Acceptance of Operational Business Intelligence in Organisations

Developing a framework describing the context and powers at play involved in achieving OpBI acceptance in organisations

Oei, M.H.H. (Maxim)
26/03/2014

Master of Science Thesis
Systems Engineering, Policy Analysis and Management
Acceptance of Operational Business Intelligence in Organisations

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Oei, M.H.H. (Maxim) – 1518305
MSc Systems Engineering, Policy Analysis and Management Thesis
Delft University of Technology
Faculty of Technology, Policy and Management

Graduation committee
Prof. dr. J. van den Berg (TU Delft)
Drs. H.G. van der Voort (TU Delft)
Dr. D. Hadžiosmanović (TU Delft)
L. Zandvliet MSc (ING)
W.P.J. Kuling MSc (ING)

Delft, 26/03/2014
Preface

This thesis is the proof of the final leg of my five-and-a-half year journey at the faculty of Technology, Policy and Management. With this thesis I complete my Master of Science program Systems Engineering, Policy Analysis and Management. I executed the case study and did most of the writing for this research at ING, a financial institution in the Netherlands.

The goal of this research is to find factors that influence the acceptance of Operational Business Intelligence systems at organisations. It provides a framework that describes the required context to achieve acceptance of an OpBI system between organisational parts and the forces that are at work between these parts that influence their acceptance.

I would like to thank everyone that has in some way contributed to my research. Family and friends for their support; my colleagues at the Black Belt department at ING, especially Chris Rutte as a thoughtful project team member; all sixteen interviewees from the Personal Banking department at ING for their indispensable input; Layla AlAbdulkarim for her expert validation of my framework; the members of my graduation committee for their feedback and powerful discussions: Jan van den Berg as inspiring chair, Haiko van der Voort as motivating first TU Delft supervisor, Dina Hadžiosmanović for her IT minded reflection as second TU Delft supervisor, Lesley Zandvliet as a fantastic daily supervisor and coach at ING and finally Wendell Kuling, who made my graduation at ING possible and gave me the freedom to pursue my academic challenge.

Maxim Hong Hao Oei
Delft, 2014
Executive Summary

Research problem
The world generates 1.7 million billion bytes of data every day. Research by McKinsey & Company (2011), BCG (2013) and many others shows that being able to analyse these huge data sets is going to be crucial for companies to be successful. Performing analyses on this Big Data is also referred to as ‘Business Intelligence’ and is going to be a key differentiator. As Business Intelligence (BI) is currently mostly data-centric and applied for reporting in Decision Support Systems, its main use lies in supporting decision making for company strategies. The value of the operational use of BI is however both underestimated and little researched. Further expansion of Business Intelligence use in operational levels of organisations is inevitable for organisations to stay ahead. Research into use of Operational BI is therefore necessary. As with their strategic counterparts, it is important for Operational Business Intelligence systems to gain acceptance from all involved stakeholders. Research into acceptance of OpBI is lacking however and existing BI literature is not always applicable due to the differences in the environments these systems are used in. Acceptance of OpBI has an added complexity, as many different layers of organisations are involved, which all have a different view on what is necessary for them to accept a technology. This resulted in the following main research question: “What factors determine the acceptance of Operational Business Intelligence in different parts of an organisation, given the subjective nature of acceptance?”

Aim and research approach
This research aims to come up with a framework that includes factors that determine acceptance of Operational Business Intelligence in organisations. This contributes to a relatively unexplored field, as it combines Operational Business Intelligence, Technology Acceptance and Organisational Design fields. Given the fact that this research fields have not been combined extensively before, this research has an exploratory nature (Baxter & Jack, 2008). More specifically, the research is mainly qualitative, since existing literature and a case study with interviews are used. Propositions that are grounded in the three research field are used to structure the case study. The eight propositions that I use in this research are shown in Table 1. Operational Business Intelligence theory provides factors about transparency, timeliness and integration. For technology acceptance, the UTAUT model provides the necessary insights. For Organisational Design the forces in the model by Mintzberg are used. The case study focussed on three separate organisational parts, which are all expected to have their own role in the acceptance of an OpBI system. These are the OpBI users (Operational Core), their Middle management, and the OpBI providers (Technostructure).

<table>
<thead>
<tr>
<th>Table 1: Case study propositions</th>
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<tr>
<td><strong>Operational Business Intelligence</strong></td>
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<tr>
<td>1. An OpBI system that is <strong>transparent</strong> positively influences the acceptance.</td>
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<tr>
<td>2. An OpBI system that is <strong>timely</strong> positively influences the acceptance.</td>
</tr>
<tr>
<td>3. When the OpBI system is <strong>integrated</strong> with other systems and the business process, this positively influences the acceptance.</td>
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Case study findings
The eight propositions that structure the case study all manifest themselves to some extent in the case study. The insights from the case study show that the factors that influence acceptance of OpBI systems fall in two categories; those that form the contextual requirements and those that describe forces that work between the organisational parts. The contextual requirements form what I refer to as the minimal context for acceptance, and the working forces as the forces of acceptance in organisations. With these factors a Framework for Acceptance of Operational Business Intelligence in Organisations is developed, which is shown in Figure 1.

Using the Framework for Acceptance of OpBI in Organisations
As described, the framework shows the context in which acceptance of OpBI systems can be realised. Furthermore, it shows which forces are at play within this context. All three contextual requirements should be realized simultaneously for acceptance to be achieved. Therefore, there should be a split focus on all three of the contextual requirements. Systems integration allows the Technostructure to efficiently provide the system to the Operational core. Business Process Integration makes sure use of the system is embedded in the job of the Operational core. Expectation alignment allows the Technostructure to provide the system effectively to several departments.
Considering the forces working in between the organisational parts, the insights of the FAOpBIO are in line with the theory of *duality of technology* and *interpretive flexibility of technology*. All of these organisational parts have their own interpretation of what is important and what the OpBI system should be able to do. As the technostructure is likely to provide the OpBI system to multiple departments within the organisation, it is critical that they communicate effectively with these departments to align expectations. They should be open to feedback and information requests and provide the necessary transparency and management data. The Operational core has a pull for transparency of the system and provides feedback towards Technostructure. Furthermore, they should be able to request help from their managers, which in return should provide them with the Intention to use. Middle management themselves is not a main user of the system, but does need its management data to monitor the use and results of that use.

The framework shows which factors influence acceptance of an OpBI system in environments where multiple departments or other stakeholder are involved, such as large organisations. It shows the minimal required context to achieve acceptance and the forces that work between the individual organisational parts. Furthermore, this research has provided a starting point as to how this situation can be achieved, so that a process can be researched.

**Reflection and validation**

This research is unique due to the qualitative and multi-perspective approach on the very data-driven and provider-oriented field of (Operational) Business Intelligence. Given time limitations and the exploratory character of this research, I mainly focussed on factors that influenced acceptance, organisational parts that are involved and the influence they have on each other. I did not elaborate further in detail on how the necessary *minimal context for acceptance* should be reached or how the *forces of acceptance in organisations* should be implemented, controlled or managed.

As this research includes only a single case study at ING this brings limitations to validity and generalizability. It does however give some general insights, but it is also of practical use at ING, as their interest is to ensure the acceptance of their OpBI system. Combining the qualitative interviews with a strict self-reporting quantitative tool helped with conquering some of the pitfalls of interview-based research.

Even though only one case study was performed, the majority of the Framework for Acceptance of OpBI in Organisations is based on literature as well, so this exploratory research can give a general overview and serve as a starting point for future research.

**Further research**

To effectively use this framework when developing an OpBI system, a process is needed to define the requirements of the context and the way that will be acted upon the forces of acceptance. Initial steps with a combined project and process approached has been discussed but is certainly a recommendation for future work. The initial steps provided in the discussion can however provide ideas as to the approach of this.

This research is mainly based on a literature review and a case study at ING. To enhance the generalizability of this framework, further research into different organisations, sectors and situations is necessary. Validation with an expert (AlAbdulkarim, 2014) of this framework also showed that closer involvement of the end users can be advantageous for acceptance of the system.
# Acceptance of Operational Business Intelligence in Organisation

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INTRODUCTION
1. Introduction

The world generates 1.7 million billion bytes of data every day (European Commission, 2013). In particular, more digitised data was created in the last two years than in the rest of human history. This trend and the mountains of data it produces is what we call "Big data". These trends that are viewed on a global scale are of course the result of what is happening in organisations all around the world. Companies are gathering data about their suppliers, sales, clients, employees and everything else that is deemed even remotely relevant in huge data warehouses. Research by McKinsey&Company (2011), BCG (2013) and many others shows that being able to analyse these huge data sets is going to be crucial for companies to be successful. Performing analytics on Big Data, also called ‘Business Intelligence’ is going to be key differentiator in every sector, for every company and for every employee.

Operational Business Intelligence

Business Intelligence is usually defined as “The process of turning data into information and then into knowledge to enable effective decision making” (Golfarelli, Rizzi, & Cella, 2004). As Business Intelligence (BI) is currently mostly data-centric and used for reporting in Decision Support Systems (Jourdan, Rainer, & Marshall, 2008; Marjanovic, 2007), its main use lies in supporting decision making for company strategies. However, this one of the many goals that can be achieved when working with big data (BCG, 2013). Great potential has also been identified for its value on operational levels of organisations (White, 2006). This requires BI to become more process-centric instead of data-centric (Marjanovic, 2007). The value of the operational use of BI is however both underestimated and little researched (Marjanovic, 2007). Further expansion of Business Intelligence use in operational levels of organisations is thus inevitable for these organisations to stay ahead (BCG, 2013). Research into this expansion process is therefore necessary.

Using Business Intelligence in an operational context however has a very different implication as to the design and implementation strategies. First, the requirements for functionality are different for BI systems used in an operational context. In addition, the environment they will be used in is different. Given the fact that big investments are involved in implementing and using these systems, analysing these differences in environment and their impact is desirable.

Acceptance of Operational Business Intelligence

As with their more strategic counterparts, it is important for Operational Business Intelligence systems to gain acceptance from their environment (Elbashir, Collier, & Davern, 2008). For BI, some research into its acceptance has been done and substantial roadmaps for implementing BI have been drawn up, which can help organisations in setting up a BI system for decision support (Moss & Atre, 2003). Research into acceptance of OpBI is however lacking and existing BI literature is not always applicable, due to the differences in the environments these systems are used. Research in this field is thus necessary to be able to understand which factors drive the acceptance of OpBI.

Subjective nature of acceptance

Acceptance of OpBI has an added complexity, as many different layers of organisations are involved. Each of these have their own view on what is necessary for them to accept a technology. In addition,
they interpret the requirements and functionalities from their own point of view. This makes acceptance subjective for each of the involved stakeholders. Therefore, taking into account that acceptance differs when taking different perspectives on the OpBI system means that multiple views on this acceptance have to be taken.

Factors of OpBI acceptance.

In this research, I will therefore view the factors that determine OpBI acceptance from several angles, which will in turn be represented in a framework. The research question that I have formulated is as follows:

*What factors determine the acceptance of Operational Business Intelligence in different parts of an organisation, given the subjective nature of acceptance?*

Introducing Operational Business Intelligence in an organisation is one thing, getting it accepted across that same organisation is another. In this research, I will take a close look at factors that influence the acceptance of Operational Business Intelligence systems, while especially taking into account the different parts of an organisation that are involved in this. To accomplish this, a case study will be conducted at financial institution ING in the Netherlands.

After this introduction, I will perform a literature review in chapter two. Then, in chapter three I will present the research methodology of this research. In chapter four the case study will be discussed. Chapter five contains the Framework for Acceptance of OpBI in Organisations. In chapter six the framework will be validated and in chapter seven I will reflect on this research. A discussion on the practical use and implications of the framework is presented in chapter eight. Conclusions and recommendations are drawn in chapter nine.
2. Literature review

In this chapter I explore the relevant literature for this research and will identify the knowledge gaps. First, the characteristics of Operational Business Intelligence as a concept and as a system will be explored. Then, I will make a comparison with (traditional) Business Intelligence. In the second section technology acceptance theory by Venkatesh et al. (2003) will be outlined. Then, in the third section I discuss Organisational Design. I will look at existing literature that integrates these three fields in section four. Finally, I outline the knowledge gaps that will be filled with this research in the fifth section.

2.1. BI / OpBI

Business Intelligence, like Big Data or ‘the Cloud’ have increasingly become buzz or hype words, which has the consequence that many different definitions are available.

From several sources, it can be derived that there is a clear division in definitions of Business Intelligence (BI) from a technical and from a managerial point of view. When talking about Business Intelligence Systems, most authors include concepts like ‘data gathering’, ‘data integration’, ‘data storage’, ‘knowledge management’ (Negash, 2004; Power, 2008; Reinschmidt & Francoise, 2000). Others look more from a management perspective, with factors like ‘system with historical information’, ‘enable effective decision making’, ‘management support’ and ‘reporting’ (İşik, Jones, & Sidorova, 2013; Lönnqvist & Prittimäki, 2006; Williams & Williams, 2010). For now, the following definition will be chosen for Business Intelligence: “The process of turning data into information and then into knowledge to enable effective decision making” (Golfarelli, Rizzi, & Cella, 2004). This already shows that BI is mainly focussed on turning (big) data into information to be used in decision making and reporting. Therefore, it is important to compose a definition for operational business intelligence as well.

The main difference between BI and OpBI is its use. While BI is mainly used for reporting and managerial tasks, OpBI provides optimization for daily business operations (White, 2006; Rouse, 2010). A great potential has been identified for this analytical and real time operational use of business intelligence (Burns, 2013). Simply put, use of Business Intelligence is predominantly strategic, where the use of OpBI is mostly operational.

These differences in use make it so that the requirements for such systems are also different to those of typical reporting BI systems. Where the timeframe and data of reporting BI is usually focused on historic data, OpBI requires more timely and current data. Operational BI has most potential in so called line of business or front-line workers, like call centre operators (Rouse, 2010). This requirement for timeliness has the effect that OpBI systems should be fully integrated with the business process they are used by (Melchert, Winter, & Klesse, 2004).

Melchert et al (2004) note that Business Process Automation (BPA) and Business Intelligence (BI) initiatives are usually executed in a separate way. This leads to misalignment and leads to insufficient integration of BI into the business process. As a consequence, this misalignment leads to a lower usability of (operational) BI implementations (Melchert, Winter, & Klesse, 2004).
2. Literature review

2.2. Acceptance of Technology

In current literature a wide range of theories exist on the acceptance of technology. They originate and reason from different perspectives, such as psychology, sociology and information technology. A common notion in these theories is the link between a set of factors that influence the acceptance of technology and the intention to accept or use technology.

The issues that arise when having several different acceptance models were identified by Venkatesh et al. (2003). He reasons that because of this plurality of acceptance theories, researchers are forced to combine these themselves, or just pick one they favour. This issue lead to the development of the Unified Theory of Acceptance and Use of Technology (Venkatesh V., Morris, Davis, & Davis, 2003). UTAUT is a combination of a total of eight theories, namely: Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Motivational Model (MM), Theory of Planned Behavior (TPB) and others. I will describe the several technology acceptance theories the UTAUT model is composed shortly below.

- **Theory of Reasoned Action – TRA** – This model was constructed by Ajzen and Fishbein in 1975 and has been set up to be used in a more general context of human behaviour. The model links attitude towards behaviour and the subjective norm of a user to its intention, which then leads to behaviour. It implies that humans are fully rational when deciding whether to pursure a task (Fishbein & Ajzen, 1975), which is also the main limitation of the theory: if intention to use is formed, the theory assumes the task will actually be carried out (Sheppard, Hartwick, & Warshaw, 1988).

- **Technology Acceptance Model (2) – TAM(2)** – One of the most used (and cited) theories, developed by Davis et al. in (1989). The model is derived from TRA and relies on two determinants: perceived usefulness and perceived ease of use. Its powers are the models simplicity and its consistent result in use across fields. The main drawbacks are its reliance on self-reported use and questionability of the relationship between the constructs (AlAbdulkarim, Acceptance-by-Design, 2013).

- **Motivational Model – MM** – There are different variations of this model. The most commonly used is the model by Vallarnd (Vallerand, 1997). Apart from the usually discussed intrinsic and extrinsic motivation the model includes the distinction of ‘amotivation’ which describes the relative absence of both other types of motivation. It further distinguishes these motivations at three levels: through personality, context and situation. (AlAbdulkarim, Acceptance-by-Design, 2013).

- **Theory of Planned Behavior – TBP** – Like the TRA, TBP was also constructed by Ajzen (1985) and was presented as an extension of the first. It extends TRA in such a way that it can deal with behaviour over which individuals do not have full voluntary control through a third moderator: perceived behaviour control. It has been successfully applied across different technologies. The main limitations that have been identified are the lack of emotional variables, like feelings and mood (AlAbdulkarim, Acceptance-by-Design, 2013).

- **Combined TAM and TBP – C-TAM-TBP** – A combination of TAM an TBP was set up by Taylor and Todd (1995), to alleviate shortcomings of both models and to be able investigate the role of prior experience. Use of the model has shown that it is suitable for both experienced and inexperienced users. The main limitations are that the initial study was
among students, with just one IT system, so generalizability to the context of a workplace can be doubted.

- **Model of PC Utilization – MPCU** – Thompson et al. (1991) developed this model, which was based on the theory of human behaviour by Triandis (Thompson, C.Higgins, & Howell, 1991). It is targeted at predicting usage behaviour of personal computers, not users intention. It’s main limitations are the limited use: it was tested within a single organisation. Furthermore, it was based on self-reported utilization.

