vs. Age = >51) was significant on the following dimensions; Reliability (p = .006), Responsiveness (p = .012), Assurance (p = .009) and Empathy (p = .007).

Therefore we can conclude that there is a significant difference between the groups 1 and 3 (Age = < 40 and Age = > 50). The older group (3) rated the Servicedesk significantly higher than the younger group (1).

Kruskal Wallis	Mean Ranks (Group 1,2,3)	Chi-Square	Sig
Tangibles	66,74 78,70 82,67	3.004	.223
Reliability	59,58 74,17 89,10	10.381	.006*
Responsiveness	60,70 74,74 88,19	8.928	.012*
Assurance	61,26 73,46 88,83	9.392	.009*
Empathy	58,44 76,76 87,83	9.842	.007*
* significant at p <.05			

Table 10 - Kruskal-Wallis test statistics for Servicedesk: Age versus SERVPERF dimensions

Mann-Whitney	SERVPERF dimensions	Mean Rank	Z	Sig (2-tailed)
Group 1 (Age = <40) vs. Group 3 (Age = >51)	Reliability	39.59 59.15	-3.064	.002*
	Responsiveness	40.42 58.76	-2.874	.004*
	Assurance	40.17 58.88	-2.939	.003*
	Empathy	39.17 59.34	-3.166	.002*
Group 1 (Age = <40) vs. Group 2 (Age = 41-50)	Reliability	36.98 45.31	-1.544	.123
	Responsiveness	37.27 45.12	-1.455	.146
	Assurance	38.09 44.58	-1.206	.228
	Empathy	36.27 45.78	-1.766	.077
Group 2 (Age = 41-50) vs. Group 3 (Age = >51)	Reliability	54.36 66.46	-1.864	.062
	Responsiveness	55.12 65.93	-1.666	.096
	Assurance	54.38 66.44	-1.865	.062
	Empathy	56.48 64.99	-1.314	.189
* significant at p <.0167				

Table 11 - Mann-Whitney test statistics for Servicedesk: Age versus SERVPERF dimensions

DIV & Geo

Data presented in Table 12 and Table 13 shows that all the service performance dimensions are not significant, therefore it is safe to conclude that age does not affect the service performance scores for these sub-units.

Kruskal-Wallis	Mean Ranks (Group 1,2,3)	Chi-Square	Sig
Tangibles	22,18 21,81 20,21	.202	.904
Reliability	22,62 21,38 20,04	.314	.855
Responsiveness	20,76 22,85 21,08	.233	.890
Assurance	21,26 22,04 21,25	.037	.982
Empathy	20,82 22,81 21,04	.220	.896
* significant at p <.05			

Table 12 - Kruskal-Wallis test statistics for DIV: Age versus SERVPERF dimensions

Kruskal Wallis	Mean Ranks (Group 1,2,3)	Chi-Square	Sig
Tangibles	16,64 13,20 15,54	.675	.675
Reliability	16,07 15,30 14,13	.251	.882
Responsiveness	17,64 14,40 13,96	.929	.629
Assurance	15,64 16,95 13,00	1.253	.535
Empathy	17,50 15,15 13,42	1.044	.593
* significant at p <.05			

Table 13 - Kruskal-Wallis test statistics for Geo: Age versus SERVPERF dimensions

4.2.4. Departmental differences rating unit ICT

There are a total of twelve operational units within Waterschap Rijn & IJssel. These units are assisted by four staff units, like P&O, legal affairs, communication and a control department. On top of these units is placed the managerial board. For this study the researcher has created four groups. First because of the improved statistical N, and second because the chance of a type one error is reduced. See also page 29 for more information.

Groups	Frequency	Percent
1. Plan Formation	48	21.1%
2. Implementation	127	55.7%
3. Resources	37	16.2%
4. Staff Services	16	7%
Total	228	100%

Table 14 - Frequency distribution: Organizational Departments

Kruskal-Wallis		Mean Rank	Chi-Square	Sig
Tangibles	1. Implementation	130,27	4.306	.230
	2. Planning	111,32		
	3. Resources	103,32		
	4. Staff Services	118,25		
Reliability	1. Implementation	136,66	7.724	.021*
	2. Planning	110,60		
	3. Resources	94,51		
	4. Staff Services	125,19		
Responsiveness	1. Implementation	120,91	10.849	.013*
	2. Planning	101,15		
	3. Resources	77,18		
	4. Staff Services	95,38		
Assurance	1. Implementation	136,32	11.508	.009*
	2. Planning	113,69		
	3. Resources	87,82		
	4. Staff Services	117,19		
Empathy	1. Implementation	134,56	9.247	.026*
	2. Planning	112,91		
	3. Resources	91,45		
	4. Staff Services	120,28		
* significant at p <.05				

Table 15 - Kruskal-Wallis test statistics for the overall IT department: Organizational departments versus SERVPERF dimensions

The data shows, with the exception on tangibles, that the data is significant. There are differences between groups. However, we do not know where these differences come from. Therefore we conduct a Mann-Whitney test with a critical value of .05 /4 = .0125. The results can be found in Table 16.

Mann-Whitney	SERVPERF dimensions	Mean Ranks	Z	Sig (2-tailed)
Group 1 Plan Formation vs. Group 2 Implementation	Reliability	102.74 82.43	-2.373	.018
	Responsiveness	84.67 69.57	-1.899	.058
	Assurance	100.98 83.09	-2.099	.036
	Empathy	100.43 83.30	-2.006	.045
Group 1 (Plan Formation) vs. Group 3 Resources	Reliability	49.54 34.51	-2.791	.005*
	Responsiveness	45.59 30.20	-3.067	.002*
	Assurance	50.56 33.19	-3.236	.001*
	Empathy	49.74 34.26	-2.879	.004*
Group 1 (Plan Formation) vs. Group 4 Staff Services	Reliability	33.38 29.88	-.654	.513
	Responsiveness	29.64 22.41	-1.551	.121
	Assurance	33.78 28.66	-.963	.335
	Empathy	33.40 29.81	-.671	.502
Group 2 Implementation vs. Group 3 Resources	Reliability	85.22 73.15	-1.364	.172
	Responsiveness	77.70 59.27	-2.311	.021
	Assurance	86.86 67.53	-2.193	.028
	Empathy	86.12 70.08	-1.816	.069
Group 2 Implementation vs. Group 4 Staff Services	Reliability	70.95 80.34	-.857	.391
	Responsiveness	62.88 59.97	-.303	.762
	Assurance	71.73 74.16	-.223	.824
	Empathy	71.48 76.09	-.422	.673
Group 3 Resources vs. Group 4 Staff Services	Reliability	24.85 31.97	-1.543	.123
	Responsiveness	25.70 30.00	-.932	.351
	Assurance	25.11 31.38	-1.364	.172
	Empathy	25.11 31.38	-1.361	.173

* Significant at p <.0125

Table 16 - Mann-Whitney test statistics for the overall IT department: Organizational departments versus SERVPERF dimensions

The Mann-Whitney U test was conducted to evaluate whether there is a difference between groups of departments exist when scoring the SERVPERF dimensions. The results of the test were that the departments belonging to the group Resources significantly scored less than Plan Formation. Resources is scoring lower on the SERVPERF dimensions compared with every other group, but only the difference between Resources and Plan Formation are significant lower on the Reliability, Responsiveness, Assurance and Empathy dimensions, z = -2.791, p= .05 for Reliability, z = -3.067, P=.002 for Responsiveness, z = -3.236, p <.001 for Assurance, and z = -2.879, p=.004 for Empathy.

Servicedesk

Kruskal-Wallis	Mean Rank	Chi-Square	Sig
Tangibles	94,36 76,91 68,06 83,50	5.300	.151
Reliability	94,55 77,67 61,94 91,04	8.037	.045*
Responsiveness	95,77 79,28 60,50 79,38	8.328	.040*
Assurance	93,96 78,53 63,33 82,88	6.408	.093
Empathy	92,41 78,46 67,09 78,58	4.341	.227
* significant at p <.05			

Table 17 - Kruskal-Wallis test statistics for Servicedesk: Organizational departments versus SERVPERF dimensions

DIV

Kruskal-Wallis	Mean Rank (group 1,2,3,4)	Chi-Square	Sig
Tangibles	26,40 19,72 20,10 20,75	2.214	.529
Reliability	27,90 19,86 19,20 18,63	3.638	.303
Responsiveness	26,40 21,25 18,15 18,75	3.188	.364
Assurance	27,40 21,25 16,40 20,63	4.179	.243
Empathy	28,35	6.995	.072

	20,14 15,00 26,75		
* significant at p <.05			

Table 18 - Kruskal-Wallis test statistics for DIV: Organizational departments versus SERVPERF dimensions

Geo

Kruskal-Wallis	Mean Rank (group 1,2[a])	Chi-Square	Sig
Tangibles	16.55 14.18	.526	.468
Reliability	18.25 13.29	2.236	.135
Responsiveness	15.40 14.79	.035	.852
Assurance	16.05 14.45	.237	.626
Empathy	15.80 14.58	.138	.711
* significant at p <.05 [a] only respondents from Plan Formation and Implementation scored Geo			

Table 19 - Kruskal-Wallis test statistics for Geo: Organizational departments versus SERVPERF dimensions

4.2.5. Amount of Contact versus IT Service Performance

To ensure that people who had limited contact with the IT department because of their function (which is often good), a decision was made to obtain a definitive answer to the question if there was a significant difference in the ratings of employees who often have contact with the IT department versus the employees who almost never had contact with IT department. (Respondents that did not have any contact with the IT department for the last year were excluded from participating). In Table 20 a frequency distribution is presented and in Table 21 the outcomes of the Kruskal-Wallis test statistics are presented. In the frequency distribution three groups are presented. Each group is classified according to the amount of professional IT contact. Professional contact is referred to as having contact with the IT department for the purpose of their function. Frequent contact is contact once every week, regular contact is contact once every month and occasional contact is contact once every six months.