- **Social Cognitive Theory – SCT** – First presented by Bandura (1986), it is one of the most powerful theories of human behaviour (AlAbdulkarim, Acceptance-by-Design, 2013). Social Cognitive Theory is based on the idea that people learn by observing others (Lent, Brown, & Hackett, 1994). Compeau and Higgins extended this model to include usage of computers (Compeau & Higgins, 1995). It revealed that ‘self-efficacy’, the belief to have the capability to perform a task, is an important influencer on the expectation of the individual.

The synthesis of these theories is the UTAUT model and is shown in Figure 2. It has been set up to contain three classes: technology acceptance determinants, moderators and the anticipated outcome. Behavioural Intention and Use Behaviour depict an individual’s acceptance of technology and the actual use of this technology. The model was set up by combining and grouping similar concepts from each of the before mentioned theories into new determinants and moderators (Venkatesh V., Morris, Davis, & Davis, 2003).

![Figure 2: UTAUT model (Venkatesh V., Morris, Davis, & Davis, 2003)](image)

Like in most technology acceptance theories, ‘behavioural intention’ showing the acceptance of technology and ‘use behaviour’ showing the actual use of technology are the resulting constructs of the model. Furthermore, the UTAUT model of Venkatesh consists of four acceptance determinants and four acceptance moderators, this is also shown in Figure 2. Of the four determinants, three directly influence the intention and one influences the use behaviour. All of these effects are moderated by four different moderators. The UTAUT model and the theories it is derived from will now be described in more detail.
2. Literature review

2.2.1. Acceptance moderators
The acceptance moderators are characteristics of the users of a system. Previous research, on which UTAUT is build, has shown that these characteristics of the users have some sort of impact on the acceptance of such a system.

Gender - The UTAUT model assumes that gender has a significant influence on the three determinants of behavioural intention. It is defined as the social roles of women and men (AlAbdulkarim, Acceptance-by-Design, 2013).

Age - Age is defined as a separate moderator, which has a significant influence on all determinants. Venkatesh (2003) argues it is important that age should be studied closely together with gender, to capture the most realistic representation of reality.

Experience – Experience is a moderator in many of the models included in UTAUT and thus it is also included in UTAUT itself. It has a significant influence on Effort Expectancy, Social Influence and Facilitating Conditions (Venkatesh V., Morris, Davis, & Davis, 2003).

Voluntariness of Use – Voluntariness of use only has a significant impact on the Social Influence determinant of the behavioural intention (Venkatesh V., Morris, Davis, & Davis, 2003). It describes that acceptance of a system increases when the end users have some sort of voluntariness of use.

These moderators have all been found to have significant effect on at least one of the acceptance determinants in the researches of which UTAUT is composed. For Operational Business Intelligence it can thus be expected that these also play a role, but this should be verified.

2.2.2. Acceptance determinants
The acceptance determinants together determine the behavioural intention of an end user and its actual behaviour, which together is referred to as acceptance. Each of the acceptance determinants that are part of UTAUT will be explained now.

Performance Expectancy – Performance expectancy describes the degree to which a user of a technology believes that using this technology will help him/her perform their job. It is derived from five constructs from other models such as ‘perceived usefulness’ (TAM) and ‘extrinsic motivation’ (MM) (Venkatesh V., Morris, Davis, & Davis, 2003).

Effort Expectancy – Effort expectancy is defined as the ease of using the system. It is derived from ‘perceived ease of use’ (TAM), ‘complexity’ (MPCU) and ‘ease of use’ (IDT). Like with the other determinants Venkatesh noticed that other research had also shown there were similarities between these constructs, which confirmed this conclusion (AlAbdulkarim, Acceptance-by-Design, 2013).

Social Influence – Social influence defines the degree to which a user of a technology feels influenced by its colleagues, manager or other important individuals to make use of the system. This determinant was composed by putting together all constructs that relate to the notion that people are influenced by the way others will view them as a result of using the technology. In other theories it is usually referred to as the ‘subjective norm’ or ‘image’. It is suggested by literature that this determinant is only of influence when the use of the system is mandatory (as opposed to voluntary) (Venkatesh V., Morris, Davis, & Davis, 2003). This would mean that concepts as peer pressure or
voluntary incentives do not have a significant influence on technology acceptance, which is debatable (Venkatesh & Morris, 2000).

**Facilitating Conditions** – Facilitating conditions are the degree as to which a user believes that the organisational and technical environment of the technology support use of the system (AlAbdulkarim, Acceptance-by-Design, 2013). This is usually characterized by the degree to which the environment removes the barriers to use the technology. Usually, this is described by the degree as to which users are supported organisationally and technically in use of the technology (Venkatesh V., Morris, Davis, & Davis, 2003). So, if the user has full intention to use the technology (and thus accepts it), the facilitating conditions might still obstruct the actual use of the technology if they are, for example, out of service. Therefore, Facilitating Conditions influences the use directly, but not the intention.

These acceptance determinants have all been found to be significant factors of determining acceptance of technology. Therefore, it can be expected that they also play a role in acceptance of OpBI systems. It however still a question, how this acceptance is translated to stakeholders other than the end user.

### 2.2.3. Behavioural intention

Sheppard et al. describe that intention and behaviour are related in such a way, that behavioural intention has a positive influence on the usage of technology (Sheppard, Hartwick, & Warshaw, 1988). It in turn, is influenced by all acceptance determinants mentioned before, except facilitating conditions as facilitating conditions have a direct influence on use behaviour, as empirically proven by Morris and Venkatesh (2000).

### 2.2.4. Use behaviour

Use behaviour is the actual behaviour of the individuals confronted with the technology. In the UTAUT model, variance in use behaviour can be explained by up to 70% by behavioural intention and facilitating conditions (Venkatesh V., Morris, Davis, & Davis, 2003).

### 2.3. Organisational design

There are different ways to look at and think about organisations. In this research, I use the generally accepted structure as proposed by Mintzberg (Mintzberg, 1993). He suggests that every organisation has five parts, the technical core, the top management, the middle management, the technical support and the administrative support, as shown in Figure 3. These five parts vary in importance and size, depending on the structure and other characteristics of an organisation.

- **Technical Core** (or Operational core) – includes people that do the basic or production work in the organisation. They produce the primary outputs of the business process of an organisation.
- **Technical Support** (or Technostructure) – makes the organisation able to adapt to its environment. It creates innovations and helps the organisation change. It includes typical departments as research & development and marketing.
- **Administrative Support** (or Support staff) – makes that the organisation can work. It encompasses departments as HR and Finance. It enables smooth operation of the organisation.
2. Literature review

- **Top management** (or Strategic apex) – The strategy of the organisation as a whole is set out by top management. They provide vision, goals and policy.
- **Middle management** (or middle line) – Middle management is responsible for operationalizing and implementing the strategy which is set out by top management. They mediate between top management and the technical core.

A technology as Operational Business Intelligence has impact on multiple of these structural components of an organisation, which all have their own characteristics. It is thus relevant to look at acceptance of OpBI from several perspectives in this multi-actor setting.

![Figure 3: Mintzberg Model](image)

2.4. Acceptance of OpBI from three organisational perspectives

As described in the introduction, this research aims to come up with a framework that includes factors that determine acceptance of Operational Business Intelligence in organisations. Currently, there is limited literature on the effect of technology on organisational change, and limited research has been done into the actual acceptance of these technologies in different parts of the organisation.

Orlikowski (1992) suggests that early research that assumes technology is objective and has a deterministic impact on organisations is short sighted. Initial theory focuses purely on the ‘hardware’ side of technology, going as far as defining technology as “the substitution of equipment for human labor” (Blau, McHugh-Falbe, McKinley, & Phelps, 1976). While this definition is made broader by for example Thompson (1967), it still does not take into account any interaction between technology and its user (Orlikowski, 1992). In addition, Orlikowski states that later research that focusses on social aspects and strategy regarding technology, rather than a deterministic approach is valuable but incomplete (Orlikowski, 1992).

Orlikowski compares several models have been made in the past trying to describe technology adoption in organisations, most notably the “Technological Imperative Model” (Giddens, 1976), the “Strategic Choice Model” (Davis & Taylor, 1986) and the “Model of Technology-Triggered Structural Change” (Barley, 1990).
• Technological Imperative Model (TIM) – This model assumes that technology has a unidirectional and independent influence on humans and organisations (Giddens, 1976). While this does cover some of the determining factors of technology, it does not include the influences of humans acting upon technology, for example in developing or changing technology (Orlikowski, 1992).

• Strategic Choice Model – This model does overcome the main shortcoming of the TIM, as it does see technology as a product of continuous human action. In this model technology is not a given, instead it focusses on the way technology is influenced by its context and the involved decision makers (Child, 1972). It does however not take into account the (modifying) influence the end users have on technology as they use it (Mohrman & Lawler, 1984).

• Model of Technology-Triggered Structural Change – This model is focussed on the fact that the introduction of technology can change the relationship between humans and organisational structure (Barley, 1990). It argues that technology can trigger organisational change, but do so in an orderly way. By using technology as a trigger instead of a cause, not all details are captured though that are relevant in information technologies. Use can change over time, differ across users etcetera (Orlikowski, 1992).

Orlikowski tries to use the before mentioned advantages and disadvantages to create a new model that shows how technology is introduced in organisations. To accomplish this, the new model should in her opinion adhere to two important premises:

• The Duality of Technology, which means that is both constructed in a social context and in a structural context. It is not just about the hardware (or just about the people). It is the interplay between the two that defines how technology is adopted within an organisation.

• The Interpretive Flexibility of Technology, describes that due to the split between the developing side and using side of technology the flexibility of technology is interpreted differently across different parts of an organisation. While the developing side sees the technology as open en flexible, the less informed using side sees the technology as an inflexible ‘black box’. In addition, the rigidity of the technology also determines the capacity to users to lead their own discourse when using the technology (Mackay, 1988).

These premises are highly relevant for OpBI systems, as they are developed, used and managed from several different parts within organisations, which are placed at different levels. All of these stakeholders have their own idea of for example what transparency means in an OpBI context. Therefore this interpretive flexibility has the effect that all relevant perspectives of the relevant stakeholders need to be taken into account when looking at this kind of technologies.

To adhere to these premises, Orlikowski proposes a new “Structurational Model of Technology”, which has three important components:

• Human agents: Technology designers, users and decision makers.
• Technology: The artefact that (helps) executing tasks in the workplace.
• Institutional properties: The organisational structure, structural arrangements, strategy, culture, etcetera.
These three components are shown in the Structurational Model of Technology, as it is presented in Figure 4. It shows the components and their influences on each other. The human agents can be linked to three of the structural elements of organisations, as described by Mintzberg (1993). Technology designers fall within the technostructure, the users of OpBI are within the operating core and decision makers are at the level of the middle managers.

<table>
<thead>
<tr>
<th>ARROW</th>
<th>TYPE OF INFLUENCE</th>
<th>NATURE OF INFLUENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Technology as a Product of Human Action</td>
<td>Technology is an outcome of such human action as design, development, appropriation, and modification</td>
</tr>
<tr>
<td>b</td>
<td>Technology as a Medium of Human Action</td>
<td>Technology facilitates and constrains human action through the provision of interpretive schemes, facilities, and norms</td>
</tr>
<tr>
<td>c</td>
<td>Institutional Conditions of Interaction with Technology</td>
<td>Institutional Properties influence humans in their interaction with technology, for example, intentions, professional norms, state of the art in materials and knowledge, design standards, and available resources (time, money, skills)</td>
</tr>
<tr>
<td>d</td>
<td>Institutional Consequences of Interaction with Technology</td>
<td>Interaction with technology influences the institutional properties of an organization, through reinforcing or transforming structures of signification, domination, and legitimation</td>
</tr>
</tbody>
</table>

Figure 4: Structurational Model of Technology (Orlikowski, 1992)

This research by Orlikowski shows the importance of linking technology with the organisation it is placed in. It does however still assume that the technology is actually accepted and used by the intended users within the organisation. Therefore, combining these insights with how acceptance of a technology works will provide an even more complete picture of technology adoption at organisations. This also shows the significance of this theory. The fact that it does see the discrepancy between the interpretation of different parts of an organisation justifies the fact that all stakeholders can have a relevant and meaningful interpretation of what the technology should do or what a system should look like.
2.5. Knowledge Gaps

To conclude the preceding sections, in this chapter a literature study was done into three separate fields: (operational) business intelligence, organisational structures, and technology acceptance. When combining these to investigate the acceptance of operational business intelligence in different parts of an organisation, I conclude that the available literature does combine technology and organisations. However, there is a lack that it does not go into the fact that technology is not only to be implemented in an organisation, but it should also be accepted by this organisation. More specifically, I am of the opinion that this acceptance should be viewed from several perspectives within the organisation, as acceptance is subjective to the different parts of the organisation. In addition, the literature is generic in nature and does not adhere to situations that are specific to Operational Business Intelligence systems. I describe the knowledge gap that has been identified to be relevant for this research as:

*What are the factors that affect the acceptance of operational business intelligence systems within different parts of an organisation and how do these factors influence acceptance?*

In the following chapter, the research methodology and approach that I will apply to fill this knowledge gap will be presented.
METHODOLOGY
3. Research Methodology

In this chapter, the methodology of this research will be thoroughly explained. The motivation for this research will be explained in the first section, after which the choice to perform a case study will be explained. Section two will also explain the contents of this case study. The third section details the method that will be used to define the framework for OpBI acceptance. In the fourth section the research question and its sub questions are repeated and explained further, after which the further structure of the thesis will be presented in section five.

Based on the literature explored in Chapter 2, it has been found that the existing body of knowledge does explore the adoption of technology in organisation, but has some limitations as well. Neither acceptance of new technology in organisations nor the acceptance of Operational Business Intelligence has been researched thoroughly yet. The aim of this research is to fill this knowledge gap, while adhering to the following problem statement: There is little knowledge available on the factors that affect the acceptance of Operational Business Intelligence systems within different parts of an organisation.

3.1. Motivation for research

The main motivations for this research are two-fold, best described from an academic and a case study related perspective. From an academic perspective, the motivation for this research is to fill the knowledge gap as it has been defined in the previous chapter. This means, that this research will try to find factors that influence the acceptance of Operational Business Intelligence systems in organisations.

The case study, which I undertake at the financial institution ING in the Netherlands, provides the second motivation for this research. A specific part of this Dutch bank, the Personal Banking division, is undergoing organisational change, of which the introduction of a new system that features Operational Business Intelligence is part of. For ING it is important that they can successfully introduce this system and similar ones in the future, in such a way that they are accepted in the organisation, at different levels. In their opinion this is necessary to enable the new systems to have considerable impact. As stated in the introduction, it is important that acceptance is viewed from the several perspectives of the different parts of the organisation.

3.2. Explorative research approach

Given the fact that this research fields have not been combined extensively before, this research will have an exploratory nature (Baxter & Jack, 2008). The goal is to gather new insights in the factors that determine acceptance of Operational Business Intelligence at organisations, which is exploratory. More specifically, the research is mainly qualitative, since existing literature and a case study with interviews will be used. The fact that this research is mostly qualitative is unique as Operational Business Intelligence is a field that is almost fully data-driven, leading to a very quantitative mindset. As acceptance is a much more subjective norm, especially when looked at from multiple perspectives, qualitative research seems more appropriate. With the insights and factors, a framework will be set up that provides an overview of OpBI acceptance in organisations.
3. Research Methodology

3.2.1. Literature research
The literature review provides a thorough reflection of the current body of literature that is relevant to this research. For this research, three fields have been identified as being relevant. First, (Operational) Business Intelligence is explored for the technical background. Then, Technology Acceptance theories are used to discuss acceptance and as a third, Organisational Design literature will be used to define the multi-actor context this research is placed in.

3.2.2. Case study
When doing explorative research, using a case study is one of the suitable approaches (Baxter & Jack, 2008). It is suitable when a contemporary phenomenon is investigated in depth and in its real-life context. Furthermore, the boundaries between this phenomenon and its context should be unclear (Yin, 2009). This is the case for this research as both the subjectivity of acceptance as the underlying reasoning of the stakeholders is unclear, which justifies the use of a case study.

As mentioned in section 3.1., the case study will take place at ING. Within ING, a Lean Six Sigma group is tasked with performing process change and other organisational changes, to improve day-to-day business at the bank. One of the projects that are being undertaken at this moment, is the introduction of an improved way of working at the Personal Banking division. This division serves the more prosperous client base of the bank and is currently undergoing organisation changes. Part of these changes is the introduction of an Operational Business Intelligence system that helps bankers attract new clients by choosing the best possible leads from several Big Data sources in the organisation. The interest of ING is that the introduction of the OpBI system is accepted by all relevant stakeholders. To gather data, (semi) structured interviews will be held with stakeholders that are deemed relevant, before and a few weeks after the introduction of the OpBI system at ING. In between those interviews, the end users will be asked to perform self-reporting on their use of the OpBI system. From these interviews and the reported use, insights will be drawn that relate to the acceptance of the system at ING.

3.2.3. Framework design
Given the insights that the case study provides, factors that determine acceptance of OpBI will be defined. These factors will then be used to set up a framework, which includes the several stakeholders that are described in the research. It will show how the three identified structural parts within the Mintzberg model should interact to introduce an Operational Business Intelligence system in such a way, that acceptance of involved stakeholders is achieved. This framework will then be evaluated by a group of experts from both the TU Delft as ING.

3.3. Factors of acceptance
To determine acceptance of OpBI, the stakeholders for whom the acceptance of OpBI is relevant need to be identified. The existing theory by Orlikowski (1992) provides a starting point for this identification and suggests that three groups of stakeholders are involved in the introduction of a new technology at an organisation, which she identifies as: Technology designers, users and decision makers. To further specify these three groups, organisational theory will be used, for which theory by Mintzberg (1993) will be central, as mentioned in Chapter 2.
When looking at acceptance of change at an organisation, the typical behavioural characteristics of each structural part of an organisation can give an initial idea about the response that can be expected from those parts when faced with a new technology.

### 3.3.1. Organisational behaviour

In Figure 5 the Mintzberg model is shown, with the five organisational parts shown. Within any organisation, these five parts of the organisation, which are embedded in the plurality of departments of organisations, are constantly moving and defining their position. They all have the tendency to ‘pull’ the organisation in a specific direction, as that is favourable for their position or for the organisation from their point of view. Mintzberg (1993) defines several different pulling forces that each of the organisational parts exert.

- **Pull to Professionalise:** The Operational core wants to work as independent as possible and as such professionalise their way of working.
- **Pull to Standardise:** The Technostructure tries to plan the organisation as much as they can and will try to train the organisation to perform in a uniform way.
- **Pull to Collaborate:** Serving the organisation, the Support staff is in contact with every other aspect of the organisation and promotes their collaboration, both inwards and outwards.
- **Pull to Centralise:** The Top management has a wish to control the organisation and impose the strategy it wants to pursue on the organisation. It does this by keeping power to themselves.
- **Pull to Balkanise:** The Middle managers and their semi-independent departments have a tendency to protect their independence and create a certain rivalry with other departments. This is called balkanisation.

![Figure 5: Pressures working in the Mintzberg Model](http://www.lindsay-sherwin.co.uk/guide_managing_change/images/mintzberg_3b.png)
These structural pulls can be combined with the human agents that Orlikowski defines: Technology designers match with the technostructure, users (in case of Operational Business Intelligence) match with the operating core and decision makers relate to the middle line.

The technostructure is characterized by a preference towards standardisation (and centralisation in conjunction with top management). This has a large influence on the implementation of an Operational BI system; as these systems usually involve standardisation and are often set up centrally in an organisation. It therefore also has a great impact on its acceptance.

For the Middle management, it is important to look at the way the OpBI system is introduced in the several departments of the organisation, in this research that will be the case study at ING in the Netherlands. The Middle management has to move between the wishes of both the Technostructure as of the Operating Core.

The Operational core is made up from professional employees that have certain autonomy in performing their job. As they will be the end users of the OpBI system, their acceptance is crucial.

Balancing the organisational pulls

The organisational pulls that are described here act on the organisation. Theory suggests that organisations benefit from these pulls, as long as they are in some sort of balance. If one of the forces acts too strong compared to the others, it pulls the organisation out of this balanced state and the force itself becomes destructive for the organisation (Mintzberg, 1993). As organisations can benefit from stability, this should be ensured through balanced pulls of each of the organisational parts. This is also the case when these forces are related to the acceptance of OpBI at organisations, the pulls exerted by the organisational parts should be balanced to ensure acceptance.

3.3.2. Defining the factors of acceptance

As described before, a case study has been chosen as the method to research these three stakeholder groups. For each of the identified stakeholder groups, their corresponding organisational counterpart has to be found at ING. These stakeholders will then represent the three groups from theory by Orlikowski and Mintzberg. The insights from the interviews that will be held will then provide a basis to elaborate on factors of acceptance of OpBI and dilemmas that come into play when an OpBI system is introduced at an organisation.

3.3.3. Subjective nature of acceptance

In chapter 2, I elaborated on the fact that Orlikowski (1992) mentions the interpretative flexibility of technology. In my opinion, this has a significant influence on the acceptance of different parts of the organisation. More specifically: given certain OpBI system characteristics, acceptance may vary to a large extend between the different stakeholders, which all have a different perspective on the system. Therefore, this subjective nature of acceptance plays an important role in determining what influences this acceptance.
3.4. Research questions

Based on the problem statement, I formulate the following main question for this research:

*What factors determine the acceptance of Operational Business Intelligence in different parts of an organisation, given the subjective nature of acceptance?*

This question will be answered by decomposing it into several sub questions:

SQ1. What does current literature state about acceptance of OpBI in organisations?
SQ2. What factors can be identified that influence acceptance of OpBI at ING?
SQ3. What does a framework that describes acceptance of OpBI in organisations look like?

3.5. Research structure

The further structure of this research is shown in Figure 6. In the fourth chapter, the case study will be discussed in full, which includes the interviews that will be held with the relevant stakeholders. Then, in the fifth chapter, insights from the case study will be used to formulate the framework. After a review of this framework by an expert to validate the framework in chapter six, a reflection on the research will be presented in chapter seven. Discussion on practical use of the framework will be provided in chapter eight. Final conclusions and recommendations will be drawn in chapter nine.
4. Case study at ING

To help answer the research question posed in chapter 3, I conducted a case study. I performed this case study at financial institution ING in the Netherlands. The goal of this case study was to find factors that influence the acceptance of operational business intelligence, at different layers of the organisation, in practice. Literature suggests that a case study should be conducted when insights are to be gathered from a (set of) decision(s): why they were taken, how they were implemented and what the results of those decisions were (Yin, 2009). That is also the aim of this case study, as it is of interest what the reasons of Operational Business Intelligence systems use are, how it is used, and what the acceptance is thereof.

In the first section, the case study is detailed further. Then, in the second section, the design choices for the case study are made by linking it to the literature study. Thirdly, a brief exploration is done into the expected insights from the case study. The setup of the interviews is discussed in section four. In the fifth section the results of the interviews are discussed, after which the case study will be concluded in section six.

4.1. Describe case and environment

When setting up a case study, the main question to be asked is: what should be studied? According to Miles and Huberman (1994) this question has two aspects: the first is the unit of analysis. The second is whether multiple cases will be compared or the same case at different times. For this case study there is one unit of analysis: the acceptance of operational business intelligence (at different levels of the organisation) and the same case will be compared at different times, namely before and after the introduction of the OpBI system. Of the three types of case study Yin (2009) defines, Explanatory, Exploratory and Descriptive, the approach of this case study is exploratory, as there is no clear outcome of the case study yet. This type of case study is in line with the overall research approach, which is exploratory as well. In short, the type of research that I will perform is a holistic single case study of an exploratory nature.

This holistic exploratory single case study is conducted at the Personal Banking division of ING. The position of this division within ING is shown in Figure 7. The Personal Banking division services clients with at least €xxx of capital, whom they advise about saving and investing this capital. In this environment, personal bankers work in geographically divided regions of the Netherlands, each with their own Region Director, which are in turn managed by the Personal Banking Director. To extend their portfolio of clients, they have several opportunities, one of which is calling prospects to invite them for an introductory meeting. A new Operational Business Intelligence system is introduced for these personal bankers, which will deliver them lists of prospects that are identified as being promising.
What can be seen in Figure 7 as well, is that I selected two out of **Personal Banking** regions. I made this selection by taking into account the differences between these regions, available time for this research and willingness to participate of the involved regions. The Amsterdam region services the greater urban area of Amsterdam; the ‘East’ region covers a large part of the east of the Netherlands, stretching from Apeldoorn to Enschede. The ‘East’ region is thus a relatively rural region.

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**Figure 7: Simplified organisational chart, orange parts are involved in the case study**

The new OpBI system should allow personal bankers to get in to contact with more new clients, but it also changes the way they work now. Currently **x**. During the case study I want to learn whether this new technology is accepted within ING and what influences this acceptance.

### 4.2. Positioning the case study

As discussed in the section 2.4, Orlikowski provides a framework that links technology to the organisation it is placed in. This model does not include acceptance of this technology, but it does give valuable insight. It does for example list the stakeholders that are deemed most important when placing technology in an organisation, which are defined as the ‘human agents’. According to Orlikowski (1992) the human agents are composed of the technology designers, end users, and decision makers. These human agents are linked to the organisational structure elements of Mintzberg (1993) and stakeholders in the case study in the following way:

---

*Source: ING Intranet*
• **Technology Designers – Technostructure – Scrumteam Customer Intelligence (CI)**
  As described in paragraph 3.3.1, the technology designers are linked to the technostructure. In the case study, this matches best with the Scrumteam Customer Intelligence (CI). This department develops the lists of prospects to be used by the Personal Banking bankers.

• **End users – Operating core – Personal Banking bankers**
  The personal bankers of the Personal Banking division represent the operating core. These are the end users of the OpBI system: the lists of prospects.

• **Decision makers – Middle management – Region Director / Personal Banking Director**
  The way the personal bankers make use of the OpBI system is largely determined by the way the region directors manages them. In turn, the Personal Banking Director influences them. This means that they are the decision makers for this technology and in the Mintzberg model they form the Middle management.

The positioning of the stakeholders is also shown in Figure 8. This figure also shows that the Strategic Apex and Support Staff are excluded in this case study. The main reason for this is that the Structurational Model of Technology by Orlikowski (1992) does not include them. In addition, the time available for this research and the position of the case study did not allow or call for inclusion of these parts of the organisation.

To increase the readability and ease understanding of the case study, I will for now on refer to the stakeholder groups mentioned above using the categorization used by Mintzberg. So, I will use the terms Technostructure, Operational core and Middle management where possible.

![Figure 8: Positioning of case study stakeholders in the Mintzberg model](image-url)
4.3. Propositions

To assure that the case study results will be as useful as possible, Yin suggests that propositions are used (Yin, 2009). By using propositions and following up on those during the case study, there is a higher chance relevant information will not be missed. Therefore, I will use propositions for this case study. These propositions are grounded in the literature presented before and help to fill the identified knowledge gap. The propositions are categorized in line with the involved research fields.

Operational Business Intelligence

Rouse (2010) states that the timeliness of data is important, as having relevant data is important in an operational context. Furthermore, for OpBI to be successful, literature states that both the integration between technological systems itself and the integration between the systems and the actual process should be developed and mature (Melchert, Winter, & Klesse, 2004). As there is limited literature that combines OpBI with acceptance, I assume that an OpBI system that complies with these notions has a higher acceptance than a system that does not comply. In short, this means the OpBI literature provides three propositions:

1. An OpBI system that is transparent positively influences the acceptance.
2. An OpBI system that is timely positively influences the acceptance.
3. When the OpBI system is integrated with other systems and the business process, this positively influences the acceptance.

Technology Acceptance

Research by Venkatesh (2003) in the UTAUT model and the numerous models it (in)directly consists or provides a large body of knowledge on acceptance of technology. This also means that it provides a number of propositions for acceptance, which are already embedded in UTAUT. The model is relevant, as it splits the intention to use from the actual use. This is also fits with the theory of interpretive flexibility, as different (perceptions of) intention creates different actual use. The direct determinants of use behaviour mentioned in UTAUT can be used to define propositions of acceptance. I will not use the (in)direct determinants that determine behavioural intention as propositions because they are measured through behavioural intention. These indirect determinants include the performance expectancy (what will they achieve by using the system), the effort expectancy (what do they have to do when using the system) and social influence (what do their colleagues/managers think about using the system).

4. When a user has the intention to use the OpBI system, it positively influences the acceptance.
5. When facilitating conditions are available, it positively influences the acceptance of the OpBI system.

Organisational Design

Given the pulling forces the structural parts of an organisation exert, behavioural style of each of the involved stakeholders can be predicted, as described in paragraph 3.3.1 (Mintzberg, 1993). As each of the three involved stakeholders exert their own forces, I have defined a separate proposition for each of the stakeholders. I assume that the stakeholders will accept an OpBI system, as long as it fits
with their pulling force. It is however also in the best interest of the organisation as a whole that the organisational pulls are balanced. Therefore, the propositions are defined as ‘having the ability’, which also means that they should not ‘over-pull’.

6. When the Technostructure has the ability to standardise with the OpBI system, it positively influences the acceptance.
7. When the Operational core has the ability to professionalise with the OpBI system, it positively influences the acceptance.
8. When the Middle management has the ability to balkanise with the OpBI system, it positively influences the acceptance.

With the eight mentioned propositions presented in Table 2, I expect to get valuable insights from the case study that will help in determining and understanding factors that influence acceptance of OpBI in organisations. To answer these propositions I will conduct interviews, which will be discussed further in the next paragraph.

Table 2: Case study propositions

<table>
<thead>
<tr>
<th>Operational Business Intelligence</th>
<th>Technology Acceptance</th>
<th>Organisational Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An OpBI system that is <strong>transparent</strong> positively influences the acceptance.</td>
<td>4. When a user has the <strong>intention</strong> to use the OpBI system, it positively influences the acceptance.</td>
<td>6. When the Technostructure has the ability to <strong>standardise</strong> with the OpBI system, it positively influences the acceptance.</td>
</tr>
<tr>
<td>2. An OpBI system that is <strong>timely</strong> positively influences the acceptance.</td>
<td>5. When facilitating <strong>conditions</strong> are available, it positively influences the acceptance of the OpBI system.</td>
<td>7. When the Operational core has the ability to <strong>professionalise</strong> with the OpBI system, it positively influences the acceptance.</td>
</tr>
<tr>
<td>3. When the OpBI system is <strong>integrated</strong> with other systems and the business process, this positively influences the acceptance.</td>
<td>8. When the Middle management has the ability to <strong>balkanise</strong> with the OpBI system, it positively influences the acceptance.</td>
<td></td>
</tr>
</tbody>
</table>

4.3.1. Propositions in the organisational context

The propositions describe both actions and forces that are expected to have an influence on the acceptance of OpBI systems in organisations. I assume that these actions and forces are exerted by and have an effect on the three mentioned organisational parts, as they fit with the description of Orlikowski (1992) of technology adoption. However, it is not clear which of these actions and forces are actually in place and what effect they have. This is displayed in Figure 9.
4. Case study at ING

4.4. Interview setup

All relevant aspects of the interview setup are discussed in this section. First I will elaborate on the choice of using the method of interviewing. Then, in the second paragraph the involved stakeholders are described, after which the contents of the interviews are discussed.

4.4.1. Interview reasoning

As acceptance is central in this research, the research setup that has been used before in many other acceptance studies will be reviewed and adopted, to fit with this case study. Most studies are questionnaire bases studies, which are conducted several times during the study (Venkatesh & Morris, 2000). For this case study, which has an explorative character, using a fixed questionnaire might result in missing insights, as it is difficult to determine what the right questions are. Furthermore, questionnaires are not very feasible, as there are a limited number of people involved in this research (Bartlett, Kortrik, & Higgins, 2001). Therefore, I chose to conduct interviews. This will result in qualitative rather than quantitative data, of which the goal is also to get more detailed data than would have been possible using questionnaires. This fits with the explorative nature of the case study. There will be multiple interviews per person. To make these interviews more substantial, I will ask all users to self-report on their use of the system in a strict format, combined with close monitoring, to gather quantitative data on OpBI usage as well.

4.4.2. Interviewees

As described, I will involve all relevant stakeholders identified in previous chapters in the interviews and interview all of these stakeholders twice. As the case study will be conducted in conjunction with two regions of Personal Banking, six personal bankers (operational core) of each of these...
regions are interviewed, which makes a total of twelve interviewees. For the middle line, I will interview the two regional directors and the Personal Banking director. Thirdly, for the technostructure, the manager of the scrumteam customer intelligence will be interviewed. All in all, I will interview 16 interviewees twice, resulting in 32 interviews.

4.4.3. Interview format and contents
To determine the intention of use and compare that with the acceptance and actual use of the system the involved stakeholders will be interviewed two times. One interview before the introduction of the OpBI system, the second one will be conducted after a period of four weeks of use of the system. This fits with the available time for the case study. All interviews will be done by me and will take approximately half an hour each. For each of the interviews a structure will be set up, which I will adhere to as much as possible during the interview, to give it a semi-structured character. I will compose six different types of interviews. Two for each of the stakeholder groups, as I will interview each of them twice. The interviews will be as similar as possible, to make comparison of the groups easier.

In all interviews, the structure of the interview is as follows. I will explain the context of the research first, describing what the interviewee can expect from this interview. The interviews itself are then divided in about four categories, with an introducing question. These categories are explicitly not the same as the propositions, as I want to combine questions and themes that are relevant and logical to the interviewee, not those that are related in this research. After a first response of the interviewee, I will decide which residual questions are relevant. These residual questions can be relevant if the interviewee did not include them in their answers already or if they did not substantiate their answer sufficiently. By using this strategy, I can make a differentiation between what the interview sees as most important. Everything the interviewees tell me without extra guidance or questions I see as being of greater importance and relevance than the details I will gather from them when asking further questions. A visual interpretation of the interview structure is presented in Figure 10, the full interview structure can be found in Appendix A.
Context

The context in which I will place the interview, is first and foremost the project in which I am conducting my research, as the interviewees are familiar to that. This project is about the time management of the personal bankers, as the goals is to have them have more appointments each week. One of the ways to get more appointments in their agenda is by calling prospects. These prospects can be retrieved with a new OpBI system, which is what the interview is about. In addition, I will mention my graduation research, to ensure the interviewees their responses are not related to their job performance and answers will be fully anonymized.

Question categories

The fact that the selection process moves from the operational core to the technostructure is the first category of questions. In this category, the opinion of the interviewee is asked about the fact that the personal bankers can no longer decide by themselves which potential clients he or she approaches. In the new situation, they have to call the prospects the OpBI system identifies, based on information available at the head office. This thus does not include local insights of the banker. In addition, with this question I try to get their opinion about the pulling forces (standardisation versus professionalization) of the involved organisational parts.

The requirements of the actual OpBI system are the theme of the second category of questions. For this question, I am interested in both the opinion of interviewees as compared to both the OpBI propositions as the technology acceptance propositions. Therefore, this is a larger category of
questions than the previous one, as it involves several sub questions regarding for example transparency, integration and facilitating conditions.

In the third category, I will ask the interviewees about the management of the personal bankers (operational core). These questions relate mostly to the propositions regarding organisational design, but are also about technology acceptance, as voluntariness is one of the indirect moderators thereof. In this category, I will also ask whether actually using this system should be part of the work of the operational core.