Group	Frequency	Percent
Frequent contact	150	65.8%
Regular contact	45	19.7%
Occasionally contact	33	14.5%
Total	228	100%

Table 20 - Frequency distribution: Contact with IT department

Kruskal-Wallis	Mean Ranks (group 1,2,3)	Chi-Square	Sig
Tangibles	110,85 124,59 117,32	1.630	.443
Reliability	108,76 129,31 120,38	3.684	.159
Responsiveness	92,84 111,44 116,95	6.104	.047*
Assurance	106,70 129,81 129,09	6.223	.045*
Empathy	106,37 129,88 130,48	6.728	.035*
* significant at p <.05			

Table 21 - Kruskal-Wallis test statistics for the overall IT department: Amount of contact versus SERVPERF dimensions

As can be seen in Table 21: Responsiveness (p=.047), Assurance (p=.045) and Empathy (p=.035) are significant, indicating that there is a difference between the three groups and that less contact with the IT department means a better score on Responsiveness, Assurance and Empathy. The Mann-Whitney test outcomes in Table 22 should give an answer on where exactly these differences occur. Unfortunately no significant outcomes can be found (p <.0167). Therefore we can conclude that the amount of contact with the IT department cannot explain differences in the scores.

Contact with IT	SERVPERF dimensions	Mean Ranks	Z	Sig (2-tailed)
Group 1 (Frequent) vs. Group 3 (Occasionally)	Responsiveness	77.03 96.17	-2.018	.044
	Assurance	88.84 106.38	-1.734	.083
	Empathy	88.57 107.58	-1.874	.061
Group 1 (Frequent) vs. Group 2 (Regular)	Responsiveness	81.81 97.88	-1.795	.073
	Assurance	93.36 113.47	-2.110	.035
	Empathy	93.30 113.68	-2.135	.033
Group 2 (Regular) vs. Group 3 (Occasionally)	Responsiveness	33.55 35.78	-.461	.645
	Assurance	39.34 39.71	-.071	.943
	Empathy	39.20 39.91	-.138	.981
* significant at p <.0167[5]				

Table 22 - Mann-Whitney test statistics for the overall IT department: Amount of contact versus SERVPERF dimensions

[5] P <.05/3 =.0167

4.2.6. Satisfaction

In the questionnaire four items where used to measure satisfaction. These items where obtained from similar researches in the Netherlands. The results from a factor analysis (Table 23) show that all the items used to measure satisfaction in the questionnaire can be combined into one variable. Principle components analysis was used, because the primary purpose is to create one variable 'satisfaction'. The initial Eigen values showed that the first factor (I think the quality of the services provided by the IT department of...) explained 77.1% of the variance. The second factor (The quality of the delivered services is…) 8.7% of the variance, the third factor (I think the performance of the unit is..) 8.6% and the forth factor (I think the quality of the services provided by the IT department compared with other supporting units is…) explained 5.4% of the variance. The new constructed variable 'Satisfaction' has a Cronbach-Alpha of .901.

Scale Items	Satisfaction
1. I think the quality of the services provided by the IT department of...	,889
2. The quality of the delivered services is…	,856
3. I think the performance of the unit is…	,904
4. I think the quality of the services provided by the IT department compared with other supporting units is…	,863

Table 23 - Factor loading and communalities based on a Principle Components analysis with varimax rotation for 4 items explaining satisfaction

A normality test (Kolgomorov-Smirnov and Shapiro-Wilk) shows that the data was not normally distributed. Therefore non parametric alternatives like the Kruskal-Wallis test were used (Table 24). In this table, a comparison between customer satisfaction and age, organizational department and the amount of contact was made. No significant outcomes were found, indicating that these variables did not influence the degree of satisfaction of customers.

	Groups	Mean Rank	Chi-Square	Sig
Age	1. Age <40 2. Age = 41 – 50 3. Age > 51	100.47 109.96 123.93	4.971	.083
Department	1. Implementation 2. Planning 3. Resources 4. Staff Services	128.41 109.13 105.62 117.50	8.913	.057
Contact with IT	1. Frequent 2. Regular 3. Occasionally	109.85 118.93 129.61	2.709	.258
* Significant with p <.05				

Table 24 - Kruskal-Wallis test statistics: Satisfaction versus age, department and amount of contact

Correlation analysis

With the aid of a correlation analysis, the correlation between different variables can be examined. This relationship is shown in the form of a 'Pearson's correlation coefficient' (r). The values of this coefficient are ranged between -1 and 1. Values close to zero (0) indicate that there is a weak relationship. If a value is close to -1, there is a strong negative correlation between the two variables. If a value is close to +1, there is a strong positive correlation between two variables. The correlation analysis can be found in Table 25 and Table 26.

Subscale	1.	2.
1. SERVPERF	--	.760*a .664*b .807*c
2. Satisfaction		--

Correlations marked with an asterisk (*) were significant at p <.001 (1-tailed)

A = DIV

B = Geo

C = Servicedesk

Table 25 - Bivariate correlations among Service Performance & Satisfaction

As can be seen from the data in Table 25 the SERVPERF construct is positively correlated with Satisfaction. There was a significant relationship between the service performance construct and the degree of satisfaction for DIV (r=.760), Geo (r=.664), and Servicedesk (r=.807) (all p (one-tailed) <.001).

Subscale	1	2	3	4	5	6
1. Tangibles	--					
2. Reliability	.840*a .675*b .768*c	--				
3. Responsiveness	.767*a .694*b .688*c	.848*a .573*b .868*c	--			
4. Assurance	.729*a .653*b .717*c	.853*a .548*b .866*c	.859*a .643*b .851*c	--		
5. Empathy	.799*a .769*b .709*c	.842*a .616*b .794*c	.853*a .746*b .814*c	.879*a .808*b .828*c	--	
6. Satisfaction	.621*a .472*b .695*c	.708*a .581*b .759*c	.694*a .530*b .754*c	.735*a .568*b .738*c	.759*a .650*b .747*c	--

Correlations marked with an asterisk (*) were significant at p <.001 (1-tailed)

A = DIV

B = Geo

C = Servicedesk

Table 26 - Bivariate correlations among Tangibles, Reliability, Responsiveness, Assurance, Empathy & Satisfaction

The results found in Table 26 indicate that all the SERVPERF dimensions have a significant positive relationship with each other and with the construct Satisfaction. (All p <.001).

4.2.7. Regression analysis

Following the correlation analysis a linear regression analysis was performed with variables that have a significant correlation with the construct satisfaction. The linear regression analysis is used to determine whether and how one dependent variable is predicted by one or more independent variables (predictors). The fraction of the variation that is explained by the explanatory variable (explained variance) is indicated by R^2. The higher the R^2 the stronger the linear relationship between the explanatory variable and the variable to predict which SERVPERF dimension is most important in explaining satisfaction. In this analysis the dimension Tangibles has been left out. This was done because of the non-normality assumption and the low Cronbach's Alpha. The residuals are normally distributed, and no signs of violation of the independent errors are found. By plotting residual data, no signs of heteroscedasticity or a violation of the linearity assumption could be found. There are however, signs of possible multicollinearity.

'Multicollinearity exist when there is a strong correlation between two or more predictors in a regression model. High levels of collinearity increase the probability that a good predictor of the outcome will be found non-significant and rejected from the model (a Type II error)' (Field, 2007, p. 174). A first clue of the existence of multicollinearity is to scan a correlation matrix of all of the predictor variables (the five SERVPERF dimensions) and see if any correlate high (a correlation of above .80 or .90) (Field, 2007). A second diagnostic tool is to scan for variance inflation factors (VIF) in SPSS. The VIF indicates whether a predictor has a strong linear relationship with the other predictor(s). Literature proposes no hard rules about what values of the VIF should be cause for concern. Myers (1990) proposes that if the largest VIF is not greater than 10, there is no reason for concern. Bowerman & O'Connell (2000) propose that when the average VIF is substantially greater than 1 the regression maybe biased. Menard (2001) proposes that a tolerance below .1, indicates serious problems, a tolerance below .2, indicates a potential problem.

According to Myers (1990) the VIF data as can be seen in Table 27, Table 28 and Table 29 shows no reason for concern. According to Bowerman & O'Connell (2000) all regression data show signs of bias if the average VIF's are all substantially greater than 1 (Servicedesk = 4.938, DIV = 5.16, Geo = 2.855). According to Menard (2001) all VIF's ranged between 5.000 (1/ 5.000 = 0.2) and 10.000 1/ 10.00 = 0.1) are a potential problem, lower than 0.1 indicates a serious problem. For Geo we can conclude that all tolerance statistics are well above 0.2; therefore, it is safe to assume that there is no collinearity within that data. For Servicedesk and DIV however, some predictors score below 0.2. For Servicedesk Reliability (0.188), Responsiveness (0.192) and Assurance (0.176). For DIV, Reliability (0.17) and Assurance (0.16). According to the above described, no unilateral conclusion could be drawn.

Table 27 - Regression results of Reliability, Responsiveness, Assurance and Empathy on Satisfaction (ServiceDesk)

Dependent variable	Satisfaction B (Servicedesk)	SEB	β
		R^2 .656	
Constant	2.669		
		F: 72,333 P<.001	VIF
Reliability	.183		5.312
Responsiveness	.124		5.212
Assurance	.135		5.690
Empathy	.187		3.538

Table 28 - Regression results of Reliability, Responsiveness, Assurance and Empathy on Satisfaction (DIV)

Dependent variable	Satisfaction (DIV)		
		R^2 .587	
Constant	3.126		
		F: 12,691 p<.001	VIF
Reliability	.191		5.877
Responsiveness	-.007		3.791
Assurance	.182		6.239
Empathy	.191		4.742

Table 29 - Regression results of Reliability, Responsiveness, Assurance and Empathy on Satisfaction (Geo)

Dependent variable	Satisfaction (GEO)		
		R^2 .588	
Constant	3.229		
		F: 8.555 p<.001	VIF
Reliability	.184		3.074
Responsiveness	.038		3.161
Assurance	-.024		2.437
Empathy	.356		2.748

Although literature could not draw a unilateral answer, the combination of the correlation diagram, where all the service performance dimensions where significantly correlated which each other and the theory of SERVQUAL and SERVPERF, where normally the dimensions are taken as a whole instead of loose dimensions, indicating that they are interrelated with each other, indicate there is a serious potential of multicollinearity. Therefore the researcher choose to use the SERVPERF as a whole. Table 27, 28 and 29 are not used for further research. In Table 30 the results of the linear regression model are presented. For each of the sub-units a model was mode that could predict customer satisfaction by the scores of the SERVPERF construct. For the Servicedesk 66.9% of the satisfaction could be predicted by the SERVPERF construct, for DIV this was 62.7% and for Geo 52.7% could be predicted.

Model	Satisfaction B	SEB	β
(Servicedesk)			
Constant	2.354**	.290	
Service Performance	.669**	.038	.817
(Geo)			
Constant	2.637*	.895	
Service Performance	.627**	.121	.706
(DIV)			
Constant	3.388**	.563	
Service Performance	.527**	.077	.736

Servicedesk (R^2 =.668) Geo (R^2 =.498) DIV (R^2 =.542)

** Significant at p <.001

* Significant at p <.05

Table 30 - Regression statistics of service performance versus Satisfaction

4.2.8. Summary

Does the factor age have a significant difference in satisfaction ratings?
The overall IT department did have significant outcomes between the group younger than 40 and the group older than 51 (Table 9). However, because the sub-units DIV and Geo did not have significant results, an assumption can be made that the overall IT department results are probably explained by the results of the Servicedesk. When comparing the middle aged employees (group 2), ranging from the age of 41 till 50, no significant outcomes were found when comparing this group to other groups. The reason why older employees are more satisfied with IT is not known. The performance teams, IT management and the researcher assume that elder employees have less demands from the IT department than younger employees. This is because older employees are not always aware of current IT features that can enhance their productivity and there often just glad that the IT systems work. The younger generation of employees however, do have more demands, they are aware of the features and see the IT department as a barrier that limits them in doing their work.

Are there departments within Rijn & IJssel that have significant differences in scoring the IT department?
Concluding from the data found in Table 16. The differences between divisions 'Plan Formation' and 'Resources' are significant. The average scores of the group 'resources' is compared with the other groups always lower, but only significant compared with Plan Formation. No reasons could be found why this group is scoring lower. The performance teams will use this data so they can plan the first following interview sessions with these departments.

Does the amount of professional contact with the IT department effects the scores on service performance and satisfaction?
Although the Kruskal-Wallis was significant, indicating that there is a difference between the amount of contact that internal customers have with the IT department and the SERVPERF scores (Table 21), Mann-Whitney tests that compared the between group results indicated that these differences were not significant (Table 22). Therefore we can conclude that the amount of contact internal customers have with the IT department does not result in different scoring behavior of these specific customers.

Which SERVPERF dimensions explain the majority of IT satisfaction among the internal customers?
Unfortunately no regression model could be developed that could explain which individual SERVPERF dimensions (Tangibles, Reliability, Responsiveness, Assurance and Empathy) could explain customer satisfaction the most, due to the high inter-correlations between these SERVPERF dimensions. There were too much indicators that there was a potential risk that the multicollinearity assumption would be violated. However, taking SERVPERF as a total variable for explaining customer satisfaction gave interesting results: Satisfaction about the Servicedesk could be explained for 66.8% by the SERVPERF construct, satisfaction about Geo for 49.8% and satisfaction DIV for 54.2%.

4.3. Developed KPIs

	Counts
Improvement points interview sessions DIV	12
Improvement points interview sessions Geo	10
Improvement points interview sessions Servicedesk	12
KPIs DIV	4
KPIs Geo	3
KPIs Servicedesk	2

Table 31 - Overview of improvements & developed KPIs

In Table 31 a list is presented of the improvements of the three sub-units as discussed in chapter 4.1. For each category these improvements were listed, the performance teams tried to develop measurable KPIs. A basic overview can be found in Table 32. The KPIs have a more in-depth description in *Appendix I – Performance indicators DIV*, *Appendix J – Performance indicators Geo* and *Appendix K – Performance indicators Servicedesk*.

Unit	Performance category	Improvements	KPI
All	Customer Satisfaction	Measurement of customer satisfaction through a questionnaire.	Average scores on the SERVPERF dimensions and Satisfaction.
DIV	Findability & Reliability	Ensure the reliability of the archives (Corsa) and improve the findability of files and documents. Random metadata checks to improve findability of dossiers and files Improve the consistency of the registration process.	Submitted dossiers in relation to the total loaned files over a period of 6 weeks. Depending on the size of the batch, 80% of the processed scan batches must be correct Max error rate of 15% at the end of 2013
Geo	Training	Measure the knowledge level of users so training programs are more targeted on the users.	On a trail bases an analog list will be used to register the types of questions that Geo receives from users
	Communication	Improve the communication to users. Reducing uncertainty about each other roles within the organization.	Average scores on questionnaire items about expectations of users.
Servicedesk	Customer Satisfaction	Monitor customer satisfaction	After each resolved report by the Servicedesk, the customer is asked to evaluate their experiences in two short questions.

Table 32 - Developed KPIs IT department

Based on the established KPIs, employees of the IT department gather performance information of their department so it can be analyzed and interpreted during team meetings. The KPIs have become an integral part of the team discussions. The newly developed set of KPIs is mainly focused on quality. For example, for each of the three sub-units, customer satisfaction and service performance is measured and scored on an annual basis by using the questionnaire. A critical comment for the

qualitative KPIs is the frequency of measurement. For this reason the researcher, in consultation with the performance teams, has added more quantitative KPIs to the set that could be measured more often. KPIs of a quantitative nature are defined, for example: the monitoring of customer satisfaction of each customer report handled by the Servicedesk. Another example is: ensuring the reliability of the archives by random audit-checks (Table 32). These KPIs can be measured more frequent and can therefore be used more often in team meetings. For the largest sub-unit Servicedesk however, a technical foundation has to be made to make this possible.

5. Conclusions

In the previous chapters the theory, methods and results were described. In this chapter conclusions are drawn based on the central research question. In chapter 5.2 the discussion and recommendations for future search are addressed. In chapter 5.3 limitations of this research are listed and the reflection with the participants of the performance teams is described.

By a mixed method approach the researcher and the performance teams investigated how well the IT department performed according to their internal customers. The first step was to investigate possible problem areas through interview sessions followed by a questionnaire. The interview data was the primary source for the reviews of the internal customers on how the three sub-units of the IT department scored service performance. The questionnaire was used as input for the development of the KPIs focused on the customer satisfaction (by using average scores). Finally a correlation and a regression analysis has been conducted to discover how much the SERVPERF construct could explain customer satisfaction.

The central question of this thesis was:
How could one develop and organize a sustainable performance measurement system for an IT department of a Water Authority that can 1. give insight into their direct contribution to the primary process and 2. continuously improve their service performance?

Develop a sustainable PMS that give insights into their direct contribution to the primary process
In order to develop a PMS that gives insights into the IT department direct contributions to the primary process the researcher used the SERVPERF construct to measure the service performance and customer satisfaction. In this context the SERVPERF construct could predict the customer satisfaction by up to 65% indicating that this construct is indeed useful in this context. In addition, by using performance teams that consisted out of participants with different disciplines, there was a sound basis for the development of reliable KPIs. These participants, in collaboration with the researcher, have developed interview questions based on the SERVPERF items, were present during all the interviews themselves and analyzed the outcomes as a team. The questionnaire that had run parallel to the action research created a broad organizational picture about how the organization of Rijn & IJssel is experiencing the service performance of the IT department.

Continuously improve the service performance.
By involving the Policy Advisor with skills in developing KPIs, that will take over the role as chairman at the end of this project right from the start, the researcher managed to secure the continuity in the development process. This Policy Advisor experienced the entire development process and can therefore ensure the development process easier. In addition, employee roles about the responsibility for the measurement of KPIs are specified in the PMS documents. The chairman will make sure the employees abide these rules. Moreover, the measured performances are used for discussions during team meetings. Last but not least, the IT management provides time and space to the performance teams to carry out their tasks.