The fourth and last category has a free character. It is meant to round off the interview and give the interviewee the opportunity to add any notion they have not said before. To encourage this, I ask them what should be done in their opinion to get the new OpBI system to be accepted/used. So, this open category allows them to say anything that did not fit in the previous categories. I will use this in the propositions as much as possible.

4.4.4. Interviews and self-reporting on usage
As with other acceptance research, I decided to undertake more than one interview per interviewee. I conducted one interview before the start of a four week period of use and performed another after those four weeks of use. In the first, the main goals was to get an idea of the intention of all interviewees, the second to discuss the actual use (and thus acceptance) with them. To make the evaluation interviews more fact-based, I decided to introduce self-reporting of usage for the interviewees that would be using the system. I will use these reports in both the interviews with them, as well as with their managers and with the technostructure. The timeline associated with the interviews is shown in Figure 11. The details on what was included in the self-reporting on usage is described in Appendix B.

Self-reporting validity and Cognitive dissonance

The self-reporting format was strict and had live feedback, which made close monitoring possible. This should reduce the disadvantages of using self-reporting as a method of data gathering (Fixen, Philips, & Wolf, 1972). The reliability and validity of the self-reported use is thus expected to be high, as ‘cheating’ the system is difficult.

Cognitive dissonance has also been identified as a possible threat of good interview results. Cognitive dissonance means that the actions of an individual contradict their opinion or belief (Festinger, 1957). For example: an interviewee might state that he will use the OpBI system a lot, but ends up not using it at all. By having quantitative data as well though, I will be able to confront interviewees with a possible disconnect between their opinion and their actual use. The strict format and close monitoring will help in reducing the cognitive dissonance of this research as it will force the interviewees to either justify their behaviour or change the conflicted cognition.
Intake and evaluation interviews

The differences between the before and after interview are small, as I want to measure the intention again. In between the interviews, I will provide the bankers with a tool to perform self-reporting on their use of the OpBI system. The after interview is also predicted to last about half an hour. In this interview I will confront the users with their actual use of the system (from their own reports), my observations and compare that with their intentions gathered during the first interviews. Due to the limited time available for this research, there will be only four weeks between the first and the second interview. Compared to similar acceptance research this is short, I think the time needed to get used to this way of working is limited. The bankers have experience with similar systems and do already call their clients and some prospects. In addition, I will closely monitor the use during these four weeks. Therefore, I believe that the results of the four weeks of use can be compared with further use after this period. Furthermore, I will try to put an emphasis on the dilemmas they experienced when (not) using the system.

4.5. Intake interviews

A total of 16 interviews were conducted, with 16 individuals. This first wave of interviews took place a week before the introduction of the OpBI system on the 12th of January 2014. With the intake interviews I wanted to get a sense of the intention of the interviewees to accept the OpBI system. To analyse the interviews I will look at each of the stakeholder groups individually.

When extracting the insights from the interviews, I will adhere to the three theoretical domains of this research rather than the categorization presented in Figure 10. This makes it easier to couple relevant statements that belong to one of the specific theory fields. In addition, that will enable me to discuss all propositions clearly and coherently. In paragraph 4.5.1 I will discuss the interviews with the bankers. The interviews with managers are handled in paragraph 4.5.2. The third group, the Scrumteam CI, is looked at in paragraph 4.5.3. The full results are presented in Appendix C.

4.5.1. Bankers (Operational Core)

During the case study twelve bankers were interviewed. For the analysis of the interviews I will look at the propositions one by one first, after which I will draw a general summarization for the group.
Operational Business Intelligence

Proposition 1 – Transparency: Before the use of the OpBI system started, most of the bankers were of the opinion that transparency of the system was necessary or even critical for them to be able to use it effectively. “This is crucial for me to trust the system.” To them, knowing how and why the system selected the prospects was important for them to do their work, for two main reasons. The first, knowing how the system selected prospects helped them in trusting the system, secondly, this transparency provided them with insights necessary to effectively approach a prospective client.

Proposition 2 – Timeliness: I asked the bankers about their opinion towards the importance of timeliness when using the system. In their responses, I noticed that their opinion was shaped by a similar but different way of working that was in place before. So, some of them responded with phrases like: “I would like the system to be able to process a list in days,” Furthermore, they said that timeliness was of the essence, as that list was relevant at that time specifically, not months from then.

Proposition 3 – Integration: To make use of the system efficient, the bankers suggested that the OpBI system should show all relevant contextual information that was available of the prospect they would call. Not all shared this opinion though; some.

Technology Acceptance

Proposition 4 – Intention: UTAUT defines that intention is composed by the performance expectancy, effort expectancy and social influence. Bankers mentioned that they expected a low effort associated with using the system, but that their continuous use of it was very much depended on the performance of the system: Furthermore, being free to choose when to use the system was also important. It was however also apparent that about half of the bankers did not see using the system as something that was part of their job. “Some of this work should be done by the call center”.

Proposition 5 – Conditions: Literature states that is important that the performance and availability of the system itself is important to ensure acceptance. The interviewees underpinned this, by stating, “The system should be available when I want to use it”. Before the start of the four-week period of use, we made sure that the systems conditions were as favourable as possible. We removed some barriers to use and introduced a management information source (the self-reported use) to improve the conditions.

Organisational Design

As the bankers belong to the Operational core, of the three propositions regarding organisational design professionalization (proposition 7) I think is most interesting for them. I did however try to distil their opinion about the other pulling forces from the interviews as well.
Proposition 6 – Standardisation: As the OpBI system is managed by the Scrum team CI, which is part of the technostructure, using this system is a form of standardisation. The bankers did not object in particular with this, as they acknowledged that the head office has more information available about these prospects in the central systems and is likely able to make better selections of prospects within the client database of ING. “It’s much more time consuming if I have to do this by myself.”

Proposition 7 – Professionalization: Literature by Mintzberg (1993) suggests that the operational core has a tendency to professionalize, which means they want to make their own decisions on the what, how and when of their work. As mentioned in Proposition 4, not all bankers see using the system or even the task of calling prospects in itself as part of their work. In addition, all of them state it is important to them to decide themselves when they use it. Most of them state that they want to be judged on effort (hours used) some others want to be judged on outcome (clients reached or appointments made). This is in contrast to professionalization, which would implicate that you would want to be judged on your output. Bankers seemed to find that difficult in this case, as they expected to have little control over the output (the list of prospects). “How can I decide how to be judged, if I don’t know how well I can perform?” In their opinion their output is fully dependent on the list of prospects the OpBI system produces for them.

Proposition 8 – Balkanization: For the bankers, balkanization of their managers is not something they have a lot to do with. As will be described later on in more detail, the middle managers do have the wish to have more control over the OpBI system.

4.5.2. Personal Banking (region) directors (Middle management)
The twelve bankers that were interviewed work in two different regions in the Netherlands, Amsterdam and ‘East’. Both of these regions have a region director, both of which I interviewed. In addition, I interviewed the manager of these directors: the Personal Banking director, who is responsible for the Personal Banking formula as a whole. For the analysis of the intake interviews I will look at the propositions one by one.

Operational Business Intelligence

Proposition 1 – Transparency: Like the bankers, their managers shared the opinion that transparency of how the OpBI system works and selects the prospects is important to effectively use it. Apart from that I noticed that the managers are also very much interested in being able to see what their bankers actually did with the information provided by the OpBI system. In other words: they want management information about the use of the system. This means that in this case the OpBI system needs another layer, a management layer, to be used to report on performance and usage of the system. "As a manager, I need to be able to see the performance of my bankers.”

Proposition 2 – Timeliness: The managers had a similar opinion as the bankers, underlining the importance of timely information and provisioning of that information. It was also an incentive for them to suggest that the system should be in their own management, or that the bankers could at least fully control the provisioning and selection of prospects themselves. They expected that would make them less reliant on the Scrum team CI (technostructure).
**Proposition 3 – Integration:** As the current implementation of the OpBI system makes it necessary for several departments to cooperate, the managers see the need to give the Scrum team regular feedback about the performance of the OpBI system. Furthermore, they stress the need to integrate the OpBI system with systems that the bankers use.

**Technology Acceptance**

**Proposition 4 – Intention:** As the managers are not the users themselves, it is in their best interest to make sure that their bankers are inclined to use the system. Therefore, they have to create the intention, especially because some of the bankers stated that using this system was not something they thought of as being part of their work. The managers stated that in their opinion, it is important to manage their bankers in such a way that there is a higher intention to use the system. This is largely in line with the opinion of the bankers who say that if there is no pressure that forces them to use the system, they are less likely to do it, simply because they have other priorities as well. So, the managers are of the opinion that they should either create more intention to use, by showing the value of use for example, or that they should make using the OpBI system obligatory.

**Proposition 5 – Conditions:** The managers expected it to be a problem that they don’t have a lot of influence on the OpBI system itself, which causes that they have little control over the facilitating conditions that enable or disable use of the system by the bankers.

**Organisational Design**

For the Personal Banking directors, who are part of Middle management, I will focus on proposition 7, professionalization. The others are less relevant given the pulling force exerted by middle management, but will be handled briefly as well.

**Proposition 6 – Standardisation:** For the managers, I noticed general agreement on the fact that prospects provided from a central part of ING is a valuable. The see that approaching prospects fits within their goals and the targets of their bankers. They do however note that the quality of the information delivered by the OpBI system should be high for them to justify the commitment. This matches somewhat with the bankers’ opinion that calling prospects is not (always) part of their job. “If our people are going to put a lot of time in using this system, we must know that the output will be worthwhile.”

**Proposition 7 – Professionalization:** As managers want to keep a certain level of control over their operating core, which are in this case the bankers, professionalization is not always wanted. The managers did however mention that they encourage ‘entrepreneurship’, but more in the sense that they should not wait for instructions, but just act in the way they think is most valuable. “It is the responsibility of the bankers to find new clients. Using the OpBI system is one of the best options to do so.” The directors aim to steer the bankers along this way, instead of continuously putting them to work. However, they did note that especially for tasks that are passed to the side easily, such as the use of this OpBI system, a more rigorous management is necessary to ensure use.

**Proposition 8 – Balkanization:** For the managers of Personal Banking becoming more independent of others is difficult, especially in an organisation like ING. I did clearly see however that the directors of Personal Banking anticipated upon some balkanizing behaviour. Due to the organisational
complexity, it is sought after in specific segments though. For example, all managers mention that the marketing department currently manages the OpBI system. This makes communication and cooperation difficult, as the objectives of marketing are not always in line with sales. Therefore, creating an application over which they have more control, but provides roughly the same functionality is of their interest. “In a perfect world, a system like the OpBI system can be fully controlled by the bankers themselves.” This would mean they would be less dependent on the Scrum Team CI for retrieving information. The balkanisation thus expresses itself by the fact that they have a wish to detach themselves from the technostructure.

4.5.3. Scrum team Customer Intelligence (Technostructure)
The OpBI system itself is managed by the Scrum team Customer Intelligence and is part of the Marketing division of the Domestic Private bank of ING. As they manage the system for the bank as a whole, I classify them as part of the Technostructure, as I have described before. The actual team is small and I managed to interview one of the team members as part of my research.

Operational Business Intelligence

Proposition 1 – Transparency: The scrum team does understand that transparency is important for the users of the system, but it is not always possible to provide that information.

Proposition 2 – Timeliness: As stated in the previous paragraphs, I found that the OpBI system actually requires some manual work to be conducted by the Scrum team to make it function. This is necessary because not all systems are fully integrated.

Proposition 3 – Integration: Like the managers, the Scrum team CI is not the end user of the OpBI system, but has an influence on the intention of use of the bankers. As stated before, the main reason intention of the bankers is hampered is because of a lack of timeliness and a lack alignment with their job. The bankers were not all of the opinion it was part of their daily tasks, of which the Scrum team CI has little influence. On the other hand, they do have some control regarding the timeliness of the system, which can help increase the intention of bankers. In addition, by
communicating better with the organisation, they can prevent that bankers have expectations of the system that far exceed its capabilities. However, they currently do not see the importance of this, as they state: “Bankers do not have to use the system; they can take it or leave it.”

**Proposition 5 – Conditions:** As with the intention, the conditions of use are influenced by the facilities that are provided by the Scrum Team. The facilitating conditions limit the use currently in such a way that the bankers state that they would not use the system any more if they would have to wait for a couple of weeks before they can start.

**Organisational Designs**

Standardisation is the main pulling force of the technostructure. This is captured in proposition 6, which I will therefore discuss most extensively for the Scrum Team Customer Intelligence. For the other two pulling forces, I will focus mainly on the effect they have on the technostructure.

**Proposition 6 – Standardisation:** The OpBI system itself is a prime example of standardisation as it is fully controlled and managed from the Scrum Team Customer Intelligence, which is located at the head quarter of ING. This position is enforced by the fact that bankers cannot use the system on their own, but are dependent on some work done by the Scrum Team. This gives them to allocate their resources in such a way that they prioritize to their own needs and other parties, which have already shown to be in conflict with the requirements of the sales force.

The fact that the Scrum Team can largely decide which prospects they deliver to the bankers only adds to this tendency of standardisation. My interviewee was even of the opinion that the bankers are not as able to define what they actually want from the system as the scrum team is. They are of the opinion that they are the most capable party to set the strategy. "We set and act on the prospect strategy for ING as a whole."

**Proposition 7 – Professionalization:** Independence of the bankers is limited by the OpBI system, as they can no longer choose which prospects to call and can no longer decide when they want to have access to them. For both they are dependent on the Scrum Team CI. They can however employ their own skills and ideas in approaching the prospects, as the system does not enforce a calling script or strict calling time windows.

**Proposition 8 – Balkanization:** The Scrum team CI provides the OpBI system to several departments within ING, not just to Personal Banking. This is also a reason that the managers of Personal Banking have limited influence on the way the OpBI provides information to their bankers. This interdependence hampers balkanization of the managers.

**4.6. Self-reporting on usage**

During the four week period of use, we asked the bankers to call prospects for about four hours a week with aid of the OpBI system. To monitor their usage, all bankers were provided with an Excel tool that automatically reported to us. In this tool, they could register their use of the system and the results thereof. The format of this reporting tool is added in Appendix B. In addition, the usage was discussed in weekly conference calls of 20 minutes in which both the bankers and their managers attended.
When looking at the reports and during the conference calls it was apparent that not all bankers were using the system and calling prospects. This had several reasons. The main reason was, that because most bankers saw the system and the associated calling as an ‘extra’ activity, not their main job. This lead to the fact that bankers that already had a lot of appointments in their agenda, did not call prospects as they did not feel they urge and did not have the time to do so. In addition, the bankers claimed that because they were free in choosing when to call and had to schedule that time flexibly, they ended up not doing it at all, as there was “always some other excuse to leave it to the side”. This was addressed during from the end of the second week onwards, as bankers were told to schedule their calling time in their agenda, to make sure it would actually happen.

It was also apparent to me that different management styles of the region directors had an effect on the bankers. As a result of a The fact that the self-reporting delivered live reports was very useful in the feedback sessions. I also used the reports in the evaluation interviews. The full results of the self-reporting including details on use, can be found in Appendix D.

4.7. Evaluation interviews

In the evaluation interviews I combined the insights gathered from the intake interviews and combined those with the self-reported actual use of the OpBI system. With these two sources I confronted the interviewees again and asked them whether any of their statements and opinions had changed due to what had happened in the preceding weeks. As with the intake interviews, I will handle them per stakeholder group; first the bankers, then their managers and finally the Scrum Team CI. The results are presented along with the intake interviews in Appendix C.

4.7.1. Bankers (Operational Core)

During the case study twelve bankers were interviewed. For the analysis of the interviews I will look at the propositions one by one first, after which I will draw a general summarization for the group.

Operational Business Intelligence

Proposition 1 – Transparency:

[Text continues with detailed analysis of the proposition for bankers.]

[Detailed analysis for the remaining propositions follows in a similar manner.]
Proposition 2 – Timeliness: In this period, the bankers were provided on time with enough prospects for their activities, which was valued. So, to guarantee continuous use in the future, the performance of the OpBI system (and Scrum Team CI) should be such that demand of the bankers is fulfilled fast enough.

Proposition 3 – Integration: The bankers experienced that integration of the OpBI system with existing systems was very limited. This impacted their use and overall experience in a negative way, as they felt that a lot of extra manual tasks were necessary to explore all available information about the prospects. “It just takes so much time before you can actually start calling.”

Technology Acceptance

Proposition 4 – Intention: During the intake many bankers explained that they had little intention to use the system as they did not perceive it as part of their regular job. In addition, the performance of the system stayed behind on their expectations as the OpBI did not identify valuable prospects well enough in their view. These negative impacts of use intention were counteracted with a stricter management style; the bankers were expected to use the system for four hours each week. This however did not happen in the end.

Proposition 5 – Conditions: During the four weeks of use, the system worked without problems, which means this did not limit the bankers. However the problems mentioned before regarding transparency and integration are still relevant. This did not obstruct usage for the bankers, but did seem to have a negative impact on use.

Organisational Design

Like with the intake interviews, I will focus on the most relevant organisational pulling force, which is Professionalization. I will examine the others briefly as well.

Proposition 6 – Standardisation: The main influence of the standardisation is that bankers have less influence on who they contact as prospective clients.