Now that the continuity is secured and a solid basis for reliable KPIs had been developed, the IT department is now ready to annually repeat the process and continuously improve their service performance.

5.1. Discussion and Recommendations for future research

Recent studies show how an enabling PMS is successfully developed in several organizations. This resulted in a participative approach for the development and implementation of an enabling performance measurement system (Evers et al., 2009; Gravesteijn et al., 2011; Groen et al., 2012; Wouters & Wilderom, 2008). In this research, steps for the development of an enabling PMS as described in recent work were applied to the IT department of a governmental organization.

This research proposes a methodology for research that studies theoretical concepts by testing them in real-life problem situations. Drawing on the research methodologies of Action Research (AR) and the theory of enabling performance measurement systems, the research described an approach that should fit the IT department of a water authority best. During Action Research many, even unintended things can change, even the situation itself can change independently of the research effort (Rosmulder, 2011). External validity or generalization by AR is therefor still far removed if one compares it with other research methods. Practical results obtained through interviews and the questionnaire however, are better suitable for generalization (McGrath, 1982). 'Still there are several routes to improve generalizability and validity of action research efforts. First is repetition of Action Research cycles. Doing more projects may lead to observing similar phenomena, which strengthens the results found' (Rosmulder, 2011, p. 65).

In this thesis Action Research and Quantitative Research are combined. By following the characteristics of the learning organization (Garvin et al., 2008), the researcher managed to setup a supportive learning environment by arranging regular PMS meetings, initiate interview sessions with key customers, provide materials for the development of reliable KPIs and was responsible for redesigning the service performance questionnaire. However, not all the characteristics were used during this study. The focus was mainly on the development of reliable KPIs and providing the tools for the independent development and maintenance of performance indicators.

Characteristic 1: Setup transcending performance teams.
By setting up three sub-unit performance teams for the development of KPIs the knowledge of these teams was optimally used by the researcher. This knowledge was useful during the interviews with the internal customers. In-depth discussions could be held to clarify the exact problems the internal customer were struggling with. The Policy Advisor, with the experience in developing KPIs and with a lot of know-how of developments in the organization was useful for the team. She was often present during discussions with the researcher and IT management and was able to place results of interviews in context because of her broad experience. Sometimes the problems seemed bigger than they actually were.

Characteristic 2: The use of conceptual artefacts
The interview reports where discussed in each performance group. This led to a problem-solution document for each of the performance teams. This document was set up as a list where each problem was assigned to an overall category (see chapter 4.1). These documents were the main sources for the development of the KPIs.

Characteristic 3: Keep professional knowledge up-to-date by collective team learning processes
By involving the Policy Advisor from the first moment the project started, she was able to experience the total AR cycle. While for the researcher this project is coming to an end, as a chairman of the performance teams, the Policy Advisor can now continue this AR cycle on her own. This is useful for the independent development of KPIs in the future.

Characteristic 4: The periodic gathering of information of the delivered performance.
In this project the performance teams of the IT department focused on customer satisfaction. To measure customer satisfaction we measured the service performance based on the SERVPERF construct by Cronin & Taylor (1994) of the IT department during a questionnaire. The use of the SERVPERF construct is a good start for explaining the customer satisfaction that in this project varied between 49.8% and 66.8% (See chapter 4.2.7). To even improve these ratings more sub-unit customized questionnaire items should be added. For example, questions about classifications found during the analysis of the interviews such as, findability or collaboration.

In an updated questionnaire these issues need to be addressed. The choice to focus on customer satisfaction was a real challenge. It led to a series of qualitative KPIs which can only be measured once a year. This could be an issue for the enabling process because theory prescribes that the measurement should be done periodic in order to learn.

Characteristic 5: Schedule time for reflection & team trust
The IT management has given the researcher full freedom to plan the performance groups for meetings. However, some participants seemed to have their priorities elsewhere. Therefore, the researcher was challenged in planning meetings regular. With these lessons learnt, he certainly would preschedule the project and divide tasks on forehand and plan all the meeting in for example, one or two months' time. The researcher observed however, that the participants of the performance teams did become more active after analyzing the interviews and even more after analyzing the questionnaire. It seemed that the participants saw that, by the confirmatory results of the interviews and the questionnaire, this project was serious and measurable. It provided more support among the participants involved.

The other characteristics are mainly focused on ensuring that learning occurs from the performance system by: optimizing team trust, dealing with conflicts constructively and leadership that reinforces learning. Keep professional knowledge and skills of team members up-to-date by collective learning processes. As a researcher, I am curious about the results of measuring the IT department level of professionalism and measuring transformational leadership. These results can be used to answer the question on how proactive the IT department is in developing and measuring KPIs.

5.2. Limitations and Reflection

The findings of this action research should be considered in light of its limitations. The researcher faced several challenges that to some extend limit the findings.

Questionnaire

For all the questionnaire items a 10-point Likert scale was used. Cronin & Taylor (1994), advise to maintain a 7-point Likert scale. During the analysis of the questionnaire the researcher had some difficulties with normalization of the data. It seemed that the data was skewed to the right, indicating that nearly none of the respondents gave a score lower than a 5, which should be the average mean of a 10-point scale. This might indicate that all the respondents where very positive about the IT department. It could however, also indicate that the respondents saw the 10-point Likert scale as a grade and saw a 5 or less as an insufficient mark. My advice would be to change the 10-point scale to a 7-point scale. According to the work of Dawes (2012), changing the scale format will not destroy the comparability of historical data.

I would also recommend to use a 'not applicable' or 'no opinion' button in the questionnaire. The underlying idea in the current questionnaire setting was that respondents would think through their opinions more, when an item was obligatory. During and after the questionnaire period there were some comments and complaints from respondents about how to answer the items. Some even said they therefore have clicked a random number. The researcher also experienced some doubtful responses on the questionnaire. There were cases that respondents had an average SERVPERF score of 10 or 1, indicating that they scored a 10 or 1 for all the items in the questionnaire. Since these respondents were a threat to the validity a lot of effort was put into tracking the origin of these responses. A solution to this way of scoring could be to set out negatively worded statements. This could help to control for respondents that are not willing to participate. However, according to Fick & Ritchie (1991), mean scores for dimensions worded negatively were lower for every service segment than the mean for positively worded dimensions. The disadvantages of negatively worded statements do not outweigh the advantages. In short, the researcher recommends to change the 10-point Likert scale to a 7-point scale and give respondents the opportunity to answer with 'not applicable' or 'no opinion'.

The translation of the SERVPERF items from English into Dutch contained errors in a similar research that was the basis of this questionnaire. Unfortunately the researcher was not able to change these irregularities in time. The translation from the original tangibles item 'well dressed and neat appearing personnel' into 'the personnel is in their appearance not sloppy or old fashioned' understandably gave a lot of complaints in the entire organization. This even led to a lower response overall. I used previous research as a guide while in fact, the translated items of the SERVPERF construct were not applied correctly. For this project the translation errors are resolved, next years questionnaire does have a better translation of the SERVPERF items.

As stated in chapter 3.4.2 some SERVPERF items were deleted beforehand. For the sub-units Servicedesk, Geo and DIV the following items were deleted. 2. Visually appealing physical facilities (Tangibles) 4. Visually appealing materials associated with the service (Tangibles) 18. Giving you individualized attention (Empathy) 19. Having convenient operating hours (Empathy) In addition one

extra item was deleted for Geo, 11. Giving you prompt service (Responsiveness). By the deletion of certain SERVPERF items the reliability of the total dependent variable became questionable. However, used in a regression model the researcher was still able to significantly explain customer satisfaction. For future research I would recommend to use the deleted items as well and analyze if there is an improvement in explaining customer satisfaction even more.

KPI development process

This research was conducted within a limited time span in a single organization. Although some of the developed performances measures are already implemented, it was not possible due this limited time span, to implement all of the developed performance measures for the IT department. The PMS implementation is at least as, if not even more, important than the development phase. The implementation phase will be an important contribution for the successful development of an enabling PMS. This research was conducted within a single organizational. A limitation that has consequences for the generalizability to other organizational settings. However, the used concepts and theories have been used successfully in similar research conducted in public organizations.

5.3. Reflection KPI development process

By the end of my research I decided to ask the direct participants of the performance teams what they thought of the PMS development process. Four performance team participants, one from DIV, two from Geo and one from the Servicedesk team evaluated this PMS development phase. Each of the four members were positive about the developed KPIs. DIV was looking forward to get started with the KPIs. When the researcher asked if the members thought the developed KPIs would be trustworthy now that they participated in this project themselves, the researcher received a confirmatory answer. All participants felt that the newly developed KPIs are going to be used more than the developed set of KPIs originated from 2010.

The Servicedesk had some doubts about the KPIs, since it was not always clear which sub-unit was measured since the sub-unit Servicedesk consists of multiple sub-units. The so-called 'third-line' of the Servicedesk actually consists of members of the sub-unit System Administration. 80% of the issues is handled by the first and second line, when they cannot solve the issues employees of System Administration are addressed in order to solve it. However, the sub-unit of System Administrators are now included in the measurement, because there was no distinction between the Servicedesk and the System Administrators in this case. According to the Policy Advisor, IT management and the researcher however, a distinction should not be made. Because through the eyes of the customers, it does not matter which sub-units are involved in solving customer issues. 'The customer only sees one Servicedesk'. The participants of Geo were satisfied with the results. I quote: 'Especially since we were present at the interviews ourselves and the bottlenecks were again confirmed by the questionnaires, I believe we have established a sound basis for the development of KPIs.'

On the question on how the participants of the performance teams thought how the KPIs should be maintained when the researcher would not be present, there were some more mixed answers. The participants of DIV are convinced that it would be maintained well in their case. DIV assigned a quality manager who is responsible for maintaining the KPI and reporting the results to IT management. For

team Geo the challenge is in registering the incoming reports of clients. This has to be done manually and requires discipline to actually keep this up.

For the Servicedesk there are also several challenges. To process the feedback provided by the customers, a link should be made between the 'Service Manager' (A system where all the reports are digitally managed and linked to employees of the unit ICT to solve) and the questionnaire tool (where customers can evaluate the obtained experience with the Servicedesk in two short questions). This link should be created in order to see which (according to the customer) reports are handled well and which are not. As stated by a performance participant: 'The Service Manager has the ability to send information to an external application. The challenge is however, letting the receiving application (the questionnaire tool) automatically read the data send out by the Service Manager. At this moment it is not possible, SharePoint can be used as a questionnaire tool, but I do not know if we have the knowledge ourselves to create this link between the two systems, it might be possible that we should outsource this project to an external time. This costs a serious amount of time and money, which should be made available by the IT manager.'

As an action researcher I am curious if the chosen method for the development of an enabling PMS continues to be used. IT management and especially the Policy Advisor should keep this on the agenda during IT team discussions. From this project, the client and the participants can conclude that Action Research was a good approach. The research and participation simultaneously has ensured that reliable performance indicators are developed. However, the future will tell whether one actually learned from the developed PMS. The performance indicators can only be measured once a year and more frequently measureable KPIs are technically not achievable yet. It is important that IT management keeps this project high on the agenda so it will not be sidetracked and be slowly forgotten.

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Appendices

Considering the fact that (potentially) sensitive issues have been discussed during the interviews, the interviews transcripts will only be publically shared with external readers upon special request. By doing so, the researcher respects the privacy concerns of the interviewees. For more information or insight into the transcripts the researcher can be contacted via: mail@nickrondeel.nl

Appendix A – Structural interview questions

Interview vragen DIV

- Wat vindt jullie unit van de algehele uitstraling van de DIV? (medewerkers, bereikbaarheid telefoon/email/mondeling/ de communicatie/ aanmaken van meldingen/ klantvriendelijkheid/ het op de hoogte houden van/ etc.)
- Wat vindt jullie unit van de ondersteuning van DIV bij jullie dagelijkse werkzaamheden?
- Houden de medewerkers van de DIV je goed op de hoogte wanneer zij diensten voor je uitvoeren?
- Is DIV op de hoogte van de behoeften van jullie, als klant?
- Wat vindt jullie unit van de huidige manier waarop DIV werkt?
- Wat zou volgens jullie met betrekking tot deze werkwijze, de meest ideale situatie zijn voor jullie unit?

Vragen Servicedesk / afhandeling van meldingen

- Wat vindt jullie unit van de algehele uitstraling van de Servicedesk? (medewerkers, bereikbaarheid telefoon/email/mondeling/ de communicatie/ aanmaken van meldingen/ klantvriendelijkheid/ het op de hoogte houden van/ etc.)
- Wat vindt jullie unit van de ondersteuning van de ICT op jullie dagelijkse werkzaamheden?
- Houden de medewerkers van de Servicedesk je goed op de hoogte wanneer zij diensten voor je uitvoeren?
- Is de Servicedesk op de hoogte van de behoeften van jullie, als klant? Waarom?
- Wat vindt jullie unit van de huidige manier waarop Servicedesk werkt? (afhandeling van meldingen)
- Wat zou volgens jullie met betrekking tot deze werkwijze, de meest ideale situatie zijn voor jullie unit?

Vragen Geo-informatiebeheer.

- Wat vindt jullie unit van Geo-informatiebeheer? (betrouwbaarheid/ medewerkers, bereikbaarheid/ de communicatie telefoon/email/mondeling/ klantvriendelijkheid/ het op de hoogte houden van/ etc.)
- Wat vindt jullie unit van de ondersteuning van Geo-informatiebeheer bij jullie dagelijkse werkzaamheden?
- Houden de medewerkers van de Geo-informatiebeheer je goed op de hoogte wanneer zij diensten voor je uitvoeren of problemen voor je oplossen?
- Is Geo-informatiebeheer op de hoogte van de behoeften van jullie, als klant? Waarom?
- Wat vindt jullie unit van de huidige manier waarop Geo-informatiebeheer werkt? (huidige situatie)
- Wat zou volgens jullie met betrekking tot deze werkwijze, de meest ideale situatie zijn voor jullie unit? (Geo-info in het veld/Gewenste situatie)?

Appendix B – Interviews Servicedesk

Appendix C – Interviews Geo

Appendix D – Interviews DIV

Appendix E – Results Servicedesk interviews

Categorie	Probleem/ vraagstuk	Oplossing/ aandachtsveld
Communicatie	Telefoonnummer Servicedesk (378) niet helder.	Overzicht met telefoonnummer, + beschrijving hoe Servicedesk meldingen afhandelt plaatsen op de meldingen pagina?
	Soms telefonisch niet bereikbaar.	Mogelijk een telefonisch bandje waarbij mocht het nodig zijn een bericht ingesproken kan worden?
	Soms probleem al bekent bij ICT, maar geen communicatie.	Gebruikersgroepen definiëren? Software wordt uitgerold op basis van computers. Niet op personen. Dit moet handmatig bijgehouden worden. Gaat dus niet lukken. Dit wordt in de toekomst opgepakt.
	SharePoint niet toereikend genoeg voor communicatie naar buiten. Voor de buitendienst is SharePoint te traag en dit zorgt voor minder draagvlak.	SharePoint wordt op dit moment te weinig gelezen in de organisatie. Pushberichten? WRIJ app. (buitendienst). Notificaties van actuele storingen voordat je een melding kunt maken.
	Meldingen systeem, is onduidelijk. Kan duidelijker	Migratie naar nieuwe versie is er niet beter op geworden. Nieuwe versie werkt op webparts. De vorige was beter.
	Bij de introductie van nieuwe systemen of software wordt er onvoldoende gecommuniceerd. Hierdoor krijgen gebruikers plotseling iets nieuws voorgeschoteld en weten ze niet hoe het werkt.	In het geval van de update van het meldingensysteem is het inderdaad fout gegaan. Volgende keer beter.
	Meldingen uit het meldingen systeem worden zonder oplossing ‘opgelost’	Dit betreft een éénmalige communicatie probleem tussen X en Y.
	Bestaande zaken lopen goed. Nieuwe zaken die niet via de Servicedesk gaan lopen stroef	Geen changemanager aangesteld binnen het ITIL proces. Geen vastgestelde procedure hiervoor. Wijzigingsbeheer proces moet hiervoor serieuzer worden opgepakt.
	ICT leidende rol terwijl dit meer met de klant moet kunnen.	Het is logisch. De apparatuur moet worden geïntegreerd in ons netwerk.

Servicedesk	Duurt te lang voordat de melding wordt opgepakt. Aanschaf apparatuur wordt de ene keer via mail, andere keer via interne factuur afgehandeld. Dit zorgt voor onduidelijkheid.	Het is lastig om dit op te lossen. Servicedesk werkt op basis van prioriteiten. Mensen willen graag snel geholpen worden en zien hun probleem als prioriteit 1. Voor de Servicedesk is dit simpelweg niet altijd mogelijk. Wanneer er iets besteld moet worden dan gaat het via mail. Wanneer er een interne factuur komt dan is het op voorraad bij de ICT.
Servicedesk (bezetting)	Klant voelt zich niet altijd geholpen	Door onderbezetting op de Servicedesk kan het voorkomen dat er geen tijd is. Hierdoor kun je soms wel direct geholpen worden en moet je een andere keer een melding maken. Dit kan het gevoel veroorzaken. Wellicht verwachten mensen teveel? Verwachtingsmanagement.
Servicedesk (meldingen)	Terugkerende probleem wordt niet gezien bij Servicedesk. Voor buitenlocaties is het digitaal aanmaken van meldingen lastig, daarom zouden ze het via telefoon mogen doen. Buitendienst een andere prioriteit geven zodat ze voorrang krijgen.	Dit moet opgepakt kunnen worden. Is dit technisch haalbaar? Vaak neemt de Servicedesk telefonisch meldingen in behandeling. Het probleem is dat dit dan weer niet geregistreerd wordt in het systeem. Gaan we niet doen. Iedereen vindt zijn melding prioriteit 1.
Servicedesk (vriendelijkheid)	Klant voelt zich niet altijd geholpen.	Dit kan liggen aan de medewerkers, volgens de procedures dient elke melding eerst digitaal aangemaakt te worden. Echter, wanneer het wat minder druk is kan er vaak bij binnenkomst direct geholpen worden. Deze regels wordt niet door elke medewerker even strikt gehanteerd. Hierdoor kunnen klanten verschil in vriendelijkheid ervaren.