Proposition 7 – Professionalization: Almost all of the bankers expressed that they had ideas on how the selection of prospects should be enhanced to make them more valuable for the bankers. “I would like the list to contain great-share-holders.” This shows a certain involvement and professionalization, as they want more control over their job. Furthermore, some bankers decided to use the system very little or not at all, as they themselves did not see using it was part of their job. Finally, the bankers expressed that it was very important to them to be able themselves to decide when to use it. All of these examples of behaviour show that professionalization is definitely a pulling force that is active. It shows that the managers to find ways to intervene in the behaviour of the bankers, to make sure that the OpBI system is used as much as they want to. In this cases they needed to put down a more strict style of management. As this was applied from the end of the second week onward, changes in use were indeed visible.
Proposition 8 – Balkanization: Although the managers have a wish to balkanize, the effects thereof are limited and thus not very noticeable for the bankers.

4.7.2. Personal Banking (region) directors (Middle management)
The evaluation interviews with the managers were conducted after the four weeks of use. During these four weeks, we had weekly conference with the bankers to discuss the usage of the system.

Operational Business Intelligence

Proposition 1 – Transparency: Transparency of the OpBI system had a very different meaning for the managers. For them it was very important to be able to see the productivity in both effort and results of each of the bankers. Thus, on top of the Operational Business Intelligence system, they wanted a reporting layer, that showed the use of the system. During the four week period, this information was collected manually, but did provide very important insights for the managers to be able to steer their bankers. “Thanks to the almost-live reporting, we could steer our bankers effectively”

Proposition 2 – Timeliness: Like the bankers, the managers understood the need of timely information. Prospect lists should be available right when they are needed. The Personal Banking director did agree with the marketing department about this issue and a solution for this problem was found. Bankers are now allowed to hold on to the lists longer (they don’t expire as quickly as was the case with previous, comparable lists). This does however introduce the problem that the provided information might be outdated.

Proposition 3 – Integration: The managers did understand the need of the bankers for the systems to be integrated better as they need to work efficiently. For the managers themselves, the management layer they want, did not necessarily need to be integrated with other systems immediately, as long as it provides them with the information they need to effectively manages the bankers. They did mention though, that for higher use (or acceptance) the integration would be both useful and necessary.

Technology Acceptance

Proposition 4 – Intention: The four weeks of use showed that the intention to use for the bankers was limited for some of them. “I’m disappointed by the usage of some of the bankers.” This made it necessary for the managers to act on this, to monitor the use more closely and try to adjust the behaviour of the bankers during the four weeks.

Proposition 5 – Conditions: As described before, the system did not show any problems during the four weeks of use and the management insights that were provided also functioned well and positively regarded as being of added value.

Organisational Design

During the evaluation interviews I thoroughly examined (the need for) balkanisation of the managers, which is the organisational pull described in proposition 8. The others will be discussed briefly as well.

Proposition 6 – Standardisation: The fact that the OpBI system is fully under management by the Scrum Team CI, has the effect that the managers feel that they have little to no control over the
performance of this system. They see that as a problem, as they can both not control the priority
their of requests, nor can they control what the output will be like. “I do not feel like I have any control
over the Scrum Team CI or the OpBI system.”

Proposition 7 – Professionalization: As the bankers do not all feel the need to use the system, the
managers need to force them more to use it. This means the bankers are limited in their
professionalization by their managers.

Proposition 8 – Balkanization: As we have seen, the managers are very dependent on the Scrum
Team CI. Their hang for balkanization is shown in the way that in their opinion, they should have
more control over the system and that in a ‘dream situation’ the system would be fully under their
management. In addition, they would like it if the bankers can use the system on their own, without
being dependent on the Scrum Team CI.

4.7.3. Scrum team Customer Intelligence (Technostructure)
The Scrum Team CI was also interviewed after the four weeks the OpBI system was used by the
bankers. Also for them, the propositions will be evaluated one by one.

Operational Business Intelligence

Proposition 1 – Transparency: The Scrum Team expressed like in the intake interview, that more
transparency is not always possible. In addition, it is of their opinion, that from a certain point, the
transparency should be reached by extra research done by the bankers themselves and should no
longer all be provided by central systems,

Proposition 2 – Timeliness: Also for the Timeliness, their opinion did not change much. To the fact
that the bankers wanted faster output and more influence into the results they said not much
can be changed and that in their opinion they can decide what is right better than the bankers themselves.

Proposition 3 – Integration: The OpBI system is currently indeed not integrated very well with other
systems on the user side.

Technology Acceptance

Proposition 4 – Intention: The Scrum Team CI is of the opinion that if the system is not used enough,
the managers should enforce this more strictly with their bankers. This is also done in other
departments. The question is however whether these departments can be compared that easily, as
those are staffed with lower-educated personal and have highly standardized work. In addition, the
Scrum Team is of the opinion that the bankers expect too much of the system, so they agree that a
large investment needs to be done into communication: telling the organisation what they are and
are not capable of. “I wonder who told them we would be capable of so much we actually can not.”

Proposition 5 – Conditions: The OpBI system did not have any malfunctions in the four week period
that I measured. Therefore this did not have a negative influence. In addition, CI is of the opinion
that using the OpBI system has a certain ‘take it or leave it’ mentality to it. If They are however of the opinion that a banker should regard using the OpBI system to call prospects as a part of its job.

Organisational Design

The Scrum Team CI manages the OpBI system for several departments within ING. Therefore, their role relates closely to what Mintzberg describes as the technostructure. Their primary pulling forces should thus be standardisation.

**Proposition 6 – Standardisation:** Standardisation is definitely something the Scrum Team CI tries to achieve, they provide uniform prospect lists to different parts of the organisation.

**Proposition 7 – Professionalization:** Independence of the bankers is not stimulated by the model the Scrum Team chooses. By putting an ‘expiration date’ on the prospects, giving them little motivation on the reason of selection and by not allowing input from the operational core, the professionalization of the bankers is severely impacted by the Scrum Team CI.

**Proposition 8 – Balkanization:** The managers, like their bankers, have little influence to exert their primary pulling forces. Their dependency leaves them closely attached to the other parts of the organisation instead of independent.

### 4.8. Discussion and conclusion

Using a multiple interview setting proved to be very useful to compare the initial intention with the resulting use of the OpBI system. The self-reporting of use was essential to make that a success as very specific discussion was possible in the evaluative interviews. Insights from the 32 interviews will now be summarized, along the eight propositions that were posed at the start of this case study. A summary of the positive and negative influences on each of the propositions is given in Table 3.

**Operational Business Intelligence**

**Proposition 1 – Transparency:** As described, all bankers explained that transparency is key for them to be able to use the OpBI system effectively. On the other hand, the Scrum Team identified that transparency cannot always be provided due to the nature of the model that are used. In addition, they explained that the limited integration with other systems also hinders providing detailed information about the contents of the prospects the OpBI system provides.

**Proposition 2 – Timeliness:** The main issue with timeliness is that the bankers do not know long beforehand when they will need the information the OpBI system provides, but the time that is needed to deliver this information is rather long. This is mainly caused by a combination of the manual limited capacity of the Scrum Team CI that has to perform manual tasks and the limited capacity they have
Proposition 3 – Integration: As the OpBI system provides information to several systems within ING that are used by different departments, there is little integration with those systems.

Technology Acceptance

Proposition 4 – Intention: Bankers in general do see the value of being provided by new prospects by the OpBI system that have not been identified before. However, they do not all see it as part of their job to actually approach those prospects. This limits the intention to use. Intention was however increased by social influences. Starting from the end of the second week and later, bankers were encouraged more intensively by their managers to use the system. This indeed lead to an increase in use. This increase in use was more apparent in the ‘East’ region than in the Amsterdam region, which seemed to correspond with the more strict managerial style applied in the ‘East’ region. In addition, peer pressure might have played a role here, as the region performed better as a whole.

Proposition 5 – Conditions: The bankers did not feel limited to use the system during the four weeks due to its conditions. There were no malfunctions and once they were acquainted with the OpBI system and new what they could and could not expect from it to do, their intention was not limited anymore by the conditions.

Organisational Design

In many of the previous propositions, it can already be seen that the organisational design had a substantial impact on the acceptance of the OpBI system. The combination of the operational core using the system, Middle management guiding them and the technostructure providing the system showed both events that increased and lowered the acceptance. I will now detail their influences further along the defined organisational forces they exert. As described before, for each of the forces it has to be kept in mind that they should be in balance.

Proposition 6 – Standardisation: The main force exerted by the technostructure, in this case study represented by the Scrum Team CI is standardisation. They provide the OpBI system from the head office and provide it for several departments within ING. It is their ambition to set the strategy for which prospects are to be approached for all of these departments and in their opinion,

Proposition 7 – Professionalization: The bankers are part of the operational core and show signs of professionalization. They all have a strong opinion about what the criteria of selecting prospects
should be and what they expect is valuable from their local knowledge. In addition, they want to be free to decide whether or not to use the system and if they do use it, they want to decide at what moments they do that.

**Proposition 8 – Balkanization:** The directors of Personal Banking form Middle management in this case study. To balkanize, or become less dependent on other departments, in their opinion, they should have their own OpBI capable system, that bankers can use without intervention from other departments.
<table>
<thead>
<tr>
<th>Propositions</th>
<th>Supporting influences</th>
<th>Counteracting influence</th>
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<tbody>
<tr>
<td>1. An OpBI system that is <strong>transparent</strong> positively influences the acceptance.</td>
<td>The Scrum Team CI provided limited contextual information about the selection of prospects. The managers experienced the provided management information about system use very useful.</td>
<td></td>
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<tr>
<td>2. An OpBI system that is <strong>timely</strong> positively influences the acceptance.</td>
<td>In this four week period, bankers were provided with prospects in time. The daily management information enabled managers to effectively manage the bankers.</td>
<td>The lead time to get new prospects from the OpBI system through Scrum Team CI</td>
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<tr>
<td>3. When the OpBI system is <strong>integrated</strong> with other systems and the business process, this positively influences the acceptance.</td>
<td>Managers saw the value of having an integrated management layer, to enable them to effectively monitor use of the system.</td>
<td>The bankers experienced an obstacles when using the OpBI system, as it was not integrated with the (CRM) systems they usually use and thus extra manual actions were required.</td>
</tr>
<tr>
<td>4. When a user has the <strong>intention</strong> to use the OpBI system, it positively influences the acceptance.</td>
<td>The bankers did in general see the added value of approaching prospects</td>
<td></td>
</tr>
<tr>
<td>5. When facilitating <strong>conditions</strong> are available, it positively influences the acceptance of the OpBI system.</td>
<td>The OpBI system performed without flaws and bankers knew where and how to get help if they needed it.</td>
<td>The bankers overestimated ease of use and performance of the system.</td>
</tr>
<tr>
<td>6. When the technostructure has the ability to <strong>standardise</strong> with the OpBI system, it positively influences the acceptance.</td>
<td>The Scrum Team CI has standardised the system as such, that they can use it for multiple departments of ING.</td>
<td>Bankers explained they have ideas on a local level as well for approaching prospects, but the Scrum Team has no capacity to fulfil those requests. This shows the standardisation pull of the technostructure clashes with professionalization of the bankers.</td>
</tr>
<tr>
<td>7. When the operational core has the ability to <strong>professionalise</strong> with the OpBI system, it positively influences the acceptance.</td>
<td></td>
<td>Middle management states they want to have more control over the system to make it suit better with their expectations.</td>
</tr>
<tr>
<td>8. When the middle management has the ability to <strong>balkanise</strong> with the OpBI system, it positively influences the acceptance.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Framework design

Using the eight propositions presented and evaluated in chapter 4, I will continue to compose a framework that describes the actions and forces I have seen that influence the acceptance of Operational Business Intelligence in organisations. First, I will show the starting point of the research with the presented propositions. Then, in the second section, identified forces will be shown. Third, the context under which these forces should work are described, after which the complete Framework for Acceptance of OpBI in Organisations will be presented in the fourth section. The fifth section will detail what can be derived from this framework in terms of uses and learnings. A conclusion regarding the framework is provided in section six.

5.1. OpBI in organisations

In section 4.3 I defined the propositions that describe possible influencers of acceptance, as derived from the literature review in chapter 2. In Table 4 the eight propositions are shown once more.

Table 4: Case study propositions

<table>
<thead>
<tr>
<th>Operational Business Intelligence</th>
<th>Technology Acceptance</th>
<th>Organisational Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An OpBI system that is <strong>transparent</strong> positively influences the acceptance.</td>
<td>4. When a user has the <strong>intention</strong> to use the OpBI system, it positively influences the acceptance.</td>
<td>6. When the Technostructure has the ability to <strong>standardise</strong> with the OpBI system, it positively influences the acceptance.</td>
</tr>
<tr>
<td>2. An OpBI system that is <strong>timely</strong> positively influences the acceptance.</td>
<td>5. When the OpBI system is <strong>integrated</strong> with other systems and the business process, this positively influences the acceptance.</td>
<td>7. When the Operational core has the ability to <strong>professionalise</strong> with the OpBI system, it positively influences the acceptance.</td>
</tr>
<tr>
<td>3. When the OpBI system is <strong>integrated</strong> with other systems and the business process, this positively influences the acceptance.</td>
<td>8. When the Middle management has the ability to <strong>balkanise</strong> with the OpBI system, it positively influences the acceptance.</td>
<td></td>
</tr>
</tbody>
</table>

In addition, I posed that these propositions show actions and forces that are expected to have an influence on the acceptance of OpBI by different organisational parts. This was shown in paragraph 4.3.1. and the initial model showing the unknown influences between the Operational core, Middle Management and Technostructure are once more presented in Figure 12.
5. Framework design

5.2. Outlining a minimally required context

While looking at the insights gathered from the propositions as explained in section 4.8, it seems some of these do not specifically relate to a certain organisational force at work. I have seen that the propositions also show requirements for the OpBI system, rather than only an organisational force causing an effect on acceptance of the system. Therefore, I see the need for a specific context where the OpBI system is placed in, which is required to come to full acceptance. This is what I will refer to as the ‘Minimal Context for Acceptance’ (MCA) from now on. The MCA will refer to the minimal context that has to be realized to gather acceptance of an OpBI system in organisations. I have identified three contextual requirements from the case study and literature, which I will now explain. These three contextual requirements are Systems integration, Business process integration and Expectation alignment.

5.2.1. Systems integration

Proposition 3 – Integration relates most to closely this contextual requirement, especially for the front-end of the OpBI system. User indicated strongly, that because of the lack of integration, they experienced a barrier to use. In addition, this is supported by the theory of Melchert et al. (2004).

Proposition 2 – Timeliness also relates to system integration. As OpBI system generally retrieve their data from a plurality of systems, their integration is of great importance for the system to be timely (Rouse, 2010). This was also seen in the case, where incomplete integration of the back-end systems caused the need for manual actions were in order for the OpBI system to function. This results in an overly long time delay for effective use.
Proposition 1 – *Transparency* is the final proposition that has posed a requirement on the system to some extent. Systems integration should be realized in such a way that it is flexible, so that transparency is possible.

System integration thus relates to both the OpBI user and the OpBI provider, which I have identified as being the Operational core and the Technostructure.

### 5.2.2. Business process integration

Proposition 4 – *Intention* showed that business process integration is a requirement to achieve acceptance. If users do not feel that using the system is part of their job, they will not use it.

Proposition 7 – *Professionalization* indicated that for bankers to be willing to use the system, they need to have a certain amount of freedom when using the system, or autonomy, which was also seen in literature (Gagne, Koestner, & Zuckerman, 2000). Therefore, the Operational Core needs to be entrusted with the task. In addition, they should be expected to use the OpBI system.

Proposition 5 – *Conditions* is the final proposition that shows the importance of business process integration, it shows what the end-users (the Operational core) expect from the system in terms of usability and performance. The acceptance and thus use of the system was impacted by the conditions in the case study, leading to lower use than expected.

Business process integration is thus a contextual requirement that positions between the Operational core and Middle management.

### 5.2.3. Expectation alignment

Proposition 6 – *Standardisation* showed that for the Technostructure to be able to standardise at ING, they need to align the expectations with Middle management and communicate better with them. Furthermore this helps the technostructure to be able to provide the functionality of the OpBI system to multiple departments. Middle managers showed to have incorrect ideas about the capabilities of the OpBI system and the Technostructure.

Proposition 8 – *Balkanisation* exerted by Middle management showed that in their ideal situation they would have full control of the OpBI system. However, as this is not possible (due to the standardisation by the Technostructure) they should align their expectations with the technostructure, to have an influence in this way. This should make sure they can effectively steer their people when using the system.

Expectation alignment is thus needed between the Technostructure and Middle management to make acceptance of the OpBI system possible.

### 5.2.4. Minimal Context for Acceptance (MCA)

Given the three identified contextual requirements that are needed to create acceptance of the OpBI system, the initial framework has been expanded. As the contextual requirements show the required context for specific organisational parts, they are positioned on the sides of each of these organisational parts. This extension of the initial figure can be seen in Figure 13. A summary of the propositions and the requirements is shown in Table 5. In the next section, the forces that are at play within this context will described and linked to the propositions.
5. Framework design

Table 5: Propositions and contextual requirements

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Contextual requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An OpBI system that is transparent positively influences the acceptance.</td>
<td>Systems integration (flexibility)</td>
</tr>
<tr>
<td>2. An OpBI system that is timely positively influences the acceptance.</td>
<td>Systems integration (back end)</td>
</tr>
<tr>
<td>3. When the OpBI system is integrated with other systems and the business</td>
<td>Systems integration (front end)</td>
</tr>
<tr>
<td>process, this positively influences the acceptance.</td>
<td></td>
</tr>
<tr>
<td>4. When a user has the intention to use the OpBI system, it positively</td>
<td>Business process integration (job</td>
</tr>
<tr>
<td>influences the acceptance.</td>
<td>embedding)</td>
</tr>
<tr>
<td>5. When facilitating conditions are available, it positively influences the</td>
<td>Business process integration (usability)</td>
</tr>
<tr>
<td>acceptance of the OpBI system.</td>
<td></td>
</tr>
<tr>
<td>6. When the Technostructure has the ability to standardise with the OpBI</td>
<td>Expectation alignment (capabilities)</td>
</tr>
<tr>
<td>system, it positively influences the acceptance.</td>
<td></td>
</tr>
<tr>
<td>7. When the Operational core has the ability to professionalise with the OpBI</td>
<td>Business process integration (culture/</td>
</tr>
<tr>
<td>system, it positively influences the acceptance.</td>
<td>autonomy)</td>
</tr>
<tr>
<td>8. When the Middle management has the ability to balkanise with the OpBI</td>
<td>Expectation alignment (influence)</td>
</tr>
<tr>
<td>system, it positively influences the acceptance.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 13: Organisational parts with Minimal Context for Acceptance

Minimal Context for Acceptance
‘MCA’

Forces of Acceptance in Organisations

Technostructure
OpBI provider

Business process integration

Middle management

OpBI user

Operational core

Systems integration

Expectation alignment

TOA

Forces of Acceptance in Organisations

Minimal Context for Acceptance
‘MCA’
5.3. Forces of Acceptance of OpBI in Organisations

As described, before the forces between the organisational parts that influence acceptance of OpBI can be exerted properly by these organisational parts, a minimal context for acceptance has to be realized. From the insights gathered in the case study and the literature review, I have found several forces at work that influence the acceptance of OpBI. I will now discuss each of these forces.