Appendix F – Results Geo interviews

Categorie	Probleem/ vraagstuk	Oplossing/ aandachtsveld
Vindbaarheid	Het is niet altijd duidelijk welke informatie aanwezig is. Voor nieuwkomers is informatie moeilijk te vinden.	Nieuwe omgeving binnen SharePoint. Nieuwe structuren en makkelijkere zoeken moet dit verhelpen.
	Metadata niet volledig, *Google zoekmachine manier van zoeken gewenst*. Er is niet bekent welke kaarten er beschikbaar zijn binnen WRIJ	Wordt aan gewerkt door middel van SharePoint. Bronhouder verantwoordelijk Trefwoorden voor je databestand is heel moeilijk.
	Welke kaarten hebben we in het systeem? Over welke informatie hebben we nou als organisatie?	Hoe worden zoektermen gedefinieerd? Je hebt meta info nodig om te zoeken.
Communicatie	Door informeel contact met Geo (X/ Y) ben je veel beter op de hoogte.	Binnen de SharePoint omgeving kun je je abonneren op interesses. Hier krijg een update van wanneer er nieuws is.
	Slecht op de hoogte wat er speelt bij Geo.	Binnen de SharePoint omgeving kun je je abonneren op interesses. Hier krijg een update van wanneer er nieuws is.
	Slecht op de hoogte wat er speelt bij Geo.	Een soort van Geo-spreekuur?
	Als er problemen zijn met Geo missen wij soms deadlines, zijn wij op de hoogte?	Servicedesk, urgentie bespreken.
	Je krijgt veel informatie via e-mail. Via DIV wordt bijna niet meer ingeboekt. *Geo of DIV probleem?*	Dat je veel informatie via mail krijgt. Betekent niet dat je dan niet meer hoeft in te boeken. Het is misschien slecht bekent dat mensen bijvoorbeeld na afronding van project bij het opschonen van de G-schijf de boel kunnen sturen naar Corsa. *Cultuur verandering*. Mensen zijn zelf verantwoordelijk dat gegevens op de juiste plek komen. Terug naar de bronhouder.
	Medewerker van de tekenkamer beschrijft precies de procedure van het geometrisch basisbestand. In het kader van het kennisplein moet dit proces juist gecommuniceerd worden.	Blijkbaar zijn medewerkers er niet van op de hoogte dat (in het voorbeeld van tekenkamer) de ideale procedure al daadwerkelijk de juiste procedure zoals beschreven in KAM.

Organisatorisch	Geo moet een regierol zijn tussen verschillende units. *(welk proces dan?)* Managers hebben een onduidelijk beeld van taken Geo en taken betreffende unit. Grijs vlak tussen verantwoordlijkheden van de verschillende units. De units mogen geen technische handelingen uitvoeren (eigen applicaties maken). Waar ligt de scheidingslijn? Geo zou procesbegeleider moeten zijn. Maken en beheren van gegevens. Puinhoop Kwaliteitsprocedure. Werk ik wel met de recente kaarten?	(MIO, tekeningenbeheer... welk proces dan?) Kunnen we zelf niet oplossen… Dit is een bewuste keuze. Zijn wij het hier mee eens? Discussiepunt Ons probleem? Een standaard metadata formulier De unit is zelf verantwoordelijk voor de kaarten.
Samenwerking	Aan het begin van project. Hoe kan Geo helpen bij projecten tekenkamer. Hoe maakt tekenkamer gebruik van expertise.	Paragraaf in het plan van aanpak. Welke data heb ik nodig? Onderdeel van checklist voorafgaand aan het project.
Training	Training voor meer Expertise? Punt van aandacht.	Meer sturen op voldoende kennis in de organisatie. Cultuuromslag?

Appendix G – Results DIV interviews

Categorie	Probleem/vraagstuk	Oplossing/ aandachtsveld.
Communicatie	DIV Meldingensysteem (Servicedesk)	De servicedesk van DIV wordt niet gewaardeerd. Er zijn veel klachten over.
	DIV Meldingensysteem is onbekend binnen de organisatie	De wijze waarop gecommuniceerd wordt om de organisatie erop te wijzen dat er aanvragen via dit meldingensysteem gedaan moeten worden is ontoereikend. Daarnaast is er binnen DIV ook onvrede over het systeem en daarom niet snel geneigd dit te promoten.
	Organisatie stelt de korte lijn op prijs.	Integratie van Servicedesk DIV en ICT? Lost de korte lijntjes niet op. Maar wel betere afhandeling.
	Organisatie is niet bewust van belang waarom documenten vastgelegd dienen te worden.	SharePoint benadert de wijze waarop post afgehandeld wordt compleet anders. Hierdoor worden veel problemen getackeld. Mensen moeten bewust worden gemaakt van hun verantwoordelijkheid voor het volledig hebben van een dossier. Dat is een cultuuromslag.
	Post komt op de verkeerde plek terecht.	Op het moment dat post niet goed is gerouteerd wordt binnen Corsa dan moet dit door de taakverdelers aangegeven worden zodat DIV dit alsnog naar de juiste unit kan sturen (routering)
Organisatorisch	Er wordt veel dubbel werk gedaan. Zie het voorbeeld EMIS Plaza.	P&O beheert hun documenten in een andere applicatie dan het DMS. Als DIV daar niet van op de hoogte is doe je dubbel werk. De discussie zou moeten gaan over waar de documenten opgeslagen dienen te worden. Alleen Emis-plaza of ook in het DMS/RMA (pd's)
	Documenten krijgen het verkeerde onderwerp en documenten komen niet op de juiste plek terecht. Routering soms verkeerd.	DIV is niet altijd op de hoogte van organisatie wijzigingen of wijzigingen van taken. Hierdoor kan het zijn dat er stukken verkeerd gerouteerd worden. Active terugkoppeling van de organisatie is nodig om het werk van DIV te verbeteren.
	Bestuursstukken zijn niet te vinden. Worden niet gedigitaliseerd.	Beleid moet worden aangepast.

Vindbaarheid	Documenten komen niet op de juiste plek terecht. Routering soms verkeerd.	DIV is niet altijd op de hoogte van organisatie wijzigingen of wijzigingen van taken. Hierdoor kan het zijn dat er stukken verkeerd gerouteerd worden. Active terugkoppeling van de organisatie is nodig om het werk van DIV te verbeteren.
	Vindbaarheid dossiers. DIV is niet altijd op de hoogte waar dossiers gebleven zijn.	Uitleenkaarten worden niet altijd ingevuld door P&O waardoor DIV niet weet welke dossiers er uitgeleend zijn of niet en aan wie. Vanuit het oogpunt van DIV zouden er geen dossiers mogen worden uitgeleend worden zonder tussenkomst van DIV.
	Openstaande stukken. Soms staan er in Corsa documenten en dossiers met de status uitgeleend terwijl ze al terug zijn gestuurd. Daardoor vaak onbekend waar ze zijn.	Overzicht waarin alle uitgeleende stukken weergegeven worden. Deze handmatig nakijken.
	Uniformiteit van registratie.	Gezamenlijk registratiecriteria bepalen. Samenwerking bevorderen.
	Processen V&H aan elkaar koppelen.	Wordt nog niet gedaan.
	Stukken worden te snel vernietigd.	Staat in de wet. Waarom zijn de termijnen gekozen waardoor ze gekozen zijn? Waarom moeten dossiers 5 jaar gekozen worden en niet 10?
	Metadata. Mensen weten niet hoe ze MyCorsa moeten gebruiken.	Bij nieuwe registraties wordt sinds anderhalf jaar steeds uniformer geregistreerd. Brieven zijn niet altijd hetzelfde. Biedt ruimte voor interpretatie.
Training	Taakverdelers verzuimen hun taak soms. Soms wordt post klakkeloos doorgezet.	Jaarlijks trainen van taakverdelers. Meer hameren op het feit dat er feedback moet komen. Actief monitoren op de kwaliteit van de postverdeling.
	Medewerkers hebben veel moeite om de juiste documenten te vinden binnen de Corsa omgeving. Zoeken moet getraind worden.	Extra cursussen en trainingen geven om meer ervaring te krijgen met de Corsa omgeving.

Appendix H – Questionnaire

Dit onderzoek richt zich op de kwaliteit van de service en dienstverlening van de unit ICT.
Het invullen van de vragenlijst zal ongeveer 5 a 10 minuten duren.
De resultaten van dit onderzoek zullen worden gebruikt om actie en verbeterpunten te realiseren.

Met alle gegeven antwoorden in dit onderzoek zal uiterst zorgvuldig worden omgegaan.
De gegeven antwoorden zijn niet tot personen te herleiden en zijn alleen inzichtelijk voor Nick Rondeel, onderzoeker aan de Universiteit Twente en ICT medewerker Rob Dikkers.

Aan het eind van dit onderzoek kun je bij het invullen van jouw e-mailadres kans maken op 1 van de 10 **Office 2013** thuislicenties. Deze thuislicenties zullen wij onder de inzenders verloten.

Succes met het invullen!

Op deze pagina worden een aantal algemene vragen gesteld over de leeftijd, afdeling en locatie. Deze vragen zijn specifiek bedoeld om te herleiden of er (extra) aandacht zou moeten worden besteed aan bepaalde leeftijdsgroepen of organisatieonderdelen.

Binnen welke categorie valt uw leeftijd?

- o <31 jaar
- o 31 - 40 jaar
- o 41 - 50 jaar
- o 51 - 60 jaar
- o > 60 jaar

Binnen welke dienst/afdeling ben je werkzaam?

- o Bestuur
- o Bestuurlijk Juridische Zaken
- o Communicatie
- o Control
- o Directie
- o Facilitaire Zaken
- o Financiën
- o Kennis en Advies
- o Onderhoud
- o Personeel en Organisatie
- o Projecten
- o Technische Ondersteuning
- o Vergunning en Handhaving
- o Waterbeheer
- o Waterbeleid
- o Waterkeringen en Vaarwegbeheer
- o Zuiveringsbeheer en Rioleringen

Op welke locatie ben je het grootste deel van de tijd werkzaam?

- o Hoofdkantoor Doetinchem
- o Zuivering
- o Werkplaats

	○ Steunpunt ○ Anders
Wanneer heb je voor het laatst contact gehad met medewerkers van de unit ICT **uit hoofde van jouw functie**? Het gaat hier om contact dat je op professioneel vlak met een of meerdere medewerker(s) over een bepaald product of een bepaalde dienst hebt gehad. Bij contact kun je denken aan mondeling contact, telefonisch contact en/of contact via e-mail.	○ Ik heb de afgelopen maand nog contact gehad (vaak) ○ Ik heb de afgelopen drie maanden nog contact gehad (regelmatig) ○ Ik heb het afgelopen half jaar nog contact gehad (soms) ○ Ik heb het afgelopen jaar nog contact gehad (nooit)
Over welke producten en/of diensten heb je contact gehad met medewerkers van de unit ICT? Er zijn meerdere opties mogelijk.	○ Geo-informatiebeheer (Vragen omtrent ARCGIS, GeoBasis, Geoweb, IRIS & IrisBasis.) ○ Servicedesk & Systeembeheer (Afhandeling van meldingen, reserveringen, aanvragen, klachten en storingen met betrekking tot ICT middelen en telefonie.) ○ DIV (Vragen, opmerkingen of problemen met betrekking tot in- en uitgaande post, het scannen van documenten, CORSA of het opvragen van archiefstukken.)

De volgende stellingen relateren aan jouw **ervaring met *DIV (documentaire informatievoorziening)***. Geef voor elk van de stellingen aan in hoeverre je DIV ziet voldoen aan de omschrijving.

Wanneer je het cijfer 10 plaatst, betekent dit dat je het volledig eens bent met de stelling; het cijfer 1 betekent dat je het volledig oneens bent met de stelling. Je kunt gebruik maken van alle tussenliggende cijfers om duidelijk te maken hoe jij een bepaalde stelling ervaart. Er zijn geen goede of foute antwoorden op de stellingen te geven –wij zijn alleen geïnteresseerd in het getal dat je op elke stelling geeft en wat volgens jou de beste ervaring weergeeft. Op deze manier weten wij hoe jij DIV ervaart.

1	2	3	4	5	6	7	8	9	10
Zeer mee oneens									**Zeer mee eens**

	Score 1 - 10
De medewerkers van DIV zijn in hun algehele uitstraling niet slordig of oubollig.	
Wanneer DIV belooft iets op een bepaald tijdstip geregeld te hebben, dan doet zij dit ook.	
Wanneer je problemen hebt, is zijn de medewerkers van DIV sympathiek en begripvol.	
DIV is betrouwbaar.	
DIV levert haar diensten op het moment dat zij dit belooft.	
DIV houdt nauwkeurig haar administratie bij.	
DIV vertelt haar klanten precies wanneer zij diensten gaat uitvoeren.	
Je ontvangt punctuele service van de medewerkers van DIV.	
De medewerkers van DIV zijn altijd bereid om klanten te helpen	
De medewerkers van DIV zijn nooit te druk om op klantverzoeken te reageren.	
Je kunt de medewerkers van DIV vertrouwen.	
Je hebt als klant een veilig/vertrouwd gevoel wanneer je dingen met de medewerkers van DIV regelt**.**	
Medewerkers van DIV zijn beleefd.	
Medewerkers van DIV hebben voldoende kennis om hun werk goed te doen.	
Medewerkers van DIV geven je persoonlijke aandacht.	
DIV handelt vanuit jouw belang als klant	
DIV weet wat jouw behoeften zijn als klant.	

	Score 1 - 10
Geo-informatiebeheer gebruikt materiaal en instrumenten die up-to-date zijn.	
De medewerkers van Geo-informatiebeheer zijn in hun algehele uitstraling niet slordig of oubollig.	
Wanneer Geo-informatiebeheer belooft iets op een bepaald tijdstip geregeld te hebben, dan doet zij dit ook.	
Wanneer je problemen hebt, is zijn de medewerkers van Geo-informatiebeheer sympathiek en begripvol.	
Geo-informatiebeheer is betrouwbaar.	
Geo-informatiebeheer levert haar diensten op het moment dat zij dit belooft.	
Geo-informatiebeheer houdt nauwkeurig haar administratie bij.	
Geo-informatiebeheer vertelt haar klanten precies wanneer zij diensten gaat uitvoeren.	
Je ontvangt punctuele service van de medewerkers van Geo-informatiebeheer.	
De medewerkers van Geo-informatiebeheer zijn altijd bereid om klanten te helpen	
Je kunt de medewerkers van Geo-informatiebeheer vertrouwen.	

Je hebt als klant een veilig/vertrouwd gevoel wanneer je dingen met de medewerkers van Geo-informatiebeheer regelt**.**	
Medewerkers van Geo-informatiebeheer zijn beleefd.	
Medewerkers van Geo-informatiebeheer hebben voldoende kennis om hun werk goed te doen.	
Medewerkers van Geo-informatiebeheer geven je persoonlijke aandacht.	
Geo-informatiebeheer handelt vanuit jouw belang als klant	
Geo-informatiebeheer weet wat jouw behoeften zijn als klant.	
	Score 1 - 10

De medewerkers van Servicedesk zijn in hun algehele uitstraling niet slordig of oubollig.	
Wanneer Servicedesk belooft iets op een bepaald tijdstip geregeld te hebben, dan doet zij dit ook.	
Wanneer je problemen hebt, is zijn de medewerkers van Servicedesk sympathiek en begripvol.	
Servicedesk is betrouwbaar.	
Servicedesk levert haar diensten op het moment dat zij dit belooft.	
Servicedesk houdt nauwkeurig haar administratie bij.	
Servicedesk vertelt haar klanten precies wanneer zij diensten gaat uitvoeren.	
Je ontvangt punctuele service van de medewerkers van Servicedesk.	
De medewerkers van Servicedesk zijn altijd bereid om klanten te helpen	
De medewerkers van Servicedesk zijn nooit te druk om op klantverzoeken te reageren.	
Je kunt de medewerkers van Servicedesk vertrouwen.	
Je hebt als klant een veilig/vertrouwd gevoel wanneer je dingen met de medewerkers van Servicedesk regelt**.**	
Medewerkers van Servicedesk zijn beleefd.	
Medewerkers van Servicedesk hebben voldoende kennis om hun werk goed te doen.	
Medewerkers van Servicedesk geven je persoonlijke aandacht.	
Servicedesk handelt vanuit jouw belang als klant	
Servicedesk weet wat jouw behoeften zijn als klant.	

De volgende stellingen hebben betrekking over jouw ideeën van de algemene kwaliteit van de services van de gehele unit ICT, gebaseerd op een serie van verschillende eigenschappen. Kies een getal tussen de 1 en 10 dat jouw oordeel weergeeft met betrekking tot de kwaliteit van de geleverde services en diensten van de hele unit ICT.	
Ik vind de kwaliteit van de geleverde services van de gehele unit van...	1. Lage kwaliteit – 10. Hoge kwaliteit

De kwaliteit van de geleverde services is...	1. Wisselend – 10. Constant
Ik vind het functioneren van de hele unit...	1. Slecht – 10. Uitstekend
Ik vind de kwaliteit van de geleverde services van de unit ICT t.o.v. andere ondersteunende units...	1. Één van de slechtste – 10. Één van de besten

Heb je misschien nog vragen en/of opmerkingen, met betrekking tot de vragenlijst, die je graag met ons wilt delen?
Je hebt aangegeven dat het langer dan 1 jaar geleden was dat je voor het laatst contact hebt gehad met de collega's van de Unit ICT uit hoofde van je functie. Dat is jammer, maar misschien is dit juist een goed teken! We zijn als Unit ICT benieuwd naar de resultaten van collega's die frequenter contact met ons hebben gehad. Om deze reden val je buiten het doel van ons onderzoek. We willen je bedanken voor de genomen moeite. met vriendelijke groet, Unit ICT
Je bent nu aangekomen bij het einde van de vragenlijst. Wanneer je kans wilt maken op één van de **Office 2013 thuislicenties** kun je hieronder je e-mail adres invullen. Aan het eind van de enquêteperiode worden door de computer automatisch tien mailadressen getrokken waaraan de licenties worden toegekend. Die nieuwe Office 2013 versie is alleen te gebruiken op pc's met Windows 7 of hoger. Het e-mailadres wordt niet gekoppeld aan jouw resultaten!