Transparency

As I have mainly seen in the insights of proposition 1 – transparency, the Operational core adheres great value to knowing how and why the OpBI system does what is does. This enables the Operational core to use it effectively and believe in its value. Therefore, to increase acceptance, the Operational core shows a pulling force for the provisioning of transparency.

Performance feedback

As the Technostructure wants to improve the OpBI system, they (should) show a need for feedback from their users, the Operational core. This pull for feedback should be exerted by the Technostructure, to enable them to better integrate the OpBI system with other systems (proposition 3 – integration). Apart from better integration, the timeliness (proposition 2) of the system is also part of the performance feedback.

Intention

Clearly in line with proposition 4 – intention, intention is an important factor to create acceptance. As seen in the case study, this intention has to be created by Middle management to make sure that the Operational core will use the OpBI system. In contrast to the pulling force ‘transparency provisioning’, this is a pushing force.

Usage insights

For middle management to know whether the intention (proposition 4) is actually converted into real use, they need to get usage insights from the Operational core. I have displayed this as a pulling force from Middle management to the Operational core, as this information should encompass more than the pure management insights that can be gathered from the OpBI use, it should provide Middle management with enough details, provided by the Operational core.

Help requests

Proposition 5 – conditions has shown in the case study that ease of use and system performance were conditions that lowered acceptance. If the minimal context is created as described in the previous paragraph, these conditions should be catered for. In addition, facilitating conditions are related to being able to use the system as part of the job of the end user. This means, that if the Operational core has any (usability-related) problems with using the OpBI system, it should request help. Help should then be provided – or referred to someone else – by Middle management. This should thus be a pushing force from the Operational core towards Middle management.

Management data
5. Framework design

As seen in proposition 8 – *balkanisation*, Middle management has the wish to access summarized management data about OpBI system use and the results of that use. This enables them to independently manage use of the system. This means that, apart from the operational functionality of the system, there is a wish to have a (more classic) reporting and managerial layer on top of the OpBI system (*Bi on OpBI*). The OpBI provider (Technostructure) should fulfil this need expressed by Middle management. This is thus a pulling force of Middle management from the Technostructure.

**Information requirements**

Proposition 8 – *balkanisation* proved hard to satisfy in a the context of a centralised/standardised OpBI system as was seen in the case study. This means that possibilities of independent control are limited. Therefore I stated that expectation alignment is required to achieve acceptance of such an OpBI system with Middle management. In addition to that, I saw that Middle management has a continuous push of information requirements towards the Technostructure describing what they expect of the system and its performance. This means that to gain acceptance of the OpBI system, these information requests should be honoured by the Technostructure.

Proposition 6 – *standardisation* also has an effect on these information requirements, as the Technostructure wants to standardise the system across different departments, their means to comply to specific information requirements set by different Middle management departments might be difficult.

The propositions and both the forces and contextual requirements that apply to them are shown in Table 6.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Force of acceptance</th>
<th>Contextual requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An OpBI system that is <strong>transparent</strong> positively influences the acceptance.</td>
<td>Transparency</td>
<td>Systems integration (flexibility)</td>
</tr>
<tr>
<td>2. An OpBI system that is <strong>timely</strong> positively influences the acceptance.</td>
<td>Performance feedback</td>
<td>Systems integration (back end)</td>
</tr>
<tr>
<td>3. When the OpBI system is <strong>integrated</strong> with other systems and the business process, this positively influences the acceptance.</td>
<td>Performance feedback</td>
<td>Systems integration (front end)</td>
</tr>
<tr>
<td>4. When a user has the <strong>intention</strong> to use the OpBI system, it positively influences the acceptance.</td>
<td>Intention</td>
<td>Business process integration (job embedding)</td>
</tr>
<tr>
<td>5. When facilitating <strong>conditions</strong> are available, it positively influences the acceptance of the OpBI system.</td>
<td>Help requests</td>
<td>Business process integration (usability)</td>
</tr>
<tr>
<td>6. When the Technostructure has the ability to <strong>standardise</strong> with the OpBI system, it positively influences the acceptance.</td>
<td>Information requirements</td>
<td>Expectation alignment (capabilities)</td>
</tr>
<tr>
<td>7. When the Operational core has the ability to <strong>professionalise</strong> with the OpBI system, it positively influences the acceptance.</td>
<td>Usage insights</td>
<td>Business process integration (culture/autonomy)</td>
</tr>
<tr>
<td>8. When the Middle management has the ability to <strong>balkanise</strong> with the OpBI system, it positively influences the acceptance.</td>
<td>Information requirements</td>
<td>Expectation alignment (influence)</td>
</tr>
</tbody>
</table>
5.4. **Framework for Acceptance of OpBI in Organisations**

I have embedded the described pulling and pushing forces that were derived from the propositions in the framework, which is presented in Figure 14. This Framework for Acceptance of OpBI in Organisations (FAOpBIO) shows the *Minimal Context for Acceptance* in the outside triangle, with its requirements for each of the organisational parts. The inside triangle shows the operational parts, with their role and the *Forces of Acceptance in Organisations* they exert. Note that some of the forces are pulling forces, where others are pushing forces.

![Diagram of the Framework for Acceptance of OpBI in Organisations](image)

**Figure 14: Framework for Acceptance of OpBI in Organisations**

5.5. **Using the Framework for Acceptance of OpBI in Organisations**

Now that I have proposed the Framework for Acceptance of OpBI in Organisations (FAOpBIO), I will elaborate on its relevance and use. As briefly mentioned before, the framework shows the context in which acceptance of OpBI systems can be realized. Furthermore, it shows which forces are at play within this context.

FAOpBIO does not have a specific start or end point and thus does not facilitate a process one can go through when implementing an OpBI system for example. It does however show, which context has to be realized, to ensure acceptance of this OpBI system. Using the FAOpBIO, I will now explain
why an organisation should not start with one of the contextual requirements, but rather I will show why all three of the contextual requirements are important to create the minimal context for acceptance. Then, I will provide a starting point to realize this context and deal with the forces at work and finally show why and which cooperation between the three organisational parts is essential.

5.5.1. Starting point for realizing MCA

To realize the Minimal Context for Acceptance, the implementer of an OpBI system must first be aware that only realizing a part of the context will hamper the acceptance of such a system. Therefore, there should be a split focus on all three of the contextual requirements. This explorative research on the factors that influence acceptance does not intend to provide methods or ways to create this context. I will however try to provide a starting point. As I have seen that the three involved organisational parts need to cooperate extensively to realize this minimal context, it is important to actually do so from the start.

For example, what was seen in the case study was that even though the technostructure has the wish to standardise the system across different departments top-down, the freedom of use of these departments limits its actual acceptance and use. The technostructure should thus communicate effectively with other departments that their actual expectations are of the OpBI system and what it is actually capable of. In addition, they should strive for integration to such an extent, that embedment of the OpBI system into the job of the Operational core is possible.

Systems integration

When only systems integration is realised, the OpBI system might have a good chance to be accepted from a technical point of view, but this does not mean that this acceptance will result in actual use by the Operational core. The operational core might not feel the intention to use the OpBI system at all for example, as using it is not part of their job, or the Operational core does not receive the autonomy they need to use it. Only having systems integration is problematic for Middle management as well. Assume there is limited communication between the Technostructure and Middle management, this would mean that Middle management does not know what the OpBI system is capable of. In addition, they would not have the intention to have their Operational core use the system as they do not see the added value of it.

Business process integration

A similar situation can be predicted when only business process integration is in place. Then, even though the Operational core and Middle management have an idea on how the OpBI system should be used, these ideas and expectations can be misaligned with the OpBI provider (Technostructure) as there is no effective communication between them. Furthermore, actual functionality of the OpBI system is limited when there is limited systems integration.

Expectation alignment

Finally, when only expectation alignment have been established, the system is still not capable of delivering what Middle management and the Operational core expect from it. Furthermore, acceptance by the Operational core is hampered as the Business process integration is limited.
5.5.2. Starting point for acting on the FAO
The insights of the FAOpBIO are in line with the theory of duality of technology and interpretive flexibility of technology as described by Orlikowski (1992). This shows why it is important to look at all of the involved organisational parts. All of these organisational parts have their own interpretation of what is important and what the OpBI system should be able to do. Therefore, it is important that they cooperate in defining a context in which the OpBI system achieves acceptance.

When defining this context, the ultimate goal or purpose of the OpBI system should be central. Is it the best possible system that is needed, or is there a need for the best way to approach clients for example? For each of the organisational parts, I will elaborate briefly on how they can position themselves in such a way that it is beneficial for acceptance of the OpBI system.

Technostructure
As the technostructure is likely to provide the OpBI system to multiple departments within the organisation, it is critical that expectation alignment with these departments is set up. This makes it possible for the involved Middle management department(s) to know what the capabilities of the OpBI system are and what they can expect from its performance. Middle management then knows what is and what is not possible and can act accordingly. The Technostructure should be open to their information requirements and should provide Middle management with summarized management data on use of the system and the outcome thereof, so that they can effectively steer the Operational core. In addition, the Technostructure should provide transparency to the Operational core, so they can effectively use the system. Systems integration is key to make that possible. To enable continuous improvement of the OpBI system, the Technostructure should be open to feedback from the Operational core.

Operational core
The main users of the OpBI system, positioned in the Operational core, are dependent on the Technostructure for the provisioning of transparency and an integrated system. Furthermore, to achieve acceptance, using the system should be embedded in their job by Middle management. This should however be done in such a way, that the Operational core still has enough autonomy and freedom to ensure their intention. The Operational core has the ability to provide feedback to the Technostructure about the performance of the system, providing this feedback gives the Operational core the opportunity to professionalise their work. Furthermore, they should provide Middle management with insights about their usage of the system and request for help when the conditions affect their ability to use the system.

Middle management
Middle management is not a main user of the OpBI system, but as they are the managers of the Operational core, it is their responsibility that use of the system is embedded in the work of the Operational core and that they create intention to use in such a way that acceptance is achieved. Example of intention creation can be settings goals, showing the added value of use and making use involuntary. Furthermore, they should evaluate actual use of the system with the Operational core, combined with the insights they receive from the management data provided by the Technostructure. They are in the position to provide help to the Operational core if conditions prohibit effective use of the OpBI system.
5. Framework design

5.6. Conclusion

From the literature and the case study I have seen that to create acceptance of OpBI in organisations, a minimal context of requirements has to be established, before acceptance can be realized. Then, the several organisational parts that are involved with the provisioning and use of the OpBI system will start to exert their pulling and pushing forces onto this system, to make it fitting to their wishes and expectations.

Concluding, when using this framework a process is needed to define the requirements of the context and the way that the forces of acceptance will handled. This process should ensure that all organisational parts are sufficiently involved and that their requirements, learnings and satisfaction with both the OpBI system and process are monitored and used. Further outlining this process is out of scope of this research, but my own interpretation on this subject will be presented in the discussion in chapter 8.

In the following chapters (6 and 7) I will validate this framework using an expert interview and I will provide a reflection on several aspects of this research, such as the generalizability of this framework.
VALIDATION
Expert validation

As discussed in the methodology chapter, I interviewed an expert to perform a validation of my framework. This expert validation was performed by interviewing Layla AlAbdulkarim (2014), from which I also used the PhD thesis as an inspiration for my literature review (AlAbdulkarim, Acceptance-by-Design, 2013). I will discuss the main insights this expert validation gave me. Due to time constraints, not every aspect of the framework was discussed in full with the expert. During our discussion about the framework three main topics/issues arose, these were about the notion of communication in the framework, timeliness of the forces shown in the framework and the process leading towards the situation displayed in the framework. Apart from these three points of discussion we elaborated on my choices and position in general, which I will describe first.

6.1. Choices and position

One of the first choices I made when making the Framework for Acceptance of Operational Business Intelligence in Organisations, was to look at acceptance from several perspectives. In my opinion this was valuable and necessary as I had concluded that acceptance was subjective for each of the organisational parts that are involved. The expert agreed that this was a good and important distinction to make and she supported my choice. In addition, the choice to split my framework into a ‘minimal context’ triangle and a ‘forces of acceptance’ triangle was well substantiated in her opinion, although she did not fully agree to this. This was mainly due to process and implementation reasoning by her, in which see said that the one does not necessarily happen after the other, which I further elaborate on in paragraph 6.4.

For the minimal context, she understood my view on the three contextual requirements and did agree on their necessity, but she saw an issue with expectation alignment. In her opinion expectation alignment should happen not just between Middle management and the Technostructure. I elaborate on this opinion in paragraph 6.2.

Finally, we briefly discussed the forces of acceptance that are active between the involved organisational parts. Not all of them were discussed in detail, but the expert did agree with the overall position they had in the framework. Her main issue with these was the fact that timeliness was insufficiently incorporated in her opinion. This discussion is described in paragraph 6.4.

6.2. Communication

In the model, I state that good alignment of expectation between the Technostructure and Middle management, in order to create a situation wherein the OpBI system can achieve acceptance. In her work, AlAbdulkarim (2013) states that in societal technology infrastructures requirements need to be elicited from the end users as well, which requires involving them in this communication about the expectations. In her opinion, this is also the case for technology infrastructures developed and deployed in organisations to a certain extent.

Given this issue, she stated that further research should look into the fact whether extending the wish for expectation alignment towards the Operational core. This should then establish whether this involvement is effective to achieve acceptance of OpBI systems in organisations. This is not a
trivial task, as it was in her opinion difficult to establish the exact requirements of this group as it can not be ascertained that they know what they actually want. This underlines my finding during the interview where the interviewee from Scrum Team CI from the Technostructure mentioned that he claimed he did not need extensive involvement of the Operational core in the functioning of the OpBI system.

6.3. Timeliness of the forces of acceptance

Somewhat in line with the issue of communication, we discussed the forces of acceptance as they are shown in the framework. As I state in the framework, the minimally required context should be established first, after which the forces of acceptance start to work between the involved organisational parts. Although I do not handle the process of coming to this situation, this triggered AlAbdulkarim with the notion of timeliness of these forces. To illustrate this discussion, see the software development waterfall model in Figure 15. In her opinion, requirements elicitation of the Operational core should start directly at the start of the development and not appear later, for example through forces like performance feedback and help requests.

Figure 15: Waterfall model with summary of discussion

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3 Image adapted from: http://upload.wikimedia.org/wikipedia/commons/e/e2/Waterfall_model.svg
6.4. Process towards acceptance

As mentioned in the conclusion of chapter 5 as well, the Framework shows a situation wherein acceptance can be achieved, but this research does not provide the actions and processes needed to get to this situation. In section 5.5 I do give some starting point and scenarios that describe what might be involved in moving towards the situation described in the framework. However, as stated in the research question, this research was focussed on the factors of acceptance, not the way move towards them or to act upon them. Therefore, AlAbdulkarim mentioned this is one of the important recommendations for future research.
7. Reflection

In this chapter, I will reflect on number of aspects of this research. First, I will reflect on findings of the research results. Then I will elaborate on the reliability, validity and generalizability of these results. Thirdly, I will reflect on the research process itself, concerning the design and conduction of the research.

7.1. Reflection on research results

The purpose of the exploratory research was to find factors that influence acceptance of Operational Business Intelligence in different parts of an organisation. With an extensive literature review and insights of the case study at ING, a Framework for Acceptance of OpBI in Organisations was drawn up. This framework provides insight in the necessary context that needs to be created to achieve acceptance of an OpBI system and into the forces at work between the several involved organisational parts.

An extensive literature research that combined Operational Business Intelligence, Technology Acceptance and Organisational Design provide grounding for this research and was a starting point for the case study that was conducted at ING. This single case study, based on multiple interviews with self-reported usage was explorative by nature and its insights were the key inputs for creating the Framework.

Due to the limited time and exploratory character of this research, I mainly focussed on the factors that influenced acceptance, the organisational parts that are involved and the influence they have on each other. The resulting framework shows these three key points. I did not elaborate further in detail on how the necessary minimal context for acceptance should be reached or how the forces of acceptance in organisations should be controlled or managed. Thus, the ways of creating a situation that stimulates acceptance was only briefly touched upon. To overcome this, I will present my own interpretation on this process in the discussion, in chapter 8. This elaboration will however not be validated or tested further, due to the time constraints mentioned before.

7.2. Quality of the results

In this section, I will elaborate on the reliability, validity and generalizability of the results of this research. Reliability describes the ability for other researcher to repeat my research and gather similar results (Yin, 2009). Validity is split into internal and external validity. Internal validity describes the extent to which the conclusions of this research are warranted. External validity is also called generalizability and details to which extent the conclusions of this research can be generalized to other situations, organisations, etc.

7.2.1. Reliability

Reliability of qualitative research is inherently limited as compared to quantitative research. In this research, the case study had its focus on qualitative research, supported by quantitative details. Validity of interviews can be achieved with interview protocols and careful notion of skewing effects like cognitive dissonance. Both were dealt with as much as possible in this research.
7. Reflection

I documented the interview protocols and adhered to them as much as possible. These protocols and the responses of the interviewees were documented and can be found in Appendix A and Appendix C. Cognitive dissonance was limited with the strict self-reporting format, which provided me with the necessary quantitative data to confront interviewees with their behaviour.

Important notions were distinguished from less urgent insights by having the interviewees talk freely after each of the interview sections were introduced. Any information I retrieved after further questioning within the same section was regarded as less important, but not ignored. The main burdens of acceptance in the case study were in line with what was found in literature, so it is expected that similar results can be gathered in a similar research.

7.2.2. Validity

The one-on-one character of the qualitative interviews, which I mostly handled over the phone, is the main limitation of internal validity of this research. There were twelve bankers of the Operational core involved, but only three Middle managers and one manager of the Technostructure. This inherently means that the insights and conclusions on which the framework are based on a limited number of impressions.

Due to time and practical constraints, the period between the intake and evaluation interviews was only four weeks. This meant that the results of usage of the OpBI system might be skewed by learning or other start up effects. The impact of these I consider to be limited though, as the interviewees were familiar with similar activities. They already called clients and prospects, but before the introduction of the OpBI system, they could choose these themselves, which is the main change during the research. So, to improve the validity of case study, a longer time period can be chosen in a further research.

Internal validity was examined further by reflecting with supervisors at ING on a regular basis, with whom I had discussions on my insights and on the framework I created. These discussions helped me tremendously in restructuring my thoughts and making sure all insights were properly processed, which was of added value in a qualitative exploratory research as this was.

7.2.3. Generalizability

There are severe limitations that impact the generalizability of this research. The main limitation I have identified is the fact that I conducted only one case study. This case study concerned one OpBI system, with one user group. As the case study took place at ING, the case study took place in the financial sector. The bankers of the Personal Banking department which might have specific influences as well. Therefore, to increase the external validity of this research more case studies have to be performed, preferably in other sectors than the financial sector, in organisations of various sizes. In addition, the OpBI system itself had specific characteristics, such as the need for some manual actions and the relatively long lead time.

It might be that different acceptance behaviour can be seen at other sectors and organisations, when using other OpBI systems. The case study that was performed at ING merely provides a thorough understanding of what context is necessary for the OpBI system at Personal Banking at ING to achieve acceptance. In addition, it shows which forces should be at play between the different organisational parts.
I did however explore these issues with Layla AlAbdulkarim, whom performed her PhD research on acceptance of intelligent infrastructures (AlAbdulkarim, Acceptance-by-Design, 2013), as described in chapter 6. This discussion helped me to get insights in possible improvements of the framework regarding communication, the timeliness of the forces of acceptance and the process towards acceptance.

So, concluding, even though only one case study was performed, the majority of the Framework for Acceptance of OpBI in Organisations is based on literature as well. All propositions formed from literature reflected themselves to some extent in the case study. So, it may well be that this exploratory research can give a general overview in the type of forces that are at play between the several involved organisational parts and the necessary context that is needed around that to achieve acceptance of an OpBI system.

7.3. Reflection on research process

The specific choices I made during the process of this research will now be reflected upon. The first paragraph will describe the choices I made in searching, selecting and using my literature. The second paragraph describes my choices for pursuing an exploratory case study and the third paragraph reflects on the effects these choices have had.

7.3.1. Literature

The choice to combine the three fields of Operational Business Intelligence, Technology Acceptance and Organisational design was not taken at once. The initial idea was to take Technology Acceptance models and somehow apply these to a specific technology, namely Operational Business Intelligence. I soon noticed though that the specific effects, which organisation themselves have on the way acceptance of a technology is achieved, were also of importance. This lead to my combination of the three research fields mentioned before. Implementing new technologies in organisations were researched before, but never combined with the actual acceptance hereof. Therefore, I decided to put my focus on exactly that literature gap.

7.3.2. Research design

Given the fact that this specific combination of research fields has not been explored before, I chose an exploratory character for my research. This combined well with the possibility for me to perform a case study at ING. As described before, this did bring limitations to both validity and generalizability. It does however give some general insights, but moreover it is of practical use at ING, as it was of their interest to ensure the acceptance of their OpBI system. The fact that I could combine my qualitative interviews with a strict self-reporting quantitative tool helped me a lot with conquering some of the typical pitfalls of interview-based research.

7.3.3. Methodology & analysis

As briefly described before, combining qualitative interviews with a quantitative self-reporting tool worked very well for the purpose of this research. Integrating the literature with the insights of the case study into my Framework for Acceptance of OpBI in Organisations proved to be an adequate way to process these results, keeping in mind the limitations in both validity and generalizability. Due to time constraints, it was not possible to completely outline a process of reaching a situation as is described in the framework. This is something that further research should pursue.
DISCUSSION
8. Discussion

In this chapter, I will discuss the use of the Framework for Acceptance of Operational Business Intelligence in Organisations. As my research was centred around identifying the factors that influence acceptance, the framework mainly shows these factors and how they relate to each other. To increase its practical use however, it is valuable to have a process which describes how the framework can actually be applied. As this discussion will mainly consist of my interpretation of the situation related to the case study at ING the actions that I describe might not be as relevant in other situations.

This discussion should be interpreted as a first step towards exploring possible uses of this Framework. It is however needed to pursue more research in this area to substantiate this discussion. In the first paragraph I will discuss the ‘minimal context for acceptance’ and in the second paragraph I will elaborate on the ‘forces of acceptance’.

8.1. Realizing the minimal context for acceptance

As stated in chapter 5 as well, I am of the opinion that a minimal context should exist, for acceptance of an OpBI system to be possible at all. This minimal context consists of three parts, systems integration, business process integration and expectation alignment. I will elaborate on the fact why all three are important and should be pursued simultaneously.

8.1.1. Systems integration

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8.1.3. Expectation alignment

Alignment of the expectations of the capabilities of the system links closely to the two contextual factors mentioned before. Management has a certain expectation of a OpBI system, which leads to their adoption of the system and their integration of that system in the job of their employees. This does mean, that if these expectations are incorrect, it severely hampers the acceptance of such an OpBI system. In return, the Technostructure has expectations on when and how the system will be used. Therefore, Middle management and Technostructure should align these expectations to make sure acceptance is achieved at all involved organisational parts.

So, in conclusion, a proper alignment of expectations must be realized between the Technostructure and the involved Middle management parties. Then, the Technostructure can focus on systems integration, while Middle management can ensure business process integration to embed usage of the OpBI system in the job of the Operational core. All of these actions are required and critical to achieving acceptance.

8.2. Managing the forces of acceptance in the organisation

In my description of the framework, I pose that the minimal context has to be realized, for the forces of acceptance to start playing a role. These forces characterise themselves by being exerted or demanded by one specific organisational parts, target to one other specific organisational part.

8.2.1. Management data

8.2.2. Information requirements

The requirement of information works in two ways. On the one hand, this is where Middle management shows their need for management data, but this force also describes how the
Technostructure needs to know what Middle management needs from the OpBI system. This force is thus related to the alignment of expectations, which should happen continuously.

### 8.2.3. Transparency

Transparency is one of the forces exerted as a demand from the Operational core they need transparency in order to understand and value the OpBI system. This should thus be provided in some way by the Technostructure. However, this is not possible in all cases. In that case the Technostructure should communicate clearly why providing transparency is not possible.

### 8.2.4. Performance feedback

On the other hand, as the Technostructure should want to improve the system and the underlying intelligence it uses, they need regular feedback from their users on the performance of the system. This means they should not only be open for feedback, but ask for feedback and set up some way of communication to make this feedback possible. This can be achieved with a feedback loop build within the system, but if integration is not possible to such an extend the Technostructure will have to look for other ways to connect with their users. This can also be valuable for the Technostructure, as the Operational core can have good ideas on ways to improve the underlying models.

### 8.2.5. Intention

Along with business process integration, creating intention has to do with the way the end users from the Operational core are stimulated to actually use the OpBI system. As soon as embedment of system use into their job is realized by the management, creating intention to use is the next step. Intention can for example be achieved by showing the value of the system and detailing what can be expected of system use. It is however important then, that the expectations are aligned well, so that this perceived value can actually be realized by the Operational core.

### 8.2.6. Usage insights / Help requests

As a returning force of the intention, usage insights Middle management with the information they need to manage their employees. Therefore, apart from the management data from the OpBI system itself, the Middle managers should have regular contact with their employees to evaluate OpBI system use. For constructive contact about this, they need the before mentioned management data. Furthermore, such moments of contact provide opportunities for the Operational core to request help to their managers if there are contextual or other factors that limit or obstruct their use of the system. All in all, use of the system and performance thereof should receive ample attention in Manager-Employee meetings.
8. Discussion

8.3. Hidden costs in realizing acceptance

As can be read from the preceding paragraphs, realizing a situation in which acceptance is possible, entails much more than just implementing the OpBI system. As shown, creating the ‘minimal context for acceptance’ asks for a significant investment in time, money and management attention. This is not always estimated or expected in advance by for example the implementing party and I therefore see these necessary investments for acceptance as hidden costs needed to realize acceptance. These hidden costs are a possible threat to the acceptance of an OpBI system and therefore a threat to a successful implementation.

8.4. From actions to a process

To combine the actions mentioned in the paragraphs before into a useful and complete OpBI acceptance tool, a method of use has to be developed. As mentioned, this falls outside of the scope of this research, but a broad outline is presented in Figure 16 and can be described as follows:

- **Prepare for acceptance**: Create the minimal context by aligning expectation and integration of systems and business processes
- **Gather acceptance**: Use the forces of acceptance to gather acceptance in all involved organisational parts. If it appears that acceptance can’t be gathered, look at the context again.
- **Sustain acceptance**: Once the acceptance has been gathered/achieved, it should be sustained by effectively using the forces of acceptance. Then, further improve the acceptance by using the insights that the forces of acceptance give.

Realizing these phases can be done in several ways, for which I will make a clear distinction between two management styles: project management and process management. Project management and process management are in many ways opposites and therefore each have their own advantages and disadvantages (Bruijn, Heuvelhof, & Veld, 2010). I will elaborate why in my opinion a project style is best suited for the preparation phase and process style is best suited for the other two phases.

During the preparation, there is a quite delineated and precise objective: introduce a new system. In addition, in this phase, decisions about the design (and implementation) of the system must be made, so options must be reduced, which fits with this approach. A clear timeline is beneficial for a project like the instruction of a new system, to make sure that it does not end up to be a never-ending implementation that is detached from the actual users.

During gathering and sustaining acceptance, which I see as looping and iterative process, the process management style suits much better. As goals are more vague, acceptance from several organisational parts. In addition, there is no clear end of the process, as it continuously happens. Furthermore, decision-making on the changes that are needed to improve acceptance are probably more fragmented in both decision making power and resulting effect (Bruijn, Heuvelhof, & Veld, 2010). Therefore, these phases can prove to be more complex than the first phase, especially if the first phase is not executed well and large revisions are necessary.
Forces of acceptance

Set up the context that is required for the OpBI system to be accepted.

Forces of acceptance (1)
Gather acceptance

Use the forces of acceptance to gather acceptance of the OpBI system at the organisational parts.

Forces of acceptance (2)
Sustain acceptance

Use the forces of acceptance, to sustain the gathered acceptance and enhance the OpBI system.

Figure 16: Possible process in using FAOpBIO
9. Conclusions and recommendations

Achieving acceptance of an Operational Business Intelligence system in a complex organisation is no trivial task. Multiple parts of an organisation are involved, which all have their own interpretive flexibilities when it comes to their expectations and demands of such a system. These differences cause that acceptance of OpBI systems in organisations can vary across different parts of an organisation. The existing body of knowledge does explore the adoption of technology in organisations, but has some limitations as well. Neither acceptance of new technology in organisations nor the acceptance of Operational Business Intelligence had been researched thoroughly yet. This lead to the following main question of my research:

**What factors determine the acceptance of Operational Business Intelligence in different parts of an organisation, given the subjective nature of acceptance?**

As presented in the second chapter, I broke down this main question into three sub questions:

SQ1. What does current literature state about acceptance of OpBI in organisations?

SQ2. What factors can be identified that influence acceptance of OpBI at ING?

SQ3. What does a framework that describes acceptance of OpBI in organisations look like?

I performed an extensive literature research and a case study at ING to answer these questions and set up a framework that describes the acceptance of OpBI systems at organisations. Using organisational design theory and technology acceptance theory I deduced that three organisational parts are closely related to the acceptance of an OpBI system. These are the Operational core, Middle management and the Technostructure. The Operational core is the end user of the system. This system in turn provided by the Technostructure. Middle management controls the Operational core and tries to influence the functioning and performance of the OpBI system. As stated, apart from these notions current literature does not detail what drives the acceptance of implementing technology in an organisation, let alone a specific technology such as Operational Business Intelligence. This answers the first sub question. To answer the second sub question I combined the insights from the literature with the qualitative case study I performed at ING. Using both these sources, I will now describe two groups of factors I identified as influencers of acceptance; those defining the **minimal context for acceptance** and those constituting to **forces of acceptance in organisations**.

**Minimal Context for Acceptance**

I have found that for acceptance of the OpBI system to be achieved, a context has to be in place, which fulfils the basic requirements of an Operational Business Intelligence system, which is placed in an organisation. These requirements are **systems integration**, **business process integration** and **expectation alignment**. These requirements are related to the three organisational parts mentioned before. Systems integration should ensure that both the timeliness and integration with other systems used by the Operational core is taken care of. Business process integration is important to show the Operational core the relevance of using the system and make it to be part of their job. Finally, **expectation alignment** is crucial, as in the case study it was seen that there was a misalignment in understanding about the capabilities of the system. This misalignment between Middle management and the Technostructure showed the importance of effective communication between these parties to align the expectations.
Forces of Acceptance in Organisations

Within this *minimal context for acceptance* the three mentioned organisational parts each exert and receive forces that are at play in organisations. These provide ways to further ensure acceptance, as acceptance rises when they are fulfilled. The full Framework of Organisational OpBI Acceptance has been placed below in Figure 17.

Transparency is necessary for the Operational core to accept the OpBI system, as they can use the system most effectively when they know how and why it works. On the other hand, they should be stimulated in their intention to actually use the system by their middle management. To evaluate this, the Operational core should provide Middle management with insights about their usage and should request help when needed. For complete overview of system use and the results thereof, Middle management needs management data from the OpBI system. So, especially when multiple departments use an OpBI system that is managed by the Technostructure, they should pay close attention to the exact information requirements and performance expectations of the involved Middle management departments. In addition, the Technostructure should retrieve feedback from the Operational core to improve the system, especially when multiple departments use it in different ways.

![Figure 17: Framework for Acceptance of Operational Business Intelligence in Organisations](image-url)
Using the Framework for Acceptance of OpBI in Organisations

To realize the Minimal Context for Acceptance, the implementer of an OpBI system must first be aware that only realizing a part of the context will hamper the acceptance of such a system. This underpins the subjectivity of acceptance, as all organisational parts have their own interpretation of the technology. Therefore, there should be a split focus on all three of the contextual requirements. The three organisational parts need to cooperate extensively to realize this minimal context.

When only systems integration is realised, the OpBI system might be accepted from a technical point of view. However, as acceptance is not defined from one perspective, the Operational core might not see using the system as part of their job and Middle management might have misaligned assumptions about the capabilities and performance of the system. A similar situation can be predicted when only business process integration is in place. Then, even though embedment in the job is realized, the systems are not capable of actually supporting this. In addition, the incorrect expectations can also hamper acceptance. Finally, when only alignment of the expectations has been established, the system is still not capable of delivering what Middle management and the Operational core expect from it. Furthermore, acceptance by the Operational core is hampered as the Business process integration is limited.

When the context of acceptance is sufficiently defined and created, the positioning of the stakeholders within this field and their actions realize the forces of acceptance that are embedded in the framework. As the technostructure is likely to provide the OpBI system to multiple departments within the organisation, it is critical that effective communication with these departments is set up to align expectations. They should be open to feedback and information requests and provide the necessary transparency and management data. Systems integration and expectation alignment are thus key to make these forces possible. The Operational core has a pull for transparency of the system and provides feedback towards Technostructure. Furthermore, they should be able to request help from their managers, which in return should provide them with the Intention to use. Middle management themselves is not a main user of the system, but does need its management data to monitor the use and results of that use.

Recommendations for future work

To effectively use this framework when developing an OpBI system, a process is needed to define the requirements of the context and the way that the forces of acceptance will be acted upon. This process should ensure that all organisational parts are sufficiently involved and that their requirements, learnings and satisfaction with both the OpBI system and process are monitored and used. The first steps towards such a process have been shown in the discussion and show that a combination of project and process management is likely to be valueable, but more research is needed in this area. Therefore, this is recommended as future work.

This research is mainly based on a literature review and a case study at ING. Therefore, generalizability of this framework and its contents are limited. To enhance this, I suggest further research into different organisations, sectors and situations. The main contextual factors at ING were the facts that the case study took place in the financial sector, [experts]... Expert validation of this framework also showed that closer involvement of the Operational Core might be advantageous for acceptance of the system. This should also be addressed in future research.
References


Appendix A. Interview structure

In this appendix, the interview structure for all six types of interviews will be described. An intake and an evaluation interview format for each of the three organisational parts. Note that all interviews were conducted in Dutch. The general structure of the interviews is shown in Figure 18.