Appendix I – Performance indicators DIV

Titel	Tevredenheidsindex
Doel (nut)	Het meten van klanttevredenheid.
Houdt verband met	Verbeteren van de serviceverlening door DIV aan de interne klanten binnen de organisatie.
Formule	Score op enquête vragen (S) / Aantal enquête vragen (N) = gemiddelde.
Frequentie van meten	1x per jaar
Frequentie van rapporteren	1x per jaar
Wie meet?	Afnemer enquête
Data bron	Enquête data
Wie handelt op basis van de gegevens?	Teammanager Teamcoördinator
Wat doen ze	Publiceren van de data en bespreekbaar maken op de werkvloer.
Toelichting en/ of opmerkingen	De enquête wordt elk jaar herhaald. De vragen worden ook herhaald. Er mogen wel vragen bijgevoegd worden maar niet worden verwijderd. Dit om de consistentie in de metingen te waarborgen.
Datum en versienummer	14-05-2013 V 1

Titel	Uitgeleende dossiers/ documenten
Doel (nut)	Verminderen van kwijtgeraakte dossiers/ documenten door niet tijdig retourneren.
Houdt verband met	Betrouwbaarheid van het archief/ Corsa waarborgen. Vindbaarheid van de dossiers/ documenten verbeteren
Formule	X= 1-1-1997 t/m (Vandaag - 6 weken); Y= 1-1-1997 t/m vandaag; Formule= X/Y*100
Frequentie van meten	1x per maand
Frequentie van rapporteren	1x per maand
Wie meet?	Kwaliteitsmedewerker
Data bron	Corsa
Wie handelt op basis van de gegevens?	Teamcoördinator. Kwaliteitsmedewerker.
Wat doen ze	Publiceren van de data en bespreekbaar maken op de werkvloer. Medewerkers aanspreken die niet tijdig retourneren.
Toelichting en/ of opmerkingen	Veel dossiers en documenten worden niet (tijdig) geretourneerd waardoor ze soms kwijt raken.
Datum en versienummer	28-05-2013 V 1

Titel	Interne steekproef van het vervangingsproces
Doel (nut)	De kwaliteit van het vervangingsproces borgen
Houdt verband met	Kwaliteit van de metadata beoordelen en de vindbaarheid van documenten/dossiers verbeteren.
Formule	Afhankelijk van de grootte van de batch. 80% van de verwerkte scanbatches moet correct zijn. 3 verschillende meet niveaus. Standaard meetniveau 2. Wanneer er vaker dan 5x een batch geaccepteerd wordt dan niveau lager. Wanneer er vaker dan 5x een batch niet geaccepteerd wordt een niveau hoger. Wanneer bij het laagste niveau een batch niet geaccepteerd wordt, direct weer naar meetniveau 2.
Frequentie van meten	Elke werkdag
Frequentie van rapporteren	1x per maand
Wie meet?	Medewerker kwaliteitszorg
Data bron	SharePoint
Wie handelt op basis van de gegevens?	Medewerker kwaliteitszorg Teamcoördinator Teammanager
Wat doen ze	De resultaten van de steekproeven worden bijgehouden in een logboek en maandelijks gerapporteerd aan de DIV-coördinator.
Toelichting en/ of opmerkingen	Gebaseerd op het Acceptable Quality Level.
Datum en versienummer	28-05-2013 V 1

Titel	Kwaliteit metadata van documenten
Doel (nut)	Het zorgen voor zo uniform mogelijke registraties zonder fouten met zo compleet mogelijk ingevulde metadata velden om de vindbaarheid en toegankelijkheid van de documenten te waarborgen. Doelstelling is een foutenpercentage van 15% aan het einde van 2013
Houdt verband met	Vindbaarheid van de documenten, uniformiteit van registraties
Formule	Aantal foute registraties / aantal registraties x 100 = foutenpercentage
Frequentie van meten	Elke dag
Frequentie van rapporteren	1x per maand
Wie meet?	Medewerkers ana-div
Data bron	Corsa
Wie handelt op basis van de gegevens?	DIV-specialist DIV-coordinator ICT-manager
Wat doen ze	Publiceren van de data en bespreekbaar maken op de werkvloer
Toelichting en/ of opmerkingen	
Datum en versienummer	28-05-2013 V 1

Appendix J – Performance indicators Geo

Titel	Geo vindbaarheidsindex
Doel (nut)	In kaart brengen van de mening van gebruikers over de vindbaarheid van Geo-data.
Houdt verband met	Verbeteren van de vindbaarheid van informatie. Verbeteren van service en tevredenheid.
Formule	Score op enquête vragen (S) / Aantal enquête vragen (N) = gemiddelde.
Frequentie van meten	1x per jaar
Frequentie van rapporteren	1x per jaar
Wie meet?	Enquête uitvoerende
Data bron	Enquête data
Wie handelt op basis van de gegevens?	Team manager Geo-medewerkers.
Wat doen ze	Publiceren van de data en bespreekbaar maken op de werkvloer Aan de hand van data de organisatie in om resultaten te bespreken.
Toelichting en/ of opmerkingen	Vindbaarheid heeft vaak te maken met de trefwoorden en metadata van de betreffende databestanden.
Datum en versienummer	V0.1 03-05-2013 V0.2 13-05-2013

Titel	Kennisniveau gebruikers
Doel (nut)	Het meten van het kennisniveau van gebruikers zodat er gerichte trainingen gegeven kunnen worden.
Houdt verband met	Het verbeteren van het kennisniveau van de gebruikers. Hierdoor kunnen ze meer zelf doen.
Formule	Als wijze van proef wordt er een uitgeprinte lijst gemaakt waarin elke vraag die de medewerkers van Geo krijgen bijgehouden wordt.
Frequentie van meten	Vragen dagelijks. Wekelijks gedigitaliseerd naar Excel.
Frequentie van rapporteren	1x per jaar.
Wie meet?	Medewerkers Geo
Data bron	Aangemaakte Excel lijst op de G-schijf.
Wie handelt op basis van de gegevens?	Team manager. Medewerkers Geo.
Wat doen ze	Publiceren van de data en bespreekbaar maken op de werkvloer. De resultaten bepalen de inhoud van de trainingen van het aankomende jaar.
Toelichting en/ of opmerkingen	Wanneer gebruikers veel herhaalde vragen over Geo data hebben kan dit betekenen dat gebruikers op een bepaald vlak te weinig kennis hebben.
Datum en versienummer	V0.1 17-05-2013

Titel	Geo-communicatie
Doel (nut)	Monitoren van de scores op communicatie.
Houdt verband met	Het verbeteren van de communicatie naar andere units door geo-informatiebeheer. Het verbeteren van de tevredenheid en servicekwaliteit. Ook is het belangrijk dat het grijs gebied waarin Geo en de gebruikers zitten verkleind wordt.
Formule	Score op enquête vragen (S)/ Aantal enquête vragen (N) = gemiddelde score
Frequentie van meten	1x per jaar
Frequentie van rapporteren	1x per jaar
Wie meet?	Enquête uitvoerende
Data bron	Enquête data
Wie handelt op basis van de gegevens?	Team manager
Wat doen ze	Publiceren van de data en bespreekbaar maken op de werkvloer Aan de hand van data de organisatie in om resultaten te bespreken.
Toelichting en/ of opmerkingen	Het grijs gebied kan door middel van vragen over de verwachtingen van de gebruikers en die van de medewerkers naast elkaar te zetten. Als er blijkt dat gebruikers andere verwachtingen hebben dan de medewerkers van Geo blijkt dat er hoogstwaarschijnlijk niet goed gecommuniceerd wordt.
Datum en versienummer	V0.1 03-05-2013 V0.2 17-05-2013

Appendix K – Performance indicators Servicedesk

Titel	Servicedesk-communicatie index
Doel (nut)	Het monitoren van de scores op communicatie.
Houdt verband met	Verbeteren en het monitoren van klanttevredenheid en servicekwaliteit
Formule	Score op enquête vragen (S)/ Aantal enquête vragen (N) = gemiddelde score
Frequentie van meten	1x per jaar
Frequentie van rapporteren	1x per jaar
Wie meet?	Enquête uitvoerende
Data bron	Enquête data
Wie handelt op basis van de gegevens?	Team manager
Wat doen ze	Publiceren van de data en bespreekbaar maken op de werkvloer Aan de hand van data de organisatie in om resultaten te bespreken.
Toelichting en/ of opmerkingen	Maatstaaf is oude score + 10%
Datum en versienummer	V1 03-05-2013

Titel	IT-happyness Index
Doel (nut)	Continue monitoren van tevredenheid over afgehandelde meldingen.
Houdt verband met	Verbeteren en het monitoren van klanttevredenheid.
Formule	Score op enquête vragen (S)/ Aantal enquête vragen (N) = gemiddelde score
Frequentie van meten	Continu
Frequentie van rapporteren	1x per kwartaal
Wie meet?	Incident manager
Data bron	Koppeling moet nog gemaakt worden. Servicemanager - SharePoint
Wie handelt op basis van de gegevens?	Team manager
Wat doen ze	Publiceren van de data en bespreekbaar maken op de werkvloer.
Toelichting en/ of opmerkingen	Schaal van 1 tot 6. Zeer ontevreden, ontevreden, beetje ontevreden, beetje tevreden, tevreden, zeer tevreden. Gebaseerd op de IT-happiness index http://ithappinessbenchmark.nl/
Datum en versienummer	V1 24-05-2013

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