![Figure 18: General interview structure](image)

The differences between the interview structures of each of the six types of interviews was very limited. Therefore, only a general intake and evaluation interview format will be detailed fully now. As said, the interviews were conducted in Dutch and the interview structures are in Dutch as well.
A.1. Intake interview

Context

In kaart brengen verwachtingen

Interviewvragen

1. Selectieproces

"In het verleden kon je als banker altijd zelf kiezen wie je benaderde, je selecteerde zelf. In deze proef gaan we dit voor jou doen, en je vragen precies die mensen te benaderen. Wat is je eerste reactie daarbij?"

- Intuïtief (Zelf selecteren) vs. Analytisch (Slimme lijst)
- Professionalisering vs. Centralisering

2. Requirements tot bijdragen

"Gegeven dat de selectie van klanten nu centraal gebeurd en je als resultaat daarvan een slimme lijst krijgt, om te bellen, wat zijn jouw eisen dan daaraan?"

- Belang van transparantie lijst: wat staat erin en waarom
- Belang van eigen inbreng: (mede) bepalen wat erin staat
- Verwachting van kwaliteit: eisen en verwachting van leadkwaliteit
- Beschikbaarheid: wanneer ik het nodig heb
- Vrijheid in gebruik: zelf kiezen voor wat/wanneer
- Gemak van gebruik
- De slimme lijst heeft meerwaarde voor het bellen van prospects

3. Aansturing

"Aangezien we van je vragen de slimme lijst te gaan gebruiken, zal je manager hier ook op sturen. Hoe verwacht je dat dat gaat gebeuren?"

- Input sturen vs. Output sturen
- Verwachting van manager vs. Eigen vrijheid tot gebruiken
- Gebruik van omgeving vs. Eigen gebruik
- Verwachting van omgeving vs. Eigen gebruik
- Imago bij collega's / manager
- Feedback naar makers lijst (CI)
- Bellen van prospects is relevant voor het goed doen van jouw werk / halen van targets

4. Afronding (volledigheid/consistente)

"In de proef, waar je wordt verwacht prospects van de slimme lijst te gaan bellen, wanneer is dit voor jou succesvol?"

"Welke zaken/verbeteringen/dingen moeten volgens jou veranderen om het succes van slimme lijsten te vergroten? (Kortom: hoe maken we de slimme lijsten binnen PerBa populair?)"
A.2. Evaluation interview

Context
Verwachting vorige keer in kaart gebracht, nu kijken naar wat er is gerealiseerd (hoeveel is er gebeld?) en wat de reden daarvan is. Gebruik maken van resultaten uit eigen registraties.

Interviewvragen

1. Selectieproces

“Drie weken geleden vertelde je dat … Hoe heb je dit de afgelopen paar weken ervaren?”

2. Requirements tot bijdragen

“Gegeven dat de selectie van klanten nu centraal gebeurd en je als resultaat daarvan een slimme lijst krijgt, om te bellen, wat zijn jouw eisen dan daaraan?”

- Belang van transparantie lijst: wat staat erin en waarom
- Belang van eigen inbreng: (mede) bepalen wat erin staat
- Verwachting van kwaliteit: eisen en verwachting van leadkwaliteit
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- Gemak van gebruik
- De slimme lijst heeft meerwaarde voor het bellen van prospects

“Drie weken geleden vertelde je dat … Hoe heb je dit de afgelopen paar weken ervaren?”

3. Aansturing

“Aangezien we van je vragen de slimme lijst te gaan gebruiken, zal je manager hier ook op sturen. Hoe verwacht je dat dat gaat gebeuren?”

- Input sturen vs. Output
- Verwachting van manager vs. Eigen vrijheid tot gebruiken
- Gebruik van omgeving vs. Eigen gebruik
- Verwachting van omgeving vs. Eigen gebruik
- Imago bij collega’s / manager
- Feedback naar makers lijst (Cl)
- Bellen van prospects is relevant voor het goed doen van jouw werk / halen van targets

“Drie weken geleden vertelde je dat … Hoe heb je dit de afgelopen paar weken ervaren?”

4. Afronding (volledigheid/consistentie)

“In de proef, waar je wordt verwacht minimaal 4 uur per week prospects van de slimme lijst te gaan bellen, was dit voor jou succesvol?”

“Welke zaken/verbeteringen/dingen moeten volgens jou veranderen om het succes van slimme lijsten te vergroten? (Kortom: hoe maken we de slimme lijsten binnen PerBa populair?)”
Appendix C. Interview results

The results of the interviews have been summarized.

**C.1. Intake – bankers**

### Selectieproces

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<td>- Intuitief (Zelf selecteren)</td>
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<td>- Analytisch (Slimme lijst)</td>
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### Requirements tot bijdragen

"Gegeven dat de selectie van klanten nu centraal gebeurd en je als resultaat daarvan een slimme lijst krijgt, om te bellen, wat zijn jou eisen dan daaraan?"

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### Aansturing

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</thead>
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<tr>
<td>Gebruik van omgeving vs. Eigen gebruik</td>
</tr>
<tr>
<td>Imago bij collega’s / manager</td>
</tr>
<tr>
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### Afronding (volledigheid/consistentie)

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</table>
C.2. Evaluation – bankers

**Selectieproces**

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<tr>
<th>Intuitief (Zelf selecteren)</th>
<th>Analytisch (Slimme lijst)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Lastig om te zeggen waar je voor belt.&quot;</td>
<td>&quot;In principe wel blij met lijst, als het rustiger is.&quot;</td>
</tr>
<tr>
<td>&quot;Werk neer in eigen hand.&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**Requirements tot bijdragen**

"Gegeven dat de selectie van klanten nu centraal gebeurd en je als resultaat daarvan een slimme lijst krijgt, om te bellen, wat zijn jou eisen dan daaraan?"

<table>
<thead>
<tr>
<th>Belang van transparantie lijst: wat staat erin en waarom</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Belang van eigen inbreng: (mede) bepalen wat erin staat</td>
<td>&quot;Ik heb heel goede ideeën over wat het wel moet zijn.&quot;</td>
</tr>
<tr>
<td>Verwachting van kwaliteit: eisen en verwachting van leadkwaliteit</td>
<td>&quot;Lijst zou wat specifieker moeten zijn, nu erg breed.&quot;</td>
</tr>
<tr>
<td>Beschikbaarheid: wanneer ik het nodig heb</td>
<td>&quot;Zoek signalen uit de markt, ook zachte waarden.&quot;</td>
</tr>
<tr>
<td>Vrijheid in gebruik: zelf kiezen voor wat/wanneer</td>
<td>&quot;Niet echt hoge hitratio, kost veel tijd.&quot;</td>
</tr>
<tr>
<td>Gemak van gebruik</td>
<td>&quot;Kwaliteit is slecht. Had beter verwacht.&quot;</td>
</tr>
<tr>
<td>De slimme lijst heeft meerwaarde voor het bellen van prospects</td>
<td></td>
</tr>
<tr>
<td>Feedback naar makers lijst (CI)</td>
<td>&quot;Klassiek via bellen. Kwaliteit was laag.&quot;</td>
</tr>
</tbody>
</table>

**Beschikbaarheid:**

Bereiken is lastig

"Niet heel veel mensen bereikt, verschillende tijden geprobeerd." 
"De meeste mensen zijn wel blij als je belt."
### Aansturing

“Aangezien we van je vragen de slimme lijst te gaan gebruiken, zal je manager hier ook op sturen. Hoe verwacht je dat dat gaat gebeuren?”

<table>
<thead>
<tr>
<th>Verwachting van manager vs. Eigen vrijheid tot gebruiken</th>
<th>Input sturen (4 uur bellen)</th>
<th>Output sturen (4 afspraken regelen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Geen tijd, gekozen om geen extra ruimte te maken”</td>
<td>“Specifiek tijd voor plannen hielp”</td>
<td></td>
</tr>
<tr>
<td>“Agenda ervoor afblokken was nodig”</td>
<td>“Te druk, prioriteit op andere lijsten”</td>
<td></td>
</tr>
<tr>
<td>“Door meer tijd te blokken, slipt het er niet tussendoor”</td>
<td>“Zonder kader schiet ertussendoor.”</td>
<td></td>
</tr>
<tr>
<td>“Meer druk en doelen nodig.”</td>
<td>“Niet - niet belangrijk, maar geen druk om het te doen”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gebruik van omgeving vs. Eigen gebruik</th>
<th>Verwachting van manager vs. Eigen vrijheid tot gebruiken</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Nog veel potentie in eigen portefeuille.”</td>
<td>“Door meer tijd te blokken, slipt het er niet tussendoor”</td>
</tr>
<tr>
<td>“Niet alleen voor afspraken gebruiken, ook toekomstige relaties”</td>
<td>“Zonder kader schiet ertussendoor.”</td>
</tr>
<tr>
<td>“Goed dat ik extra munitie heb nu.”</td>
<td>“Te druk, prioriteit op andere lijsten”</td>
</tr>
<tr>
<td>“Had afgelopen weken veel afspraken, dan geen tijd meer voor bellen”</td>
<td>“Niet zoals gehoopt.”</td>
</tr>
</tbody>
</table>

### Imago bij collega’s / manager

“Prioriteit maken, sommige hebben al genoeg afspraken.”

“Als het rustiger is, dan liever eerst alle orde op zaken stellen.”

“Nu ruim de tijd, dus agenten volboeken”

### Afronding (volledigheid/consistentie)

<table>
<thead>
<tr>
<th>Welke zaken/verbeteringen/dingen/tips moeten volgens jou veranderen om het succes van slimme lijsten te vergroten?</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Hier geen ruimte voor netwerken, te rwijl het goed is om te acquireren buiten vertrouwde omgeving, bijvoorbeeld op de events.”</td>
</tr>
<tr>
<td>“Voor niet-ING ers moet je naar buiten.”</td>
</tr>
<tr>
<td>“Kantoren meer inzetten, algemene call.”</td>
</tr>
</tbody>
</table>
### C.3. Intake – managers

**Selectieproces**

- **Intuitief (Zelf selecteren)** vs. **Analytisch (Slimme lijst)**
  - "Als model goed genoeg is, hoeft er geen discussie te zijn."
  - "Hoge verwachting: er zijn miljarden te halen."
  - "Blokkeert wel lokaal ondernemerschap wel deels."

**Requirements tot bijdragen**

"Gegeven dat de selectie van klanten nu centraal gebeurd en je als resultaat daarvan een slimme lijst krijgt, om te bellen, wat zijn jou eisen dan daaraan?"

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belang van transparantie</td>
<td>Belang van transparantie</td>
</tr>
<tr>
<td>lijst: wat staat in en waarom</td>
<td>lijst: wat staat in en waarom</td>
</tr>
<tr>
<td>Belang van eigen inbreng:</td>
<td>Belang van eigen inbreng:</td>
</tr>
<tr>
<td>(mede) bepalen wat erin staat</td>
<td>(mede) bepalen wat erin staat</td>
</tr>
<tr>
<td>Verwachting van kwaliteit:</td>
<td>Verwachting van kwaliteit:</td>
</tr>
<tr>
<td>eisen en verwachting van</td>
<td>eisen en verwachting van</td>
</tr>
<tr>
<td>leadkwaliteit</td>
<td>leadkwaliteit</td>
</tr>
<tr>
<td>Beschikbaarheid:</td>
<td>Beschikbaarheid:</td>
</tr>
<tr>
<td>wanneer ik het nodig heb</td>
<td>wanneer ik het nodig heb</td>
</tr>
<tr>
<td>Vrijheid in gebruik:</td>
<td>Vrijheid in gebruik:</td>
</tr>
<tr>
<td>zelf kiezen voor wat/wanneer</td>
<td>zelf kiezen voor wat/wanneer</td>
</tr>
<tr>
<td>Gemak van gebruik</td>
<td>Gemak van gebruik</td>
</tr>
<tr>
<td>De slimme lijst heeft</td>
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</tr>
<tr>
<td>meerwaarde voor het</td>
<td>meerwaarde voor het</td>
</tr>
<tr>
<td>bellen van prospects</td>
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</tr>
<tr>
<td>Feedback naar makers lijst</td>
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</tr>
<tr>
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</tr>
</tbody>
</table>
### Aansturing

"Aangezien we van je vragen de slimme lijst te gaan gebruiken, zal je manager hier ook op sturen. Hoe verwacht je dat dat gaat gebeuren?"

<table>
<thead>
<tr>
<th>Input sturen (4 uur bellen) vs. Output sturen (4 afspraken regelen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Druk lekker hoog leggen, dan efficiency en kwaliteit&quot;</td>
</tr>
<tr>
<td>&quot;In principe kijken naar resultaat, conversie is interessant.&quot;</td>
</tr>
<tr>
<td>&quot;Benchmarken, je hebt een richtlijn nodig; daarmee plannen&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verwachting van manager vs. Eigen vrijheid tot gebruiken</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Banker is eindverantwoordelijk: die moet druk voelen&quot;</td>
</tr>
<tr>
<td>&quot;Niet perse elke week altijd, wel als het tegen zit. Als andere kanalen niet doen, dan moet je zelf&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gebruik van omgeving vs. Eigen gebruik</th>
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<tbody>
<tr>
<td>&quot;Geprobeer gelijker te trekken, grote verschillen in portefeuille.&quot;</td>
</tr>
<tr>
<td>&quot;Andere regios: zou gelijk moeten zijn, is het niet&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rol tussen CI en bankers</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Voor marketing moet dit boeiend zijn, hoe komt het dat prioriteiten niet goed zijn?&quot;</td>
</tr>
<tr>
<td>&quot;Link naar CI niet belangrijk, wel een management rapportage, daar haalt CI bevindingen uit.&quot;</td>
</tr>
<tr>
<td>&quot;We moeten CI benaderen via Marketing, weinig control&quot;</td>
</tr>
<tr>
<td>&quot;Bij sommigen komt het aanwaaien.&quot;</td>
</tr>
<tr>
<td>&quot;Hoe werkt CI precies, het is een blackbox voor mij&quot;</td>
</tr>
</tbody>
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<td>&quot;Bellen van prospects is relevant voor het goed doen van jouw werk / halen van targets&quot;</td>
</tr>
<tr>
<td>&quot;Een kant: mensen tien jaar en houden wat ze beste kunnen en meest plezier uit halen: bij bankers is dat niet bellen. Maar: hij moet wel ondernemen, als het niet druk genoeg is, zelf aan de bak.&quot;</td>
</tr>
<tr>
<td>&quot;Gedeelde verantwoordelijkheid.&quot;</td>
</tr>
<tr>
<td>&quot;Rustige periode aanvullen, daarbuiten niet nodig&quot;</td>
</tr>
<tr>
<td>&quot;Als alles bij call goed werkt, dan niet meer onderdeel van werk banker.&quot;</td>
</tr>
<tr>
<td>&quot;In een ideale wereld: heel veel prospects benaderen&quot;</td>
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</tbody>
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### Afronding (volledigheid/consistentie)

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<tbody>
<tr>
<td>&quot;Visie geven hoe het moet, hulp bieden. Manager moeten hun mensen helpen, methodes bedenken: bellijst is een van die methodes. Businessclubjes zijn niet alles.&quot;</td>
</tr>
<tr>
<td>&quot;Bewustzijn creeeren, verbinden met strategie.&quot;</td>
</tr>
<tr>
<td>&quot;Lastig, als het niet je drijfveer is, is het daar ook niet zo snel te krijgen.&quot;</td>
</tr>
<tr>
<td>&quot;Populair wordt het niet.&quot;</td>
</tr>
</tbody>
</table>

(Kortom: hoe maken we de slimme lijsten binnen PerBa populair?)
## C.4. Evaluation – managers

### Selectieproces

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<th>Output sturen (4 afspraken regelen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Strakker op moeten zitten, dwingen. Zou eigenlijk niet nodig moeten zijn.&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Gaat ook om mensen ontwikkelen.&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Weerstand, je moet er bovenop zitten.&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Zonde r stuurinformatie kan het niet&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**Verwachting van manager vs. Eigen vrijheid tot gebruiken**

| Hard erin zetten als vast onderdeel, bedrijfseconomisch is het logisch |  |
| Ene kant balen dat het niet gebeurd is, meer discipline nodig. |  |
| Deels geleefd door waan van de dag. |  |

**Gebruik van omgeving vs. Eigen gebruik**

| Deels ook dwingen kijken wat er nou gebeurd is |  |
| Niet te snel oordelen |  |
| Duidelijker verwachting creëren, maar die ook afdwingen. |  |

**Rol tussen CI en bankers**

| Formule management moet hier ook een rol spelen |  |
| Samenspel met CI moet beter |  |

**Bellen van prospects is relevant voor het goed doen van jouw werk / halen van targets**

| Acquireren wel leuk, maar niet op deze manier. |  |
| Dan ook paar dingen doen die niet het leukst zijn. |  |
| Nuttig? Het is goed voor resultaten. We zijn immers salesforce. |  |
| Bij de functie hoort wel drive/eagerness |  |

### Afronding (volledigheid/consistentie)

| Welke zaken/verbeteringen/dingen/tips moeten volgens jou veranderen om het succes van slimme lijsten te vergroten? (Kortom: hoe maken we de slimme lijsten binnen PerBa populair?) |  |
Appendix D.  Self-reporting results

Appendix D has been removed from the public version of this thesis.
Acceptance of Operational Business Intelligence in Organisations

Developing a framework describing the context and powers at play involved in achieving OpBI acceptance in organisations

Maxim Oei – 31/03/2014